



SPSD/M 

Algorithm Guide

This guide is designed primarily to provide *SPSD/M* users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black box and glass box users.

September 21, 2001



Canada

Introduction

The Algorithm Guide provides SPSD/M users with a description of the specific personal tax and cash transfer programs which are simulated and the specific way in which this is done. An attempt is also made to guide and caution the user, where necessary, as to the interpretation of the results. Also included in this guide are descriptions of processing and utility algorithms which have a significant effect on the results. The guide is intended for both black box and glass box users.

The guide is organized into three main sections. After the first section (this Introduction), there is a section describing the algorithms organized into logical groupings. This is followed by an alphabetically-arranged encyclopaedic section that lists all algorithms in the SPSM.

These modules are referred to as functions. Function names are printed in lower case (e.g. `txinet`, `txcalc`). Sub-functions are defined within the function that calls them and are also shown in lower case (e.g. `uicl`, `gissub`). Both regular and local variables are shown as usual in lowercase (immicons). These local variables may not be used for reporting purposes unless modifications are made in glass box mode.

These functions tend to have a one-to-one correspondence with actual social and tax programs. In some cases however, two functions are required for one social program (Eg. the child care expense deduction is calculated in one function and allocated to a particular family member in another), or many programs may be simulated in one function (e.g. federal and provincial family allowances are both calculated by one routine).

Subject Reference

1 Algorithm by Program

1.1 Introduction

This guide is designed primarily to provide SPSPD/M users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black-box and glass-box users.

1.2 Pre-simulation Functions

The functions in this group are executed prior to the simulation of taxes and transfers. The database is first adjusted to the users specifications, by `adj`. This adjusted database will form the basis of all base/variant combinations executed in a single program run. Parameter edit checks and the calculation of derived parameters are performed next in `mpc`. This is done based on `.apr` parameters and rules embodied in the function. Finally, calls to the tax/transfer algorithms are made for each requested base and/or variant simulation as controlled by the `drv` function.

1.2.1 Adjust Database

Three functions perform certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database.

| | |
|-----------------------|---|
| <code>fmspopen</code> | Routines to read SPSPD file (<code>.spd</code>) |
| <code>fmxopen</code> | Routines for reading FAMEX (<code>.fxv</code>) file |
| <code>adj</code> | Perform SPSPD database adjustment |

1.2.2 Calculate Derived Parameters

The `mpc` function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters.

| | |
|------------------|---|
| <code>mpc</code> | Calculate derived model parameters and do edits |
|------------------|---|

1.2.3 Tax/Transfer Calculator

Two functions are responsible for invoking the algorithms which calculate all taxes and transfers.

| | |
|-------------------|------------------------------|
| <code>call</code> | Call tax/transfer calculator |
| <code>drv</code> | Tax/transfer calculator |

1.3 Government Cash Transfers

1.3.1 Unemployment Insurance Benefits

Unemployment Insurance benefits are calculated by a set of functions which mimic application of UI regulations to individual employment and claim histories. These functions are contained within the ui function

ui Compute UI benefits

1.3.2 Family Allowances

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

famod Compute family allowance

1.3.3 Federal Child Tax Benefit/Credit

This function is used to calculate either the federal Child Tax Credit program or the federal child tax benefit. Both programs are intended to provide benefits to help low and middle income families meet the costs of raising children under the age of 18.

txctc Compute child tax credit

ccept zero CCE for young kids if optimal

1.3.4 Federal Sales Tax Credits

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse.

txfstc Compute federal sales tax credit

1.3.5 Elderly Programs

1.3.5.1 Old Age Security

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. The SPSM calculates OAS based on the age of the individual and, for immigrants, the years since immigration. The clawback of OAS is performed in the txitax function.

oas Compute OAS for elderly

1.3.5.2 Guaranteed Income Supplement/Spouses Allowance

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable

monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested.

gis Compute GIS/SPA for elderly

1.3.5.3 Provincial GIS Supplementation Programs

The gist function calculates benefits for seven provincial GIS supplementation programs in six provinces; Nova Scotia, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. All modelled provincial senior's programs within SPSM are in this function.

gist Compute Provincial GIS top-ups for elderly

1.3.6 Social Assistance Benefits

This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here.

samod Compute social assistance or guarantees

1.4 Federal Income and Payroll Taxes

1.4.1 Calculate Net Income

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Taxable Dividends
- Taxable Capital Gains
- Total Income
- CPP/QPP Contributions (Deduction or Tax Credit)
- UI Contributions (Deduction or Tax Credit)
- Tuition Fees (Deduction or Tax Credit)
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

txinet Compute net income

1.4.2 Calculate Taxable Income

The process of computing taxable income is divided into two separate routines. Exemptions, deductions and tax credits which are not dependent upon information from other members of the family (e.g., the Basic Personal Exemption or Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

txitax Compute taxable income and individual credits

txhstr Compute family-related deductions or credits

1.4.3 Child Care Expense Allowance

The txceea function calculates the value of the child care expense deduction. The calculation may be optionally converted to a tax credit basis rather than a deduction.

txceea Compute child care expense allowance

1.4.4 Calculate Federal Tax

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Basic Federal Tax (including credit transfers)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement

txcalc Calculate federal income tax

1.5 Calculate Provincial Taxes

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax to a parallel of the federal system in Quebec. Most provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

1.5.1 All Provinces except Quebec

| | |
|--------|---|
| txprov | Compute provincial taxes |
| txnfld | Compute provincial taxes for Newfoundland |
| txpei | Compute provincial taxes for P.E.I. |
| txns | Compute provincial taxes for Nova Scotia |
| txnb | Compute provincial taxes for New Brunswick |
| txont | Compute provincial taxes for Ontario |
| txman | Compute provincial taxes for Manitoba |
| txsask | Compute provincial taxes for Saskatchewan |
| txalta | Compute provincial taxes for Alberta |
| txbc | Compute provincial taxes for British Columbia |

1.5.2 Quebec

| | |
|---------|--|
| txque | Compute provincial taxes for Quebec |
| txqinet | Compute net income (Quebec) |
| txqccea | Compute child care expense allowance (Quebec) |
| txqitax | Compute taxable income and individual credits (Quebec) |
| txqhstr | Compute family-related deductions or credits (Quebec) |
| txqcalc | Calculate income tax (Quebec) |

1.6 Calculate and Assign Commodity Taxes

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures at the spending unit level of analysis in the following function..

| | |
|---------|--|
| ctmod | Compute commodity taxes for individuals and households |
| txhhexp | Compute and pro-rate household taxes, rent, etc. |

1.7 Aggregation Routines

Two aggregation functions are used to calculate several reporting variables as aggregates of other modeled variables. The functions calculate all dollar denominated reporting variables up to the level of consumable income. In addition taxable filer status is determined.

| | |
|-------|----------------------------------|
| memo1 | Compute memo items for reporting |
| memo2 | Compute consumable income, etc. |

1.8 Glass Box Stub Routines

There are two empty functions in both the standard and alternate drivers (drv) that are available to

allow completely new tax or benefit programs to be developed by glass box users.

| | |
|-----|--|
| dem | Compute new taxable demogrants |
| gai | Compute new refundable credits or guarantees |

1.9 Auxiliary Functions

There are a number of auxiliary functions which are used by the functions containing the tax/transfer algorithms. These functions perform routine tasks required in simulating the tax/transfer system such as table look-ups and benefit reduction functions. The description of these functions is of use to anyone attempting to fully understand or modify the C-language source code for the tax/transfer algorithms.

| | |
|----------|--|
| classu | Compute user-defined reporting variables |
| isneg | Is argument negative ? |
| isnneg | Is argument non-negative? |
| isnzro | Is argument non-zero? |
| iszero | Is argument zero? |
| lkup1 | Table look-up with interpolation/extrapolation |
| lkup2 | Table look-up without interpolation |
| maxn | Find the maximum of two numbers |
| minn | Find the minimum of two numbers |
| nneg | Change negative numbers to zero |
| pmaddent | Define and add a parameter |
| randrnd | Randomly round a floating point number to an integer |
| round | Round to nearest integer |
| strn | Retrieve string by string number |
| taxbak1 | One level tax-back function |
| taxbak2 | Two level tax-back function |
| vardef | Define structure member as an SPSM variable |

Alphabetic Reference

adj

Perform SPSD database adjustment

SUMMARY

The `adj` function performs certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database. The function may currently be used to adjust the amount of RRSP contributions claimed. A brief description of the database adjustment in general is also included.

SPSM Implementation

The SPSD is based on surveys and administrative data collected for the 1988 calendar year. Adjustment of this data may be required for several reasons. The user may wish to use the incomes to represent the incomes in a more recent year such as 1994. As such the user would supply estimates of growth rates for income by source and expenditures from 1988 to 1994. The user may also wish to make adjustments for simulation purposes in the 1988 year. For example, known under-reporting of alcohol expenditures may be treated by scaling each household's alcohol expenses or a deduction item could be scaled down to zero to represent a restriction of a certain tax measure. Finally, the user may wish to adjust the weights of individuals and households to reflect alternate demographic assumptions.

The scaling of money items is performed in two functions inaccessible to the glass box user. Prior to the calculation of any taxes or transfers each dollar denominated database variable is multiplied by a single corresponding database adjustment parameter. There are two key exceptions to this. Employment income, comprising about 70% of total income is given more rigorous treatment due to its relative importance in the overall tax/transfer system. Employment income may be adjusted by industry specific growth rates. CPP/QPP income may be adjusted by differential rates according to age groups which allows for the phasing in of that program. Users should refer to the *Parameter Guide* in this manual for further details on specific adjustment parameters.

The `adj` function is a means for glass box users to affect the adjustment of the database in ways not currently possible. The user may add their own adjustment routines to augment or even offset current means of adjustment. For example if the user wished to grow employment income by age and sex they would set the existing employment parameter to one and enter a new algorithm in this function. One such specific database adjustment provision is currently available in black box mode and is used in the analysis of RRSP contributions.

This adjustment (which will change the value of the `idrrsp` variable) is designed to allow the user to simulate the increase in RRSP contribution limits in a rough fashion. It allows the user to increase the RRSP contributions of individuals who are near to the current

contribution limits. The facility is activated by setting the RRSPIFLAG parameter to 1. Two cases are distinguished, those who are not covered by a employer-contributed pension plan, and those who are.

If individuals had RRSP contributions but had no RPP contributions, and their RRSP contributions fell between RRSPSMIN and RRSPSMAX inclusive, their RRSP contributions will be increased by RRSPSINC.

If individuals had RPP contributions, then, for those individuals whose total pension contributions (RRSP plus RPP) fell between RRSPEMIN and RRSPEMAX, their RRSP contributions will be increased by RRSPEINC.

Relation to Other SPSM Routines

The `adj` function is called before `drv` and as such is only executed once for every program run. This means that database adjustments will apply to both the base and variant scenarios. The function is called after the other database adjustment routines.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-----------|---|
| DNINCFLAG | Disable no income flag for calculation |
| PROVMAP | Provincial remapping [prov] |
| RRSPEINC | Increment to rrsp if conditions & rpp>0 |
| RRSPEMAX | Maximum (rpp+rrsp) for increment if rpp>0 |
| RRSPEMIN | Minimum (rpp+rrsp) for increment if rpp>0 |
| RRSPIFLAG | RRSP increment activation flag |
| RRSPSINC | Increment to rrsp if conditions & rpp=0 |
| RRSPSMAX | Maximum (rrsp) for increment if rpp=0 |
| RRSPSMIN | Minimum (rrsp) for increment if rpp=0 |

INPUT VARIABLES:

| | |
|-------|---|
| hhnin | Number of individuals in household |
| idrpp | Registered pension plan contributions (207) |

OUTPUT VARIABLES:

| | |
|---------|---------------------------------|
| hdprov | Province |
| idninco | No income flag (SPSD variables) |
| idrrsp | RRSP calculated amount (208) |

SUMMARY

Stub function for use by glass box users who wish to modify database variables either before and/or after tax/transfer calculation. This function calls the standard driver -- drv.c.

SUMMARY

The ccept function controls multiple calls to the tax transfer calculator drv.

Program Description

There are three instances in which the entire calculation of the tax/transfer system for household is necessary. The ccept function controls such recalculations. Each case is discussed under separate headings below:

Pre-calculation of the child tax benefit.

The calculation of Employment Insurance depends in part upon an individual's Child Tax Benefit entitlement. However, Employment Insurance is calculated prior to the Child Tax Benefit. ccept is used to calculate a preliminary value for the child tax benefit which can then be used in the calculation of Employment Insurance. The final value for a family's child tax benefit may differ from the preliminary estimate used for this calculation of Employment Insurance.

Optimization of the Child Tax Credit/Child Tax Benefit

Beginning in 1988 the rules for calculating the child tax credit/child tax benefit and the child care expense credit were altered to ensure that middle income families could not receive the full benefits from both programs. In practice this is done by reducing maximum child tax credit benefits by 25% of claimed child care expenses. The resulting situation is that below a certain income level it is advantageous not to claim any child care expenses incurred. The ccept function can locate this level and thus maximize the combined benefits from the child care expense credit and the child tax credit/child tax benefit.

SPSM Implementation

ccept performs the re-calculations and optimizations in a specific sequence. The pre-calculation of the federal Child Tax Benefit for purposes of correctly calculating Employment Insurance is performed first. Next the optimization of the child care expense deduction and the federal Child Tax Benefit is performed. The SPSM implementation of each

type of optimization are described separately below:

Pre-calculation of the child tax benefit.

The first time drv is called Employment Insurance is calculated with a zero value for the federal Child Tax Benefit. This will result in no EI family supplement benefits being assigned. The first time ccept is called by drv, it first determines if a family is eligible for both EI and the Child Tax Benefit. If so, that household has its entire tax/transfer entitlements/liabilities re-calculated using the value for the federal child tax benefit calculated in the first pass.

Note that there is a circularity between the two programs in that the federal Child Tax Benefit is based, in part, on Unemployment Insurance benefits to the extent that they are included in the definition of net income which is used to clawback the child benefits.

Optimization of the Child Tax Credit/Child Tax Benefit

The default calculation first performed in txceca makes use of any child care expenses associated with the children in the family. In the ccept function cases subject to optimization are first identified as families having children aged 0-6 with associated child care expenses.

The complexities of the tax reform situation in Canada make it difficult to know how to optimize many of this type of case. Consequently, once these families have been identified, the entire tax/transfer system is recalculated, setting child care expenses for young children to zero. The value of consumable income for both runs is then compared. If the family benefits from this change, the scenario with no child care expenses is kept. Otherwise, the previous scenario is restored by again re-running the entire tax transfer system.

The algorithm is controlled by the parameter CCEZOPT, which is described in the [Parameter Guide](#).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----------|--|
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UITARGET | UI/EI target for the number of cases (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| hdageeld | Age of eldest in household |
| hdnkids | Number of children in household |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idninc | No income flag (SPSD variables) |
| iduirank | Predicted ranked likelihood of getting UI |
| imcce | Child care expenses claimed on behalf of child |
| immicons | Consumable income |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|---------|--|
| imcceni | Consumable income with CCE not zeroed |
| imccez | Is CCE zeroed? |
| imccezi | Consumable income with CCE zeroed |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |

classu Compute user-defined reporting variables

SUMMARY

The classu function is a stub routine which allows the glass-box user to compute and assign values to new or re-defined variables. Variables first must be defined appropriately in vsdu.c and vsu.h. Since this function is normally called by both the standard and alternate model drivers, assignments made in classu will be effective in both cases.

Users should note that classu should only be used when the user is unable to create the desired classification with the User Defined Variable Facility. Please see the [*User's Guide*](#) for more information on this alternative facility.

Note that classu is called at the end of drv so that variables defined in classu are not available for use in other tax/transfer algorithms. See the [*Programmer's Guide*](#) for more information.

ctmod Compute commodity taxes for individuals and households

SUMMARY

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to

observed family expenditures at the spending unit level of analysis. The resulting federal government taxes span 48 consumer expenditure (CE) categories while provincial government taxes have both CE category and provincial dimensions. Commodity taxes are also estimated for other levels of analysis such as economic families and individuals.

Program Description

The federal government has a variety of taxes which are levied on goods used in production and for final demand consumption. Some of the major federal tax types are: custom import duties, alcohol and tobacco excise taxes and excise duties, manufacturers sales tax, gasoline excise tax, air transportation tax, and energy use taxes. The provincial governments also levy taxes but with more of an emphasis on consumer goods. Major taxes include liquor commission mark-ups, gasoline taxes, tobacco taxes, and retail sales taxes.

An important characteristic of this tax system is the cascading effect. Tax cascading occurs when a tax rate is applied to the value of a commodity inclusive of another tax type. For example, when an individual makes a long distance call a federal telecommunications tax of 10% is applied to the price of the call. Provincial governments then levy their retail sales tax rates to the value of the call inclusive of the federal tax.

SPSM Implementation

Input/Output Estimation of Tax Rates

Tax costs associated with domestic production are passed to the domestic consumers is the fundamental I/O modeling assumption. For example, alcohol producers require raw materials such as grains, water, energy source etc. If these inputs are produced themselves in other industries, then their selling price may include a manufacturer's tax component. Through Input/Output (I/O) techniques we are able to associate the implicit tax share of the production process to the correct final demand good.

The macroeconomic I/O system is used to construct effective tax rates by tax type, final demand good, and by province. This enables the calculation of the tax burden implicit in each household's reported final demand expenditures.

The federal tax rates have been grouped into six tax types: custom import duties; excise duties; manufacturer's sales tax; excise taxes; other energy taxes; and federal sales tax. The federal sales tax type that has been included for user simulations is set to zero by default. The array of provincial tax rates has also been reduced to six tax types: profits on liquor commissions; liquor gallonage tax; gasoline tax; amusement tax; tobacco tax; retail sales tax.

The above rates are defined as the ratio of a particular tax to the expenditure net of all commodity taxes for a given good in a given province. Therefore, an additional input parameter rate is applied to the FAMEX observations to net out the commodity taxes implicit in the base year.

For a more complete description of the I/O methodology, calculation procedures, tax type composition, etc. see *Commodity Tax Model User's Guide*.

Notes Regarding Expenditure Adjustments

Prior to the execution of the ctmod function, two modifications of the FAMEX data have been performed by the SPSM.

The first is made necessary because of the way SNA and FAMEX treat the expenditures on motor vehicles as net expenditures. If the trade-in exceeds the value of the purchase, or a household sells a vehicle outright, then the expenditure category will contain a negative value. In this case the SPSM treats the net expenditure as an income item (net sale of durables) and it is incorporated into the income calculation. The expenditure category is then set to zero. This procedure is conducted in the two consumer expenditure categories where net sales can occur: New & used automobiles; Recreation, sporting goods, and camping equipment. This modification is not accessible to the user.

The second data modification involves correcting for under-coverage of some FAMEX expenditure components. For example, sales of alcohol and tobacco are monitored very carefully by government agencies and their data indicate roughly twice as much consumption of these two goods as reported on the FAMEX. Two other FAMEX categories report substantially lower consumption than other information sources would indicate. They are semi-durables and expenditures for restaurants & hotels. The GFFMX parameter in the .APR file enables the adjustment of raw FAMEX values to the levels of other sources. We provide users with factors to inflate expenditures to known 1984 levels.

Estimation of commodity taxes

The ctmod function initially calls the ctfx sub-function to calculate the taxes based on the expenditure patterns of FAMEX spending units. The ctmod function then computes the taxes for other levels of analysis such as individuals or economic families.

The FAMEX expenditure categories must be stripped of their original tax component before the commodity tax calculation can be performed. This is accomplished in the ctfx sub-function by applying the I/O computed CTTXRM parameter (database adjustment parameter) to the expenditure observations.

The effective commodity tax rates are then multiplied by the net expenditures to produce commodity tax levels for each spending unit. If the CTDFLAG is set to 0 then total federal level taxes by commodity and provincial level taxes by commodity and province are calculated. If CTDFLAG is set to 1 then the six detailed federal taxes and seven provincial taxes are generated. Provincial taxes applied are defined in the following input parameters:

- CTPAMU Provincial amusement tax
- CTPGAS Provincial gasoline tax
- CTPICT Provincial commodity taxes on industry
- CTPLGL Provincial liquor gallonage tax
- CTPPLQ Provincial profits on liquor commissions
- CTPRST Provincial retail sales tax
- CTPTOB Provincial tobacco tax

The model ensures that both options will produce identical results in the aggregate.

Commodity taxes are then allocated to individuals in the FAMEX spending unit via personal income shares in the ctmof function. The income of the household's head is derived by adding three variables from the FAMEX income concept not surveyed elsewhere to his/her SPSD income concept variables. These variables are: savings; other money receipts; and net sales of durables. The shares reflect the income distribution after this modification.

The CTOPT parameter controls which income concept is used in the simulation. If the parameter is set to 1 then the FAMEX income concept is used. This measure of income is not linked to other SPSD variables in any way. Therefore, if the user wishes to examine the implications to commodity tax outflows based upon changes in SPSD income variables (i.e. OAS, GIS, income tax changes) then this option should never be specified. Its use should be restricted to pure FAMEX analyses.

If CTOPT is set to 2 then the SPSD income concept is used. This income measure has been corrected for an income bias inherent in Survey of Consumer Finance (SCF) data using Department of Revenue Green Book tax data. This income adjustment is described in detail in the *Database Creation Guide*. The result is a substantial increase in household income for observations in the extreme upper tail.

The FAMEX data suffers from the same under-coverage as the SCF so the reported spending unit expenditure can be out of synch with the Green Book adjusted income. For example, the largest total expenditure observation is around \$150,000 while a large tax adjusted household income exceeds \$5,000,000.

Setting the CTOPT parameter to 2 scales the commodity tax calculated conditioned on FAMEX spending unit income by the ratio of the SPSD "shared" income concept to an equivalent FAMEX "shared" income concept. In this way tax outlays bear closer relation to the SPSD income levels. However, this leads to some outlay distortions for the extremely wealthy which are described in the Interpretation Section.

Interpretation

There are some other discrepancies between the system of national accounts (SNA) definition of consumer expenditure and that of FAMEX. Generally, SNA includes the entire personal sector whose components are households, self-employed professionals, and universities. FAMEX tracks only households and, therefore, tax levels by commodity are generally lower. For a detailed description of these differences see the *Commodity Tax Model User's Guide*

In the aggregate, differences between income SPSM income concept (CTOPT=2) and the FAMEX income concept (CTOPT=1) are almost negligible. Using 1984 base case parameters the FAMEX option produced a \$20.997 billion tax burden on Canadian families while the scaled option generated \$21.048 billion. These compare favorably with the SNA estimate of \$22.5 billion. However, the differences for the highest income households in great. The top three households show differences of over \$200,000. This implies some caution when interpreting commodity tax values for high income observations.

Relation to Other SPSM Routines

The ctmod function calls the ctfx sub-function in order to calculate spending unit commodity taxes. The ctmod function itself is called by the drv function. The ctmod function makes use of parameters derived in the mpc function. The mpc function also ensures that the ctmod function is not executed if the FAMEX data vector is not being read (i.e. if FXVFLAG=0). The calculation of commodity taxes is highly dependent on the parameters applied to the database expenditure items during the database adjustment phase of the simulator.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTDFLAG | Commodity tax detailed calculation flag |
| CTFCID | Federal custom import duties [com] |
| CTFEXD | Federal excise duties [com] |
| CTFEXT | Federal excise taxes [com] |
| CTFGST | Federal GST [com] |
| CTFLAG | Commodity tax activation flag |
| CTFMFG | Federal manufacturer's sales [com] |
| CTFOEN | Federal other energy taxes [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTLPROP | Local property taxes |
| CTNES | Expenditures NES |
| CTOPT | Commodity tax calculation method [1=FAMEX,2=SPSM] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| CTPTOT | Provincial total retail tax equivalent |
| CTSAVE | All positive savings |

INPUT VARIABLES:

| | |
|----------|--|
| ctnexp | Household expenditure net of taxes |
| ctothmon | Household money from other sources |
| cttxfc | Federal commodity taxes (total) |
| cttxpc | Provincial commodity taxes (total) |
| fxfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |

| | |
|----------|------------------------------------|
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hhnin | Number of individuals in household |
| idhhrh | Relationship to head of household |
| immdisp | Disposable income |

OUTPUT VARIABLES:

| | |
|----------|--|
| ctfcid | Federal custom import duties |
| ctfexd | Federal excise duties |
| ctfext | Federal excise taxes |
| ctfgst | Federal GST |
| ctfmfg | Federal manufacturer's sales tax |
| ctfoen | Federal other energy taxes |
| ctishrh | Shared income concept (FAMEX) |
| ctlprop | Local property taxes on owned dwellings |
| ctnes | Household expenditure not elsewhere specified |
| ctnexp | Household expenditure net of taxes |
| ctnexp_ | Household expenditure net of taxes [array] |
| ctnsna | Household expenditure net of taxes -SNA adjusted |
| ctnsna_ | Household expenditure net of taxes [array] -SNA adjusted |
| ctothmon | Household money from other sources |
| ctpamu | Provincial amusement tax |
| ctpgas | Provincial gasoline tax |
| ctplgl | Provincial liquor gallonage taxes |
| ctpplq | Provincial profits on liquor commissions |
| ctprov | Province for COMTAX calculations |
| ctprst | Provincial retail sales tax |
| ctptob | Provincial tobacco tax |
| ctsave | Household savings |
| ctseqhv | FAMEX record sequence number |
| cttxfc | Federal commodity taxes (total) |
| cttxfc_ | Federal commodity taxes [array] |
| cttxpc | Provincial commodity taxes (total) |
| cttxpc_ | Provincial commodity taxes [array] |
| imishri | Shared income concept (FAMEX & SPSD) |
| imninc | No income flag |
| imtxfc | Federal commodity taxes |
| imtxpc | Provincial commodity taxes |

dem Compute new taxable demogrants

SUMMARY

This is a stub function for use by glass box users who wish to incorporate a new program which interacts with the tax system (i.e. taxable benefits).

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|--------------------------|
| imiotg | Other taxable demogrants |
|--------|--------------------------|

| | |
|------------|-------------------------|
| drv | Tax/transfer calculator |
|------------|-------------------------|

SUMMARY

The calculation of taxes and cash transfers for any base or variant run is controlled by a function whose only task is to call all other individual tax/transfer algorithm functions. The sequence of calls is critical to the simulation due to the informational requirements of the tax/transfer functions. For example net income must be known before gis can be calculated. The following list gives the functions called by drv in the order in which they are called.

| Function | Description |
|----------|---|
| ui | Compute UI benefits |
| famod | Compute family allowance |
| oas | Compute OAS for elderly |
| dem | Stub routine for new pre-tax system programs |
| txinet | Compute net income (including payroll taxes) |
| gis | Compute GIS/SPA for elderly |
| senben | Compute senior benefit |
| gist | Compute Provincial GIS top-ups for elderly(GAINS-A, SIP, etc) |
| samod | Compute social assistance or guarantees |
| txitax | Compute taxable income |
| txhstr | Apply tax transfers between head and spouse |
| txcalc | Calculate federal income tax |
| txctc | Compute child tax credit |
| txprov | Compute provincial taxes and credits |
| txfstc | Compute federal sales tax credit |
| gai | Stub routine for new post-tax system programs |
| memo1 | Compute memo items for reporting |
| ctmod | Compute commodity taxes |
| memo2 | Compute consumable income, etc. |

ccept
Classu

Zero CCE for young children if optimal
Stub routine to compute user defined reporting variables

The calling order of the component functions of drv reflects the logical precedence between them.

- The first functions, ui, famod and oas, simulate programs whose benefits are determined by factors other than income and as such are called first.
- dem is a stub routine for glass box applications that require calculations to occur before entering the tax system routines.
- txinet calculates net income prior to certain transfers.
- gis calculates transfers to the elderly.
- senben calculates senior benefits.
- gist, txctc, and txfstc calculate income tested transfer programs.
- samod calculates social assistance or guaranteed income transfers.
- Federal and provincial taxes are calculated next in the next six functions with the tx prefix (txitax, txhstr, txcalc, txprov, txctc, and txfstc).
- gai is another stub routine that is intended for use by glass box users who wish to simulate options requiring information on all personal income taxes and cash transfers. For example users may use this function to simulate an income supplementation program.
- The memol and memo2 functions create aggregate variables for reporting.
- In the ctmod function, sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures.
- ccept optimizes income by maximizing the child care expense credit and the child tax credit.
- classu is a stub routine which allows the glass box user to compute and assign values to new or re-defined variables.

The functions called by drv call other functions and sub-functions in order to complete their calculations. The following page contains a complete list of the names of functions and sub-functions along with a short description in the order in which they are called by drv. Please refer to the specific function in this guide for a more detailed description. Sub-functions (in italic) can be found listed under the function which calls them. Thus for a complete understanding of the calculation of net income one would have to consult both the txinet and txceca functions.

As mentioned earlier, function names are printed in lower case, bold, courier font (E.g. txinet, txcalc) and correspond to a single C language source code file (E.g. txinet.c, txcalc.c). Sub-functions are defined within the function (file) that calls them and are shown in lower case, courier font, italic (e.g. uisqz, gissub). All multiple calls to the same sub-function have been shown here. All functions directly called by drv begin in the first column below, other function calls are indented.

In ccept all the functions are called a second time by drv to find if a family benefit of setting CCE to zero, if it is the case the result is kept, otherwise drv call again all the functions to reset the original values.

| | | |
|----|---------------|---------------------|
| ui | | Compute UI benefits |
| | <i>uicl</i> m | Simulate a UI claim |

| | | |
|--------|-----------------|---|
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| | <i>uicl</i> | Simulate a UI claim |
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| famod | | Compute family allowance |
| oas | | Compute OAS for elderly |
| dem | | Stub routine for new pre-tax system programs |
| txinet | | Compute net income |
| | <i>txccea</i> | Compute child care expense allowance |
| gis | | Compute GIS/SPA for elderly |
| | <i>gissub</i> | Compute income used to tax back GIS/SPA |
| senben | | Compute senior benefit |
| | <i>sbsub</i> | Compute income used to tax back Seniors Benefit |
| gist | | Compute Provincial GIS top-ups for elderly |
| | <i>txhhexp</i> | Compute and pro-rate household taxes, rent, etc. |
| samod | | Compute social assistance or guarantees |
| txitax | | Compute taxable income |
| txhstr | | Apply tax transfers between head and spouse |
| txcalc | | Calculate federal income tax |
| txprov | | Compute provincial taxes |
| | <i>txnfld</i> | Compute Newfoundland provincial taxes |
| | <i>txpei</i> | Compute PEI provincial taxes |
| | <i>txns</i> | Compute Nova Scotia provincial taxes |
| | <i>txnb</i> | Compute New Brunswick provincial taxes |
| | <i>txque</i> | Compute Quebec provincial taxes |

| | | | |
|--------|--------------|--------------|--|
| | | txqinet | Compute net income (Quebec) |
| | | txqccea | Compute child care expense allowance (Quebec) |
| | | txqitax | Compute taxable income (Quebec) |
| | | txqhstr | Apply tax transfers between head and spouse (Quebec) |
| | | txqcalc | Calculate Income Tax (Quebec) |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txont | | Compute Ontario provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txman | | Compute Manitoba provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txsask | | Compute Saskatchewan provincial taxes |
| | txalta | | Compute Alberta provincial taxes |
| | txbc | | Compute BC provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| txctc | | | Compute child tax credit |
| txfstc | | | Compute federal sales tax credit |
| gai | | | Stub routine for new post-tax system programs |
| memo1 | | | Compute memo items for reporting |
| ctmod | | | Compute commodity taxes |
| | <i>ctfx</i> | | Compute commodity taxes for FAMEX spending unit |
| | | <i>ctfxd</i> | Compute commodity taxes for FAMEX spending unit (detailed) |
| | | <i>ctfxs</i> | Compute commodity taxes for FAMEX spending unit (simple) |
| memo2 | | | Compute consumable income, etc. |
| cceopt | <i>pass2</i> | | Zero CCE for young kids if optimal recalculate UI with child benefits in place |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| classu | | | Compute User Defined Reporting Variables |

SUMMARY

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

Following 1997 reform, starting in 1998 in the model, the Quebec family allowance, the Quebec new born allocation and the Quebec availability allowance are now calculated only if QFATCOPT is set to 1, otherwise the Quebec Family Allowance Tax Credit is calculated in txqcalc.

Program Description

The federal Family Allowances program was designed to provide taxable benefits to help meet the costs of raising children under the age of 18 who are resident in Canada and are maintained by their parent(s) or guardian. At least one parent or guardian must be either a Canadian citizen or a permanent resident, visitor or holder of a Minister's Permit under the Immigration Act and have been legally admitted into Canada. The parent(s) or guardian must make application for benefits and their income must be subject to Canadian income tax. Benefits cease to be payable with regard to self-supporting children (i.e. children who begin to earn a taxable income).

Family allowance benefits are generally paid at a uniform rate across Canada. However, provinces may, within certain limits, vary the amount of Family Allowances that the federal government pays to their residents according to the age and/or number of children in a family. Alberta and Quebec are the only provinces that vary the rate. Alberta varies payment based on the age of the child while Quebec varies payment based on the number of children in the family and then adds a supplement based on the age of the child.

The province of Quebec maintains a separate but linked program under the Quebec Family Allowances Act which provides for benefits to the parent or guardian of an unmarried child under the age of 18 who is not a ward of the province. The applicant must have resided in Quebec for at least one month or be paying Quebec income tax. In 1984 benefits payable were not subject to Quebec income tax, however benefits paid with respect to children aged 16 and 17 were subject to federal tax. Persons in receipt of federal family allowances automatically receive the provincial benefits without application. This program also has a supplement for handicapped children; however, this is not modeled in the SPSM.

The Quebec Newborn Allowance was implemented in 1988 and is modeled in famod from that year. Benefits are paid per child and rise from \$500.00 for each of the first two children to \$3000.00 for each subsequent child.

An option permit the user to randomly increase the rank of first and second child in order to

reflect the rank distribution of child observed by the RRQ. The program end in October 1997 and is replaced by a Child tax allocation not modeled yet.

SPSM Implementation

The famod function calculates federal and provincial family allowances based on the age of children and number of children in a family. Residency requirements are deemed to have been met in all cases as is the requirement of non self-sufficiency. The function always allocates family allowances as income of the mother unless one is not present in the nuclear family. This temporary allocation is subsequently assigned to the spouse having the higher net income in txinet and txqinet. The function outputs values for federal(imffa) and provincial(impfa) family allowances as well as the value of taxable family allowances(imtfa) for use in other functions. The function loops through each nuclear family in a household.

The function first calculates federal and provincial family allowances for residents of Quebec. Counts of numbers of children by age group are calculated and used to index into two look-up tables for federal and provincial programs as well as to scale the federal age supplement. The values are then aggregated into two local variables, taxable family allowances and federal family allowances. Taxable family allowances are equal to the sum of federal benefits for each child (as determined by that child's rank in the family) plus the federal supplement for each child aged 12-17 plus the portion of Quebec family allowances paid with respect to children aged 16 and 17.

The calculation of Quebec allowances in famod includes the Quebec availability allowance from 1988 forward. It is paid as a supplement to the Quebec family allowances and is represented by the variable imqaafa. Quebec allowances also include the calculation of the Quebec Newborn Allowance, represented by the variable imqnbfa. This benefit is calculated on the following schedule for 1988:

| Child Number | Birth | Age 1 | Age 2 | Total |
|--------------|-------------|-------------|-------|-------|
| 1 | 500 | 0 | | 500 |
| 2 | 500 | 0 | | 500 |
| 3+ | 375/Quarter | 375/Quarter | | 3,000 |

Interpretation

Results obtained from the SPSM with respect to family allowance benefits differ from Health and Welfare Canada administrative data. Overall the SPSM reports 96.7% of the 1984 calendar year average health and welfare total dollars and 97.3% of children for whom benefits are received.

The SPSM has few children in part due to the non-coverage of Yukon, N.W.T., and native reservations, all of which have younger than average populations and larger than average family sizes (approximately 1.5% of children). A second source of underestimation is the special allowances for foster children and children in welfare agencies. The SPSM does not include these children or their benefits which account for .7% of total family allowances. Further, the SPSM does not take into account payments made outside Canada, although the effect of these on the total is insignificant (less than .1%).

The family allowance program requires parents of 'self-supporting' children to notify Health and Welfare Canada and have the benefits with respect to these children suspended. There are about 52,000 of such children aged 16 and 17 on the SPSD with respect to whom benefits are allocated. It is unknown how many of the parents of these children actually report their situation to Health and Welfare Canada. Lastly, no residency check is imposed on the parents and this will have an insignificant effect. It is assumed that the number of children turning age 18 during the calendar year is balanced by the number of new births. That is, full year family allowance benefits paid with respect to children born during 1984 will be overestimates to the same degree that an underestimate arises for benefits not given to 18 year olds who were 17 during calendar 1984.

Relation to Other SPSM Routines

The famod function is called by drv. The function outputs two variables that are used in txinet for deciding which parent will claim the family allowances for tax purposes: taxable family allowances(nftfa) and number of family allowance children(nfnfach).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AFAC1 | Alberta FA benefit per child aged 0 - 6 |
| AFAC2 | Alberta FA benefit per child aged 7 - 11 |
| AFAC3 | Alberta FA benefit per child aged 12- 15 |
| AFAC4 | Alberta FA benefit per child aged 16- 17 |
| FAFLAG | Family allowance flag |
| PFACFLAG | Use provincial configuration flag |
| QAAFA | Quebec availability allowance (supplement) [parity,\$] |
| QAAFAFLAG | Availability Allowance: Supplement to Quebec FA |
| QFAIFLAG | Quebec inclusion of federal family allowance in income flag |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFFSL | Federal family allowance: Quebec Configuration[parity,\$] |
| QFPSL | Quebec provincial family allowance [parity,\$] |
| QFS | Federal supplement per child 12-17 in Quebec configuration |
| QNBFA | Quebec newborn family allowance [parity,age] |
| QNBFAFLAG | Quebec newborn family allowance flag |
| QNBPOFLAG | Quebec newborn family allowance phase out flag |
| QNBPOPYR | Quebec newborn family allowance phase-out year proportion |
| QNBPOYR | Quebec newborn family allowance phase out year |
| QNRFLAG | Quebec newborn family random increase of child rank |
| STDFA | Standard federal family allowance per child |
| TARGETYEAR | Year of analysis |
| INPUT VARIABLES: | |
| hdprov | Province |
| hhnnf | Number of nuclear families in household |

| | |
|----------|---|
| idage | Age |
| idrand | Random numbers [array] |
| idsex | Sex |
| nfinch | First child in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|---------|---|
| imffa | Federal portion of family allowances |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| impfa | Provincial family allowance |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqnbfa | Quebec newborn Allowance |
| imqtfa | Quebec taxable family allowances |
| imtfa | Taxable family allowances |
| nfineld | Eldest person in nuclear family [pointer] |

fmfxopen Routines for reading FAMEX (.fxv) file

SUMMARY

The purpose of this maintenance function is to load the FAMEX variables and to grow them by the corresponding database adjustment parameter.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|---------------|--|
| CTCFALC | FAMEX reporting error adjustment: Alcohol [prov] |
| CTCFGAS | FAMEX reporting error adjustment: Gasoline [prov] |
| CTCFTOB | FAMEX reporting error adjustment: Tobacco [prov] |
| CTTXRM | Base year commodity tax removal factor [com x prov] |
| GFCQP | Adjustment Factor: CPP/QPP contributions |
| GFFABD | Adjustment Factor: Account balancing difference |
| GFFMX | Adjustment Factor: consumer expenditure categories |
| [commodity] | |
| GFFOMR | Adjustment Factor: Other money receipts |
| GFGVPEN | Adjustment Factor: Government pension plan contributions |
| GFINTAX | Adjustment Factor: Income taxes |
| GFIPAC | Adjustment Factor: Life insurance premiums and annuity |
| contributions | |
| GFNCAL | Adjustment Factor: Net change in assets and liabilities |
| GFNES | Adjustment Factor: Not elsewhere stated |

| | |
|------------|---|
| GFPRTAX | Adjustment Factor: Property tax |
| GFPVPEN | Adjustment Factor: Private pension plan contributions |
| GFRECOM | Adjustment Factor: Real estate commissions |
| GFRFEES | Adjustment Factor: Registration and license fees |
| GFRRSPT | Adjustment Factor: Total RRSP contributions (FAMEX) |
| GFTPTAX | Adjustment Factor: Transfer of property taxes |
| GFUIC | Adjustment Factor: UI contributions |
| KEEPNEGEXP | Retain negative expenditures in FAMEX |
| DBVERSION | Version of the database (x100) |
| INPFXXV | Name of FAMEX vector file (in) [string] |
| INPSPD | Name of SPSD file (in) [string] |

INPUT VARIABLES:

| | |
|----------|--|
| fhbfver | SPSD/M binary format version (x100) |
| fhdbver | SPSD/M database/year version (x100) |
| fhfiltyp | File type (extension) [string] |
| fhnum | Number of numbers in the file |
| frclhvh | Cloning factor for FAMEX exp. vector |
| frcpp | Cpp - qpp contributions |
| frfabd | Account balancing difference |
| frfomr | Other money receipts |
| frgvpen | Gvt pension plan contributions |
| frintax | Income taxes |
| frio | Expenditure on the 40 I/O categories [array] |
| fripac | Life ins prems and annuity contributions |
| frncal | Net change in assets and liabilities |
| frnes | Not elsewhere stated |
| frprtax | Property tax |
| frpvpen | Private pension plan contributions |
| frrecom | Real estate commissions |
| frxfees | Registration and license fees |
| frrgvlot | Ratio of spending on government lotteries |
| frrrspt | Total RRSP contributions (FAMEX) |
| frtptax | Transfer of Property taxes |
| fruic | UI contributions |
| hdprov | Province |

OUTPUT VARIABLES:

| | |
|----------|---|
| fhhash | Hashed code of header information |
| fxclhvh | FAMEX cloning factor |
| fxcpp | Cpp - qpp contributions |
| xfabd | Account balancing difference |
| xfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxintax | Income taxes |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxncal | Net change in assets and liabilities |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxrgvlot | Ratio of spending on government lotteries |
| fxrrspt | Total RRSP contributions (FAMEX) |

| | |
|----------|---|
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtpax | Transfer of Property taxes |
| fxuic | UI contributions |
| hdfrstfx | First household in FAMEX group flag |
| hdlastfx | Last household in FAMEX group flag |
| hdwgtfx | Sum of household weight for FAMEX group |

fmspopen Routines to read SPSD file (.spd)

SUMMARY

The purpose of this maintenance function is to load the SPSD variables and to grow them by the corresponding database adjustment parameter. In addition the method of conversion for converted variables is applied. The logic for differential growth of CPP is also applied in this function. The actual code in this function is proprietary and is not released with the SPSD/M product.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|-----------|--|
| GFADDDDED | Growth Factor: Additional deductions from net income (256) |
| GFALEXP | Growth Factor: Other allowable employment expenses (229) |
| GFCAPGEX | Growth Factor: Capital gains exemptions (254) |
| GFCARRY | Growth Factor: Carrying charges (221) |
| GFC CET | Growth Factor: Child care expenses associated with child |
| GFC CETT | Growth Factor: Child care expenses (Limit A, Form T778) |
| GFCGLESS | Growth Factor: TCG Less Cap Gains Ded on Cap Prop Gifts |
| GFCCHARIT | Growth Factor: Charitable donations (340) |
| GFCLOSS | Growth Factor: Allowable other years capital loss (253) |
| GFCPP65 | Growth Factor: CPP for age 65 |
| GFCPP66 | Growth Factor: CPP for age 66 |
| GFCPP67 | Growth Factor: CPP for age 67 |
| GFCPP68 | Growth Factor: CPP for age 68 |
| GFCPP69 | Growth Factor: CPP for age 69 |
| GFCPP70 | Growth Factor: CPP for age 70 |
| GFCPP71 | Growth Factor: CPP for age 71 |
| GFCPP72 | Growth Factor: CPP for age 72 |
| GFCPP73 | Growth Factor: CPP for age 73 |
| GFCPP74 | Growth Factor: CPP for age 74 |
| GFCPP75 | Growth Factor: CPP for age 75 |
| GFCPPG75 | Growth Factor: CPP for age > 75 |
| GFCPPL65 | Growth Factor: CPP for age < 65 |

| | |
|------------------|---|
| GFDALIMO | Growth Factor: Alimony paid (220) |
| GFDISOTH | Growth Factor: Disability amount for dependants (318) |
| GFDISSLF | Growth Factor: Disability amount for self (316) |
| GFDUES | Growth Factor: Union and professional dues (212) |
| GFEMPLO | Growth Factor: Employee home relocation loan dedn (248) |
| GFEXPLOR | Growth Factor: Exploration and development expenses (224) |
| GFFDSFT | Growth Factor: Foreign tax credit applied to surtax (511) |
| GFFORAVG | Growth Factor: Forward averaging amount withdrawal (237) |
| GFFORINC | Growth Factor: Net foreign income (508) |
| GFFORTX | Growth Factor: Foreign tax paid (507) |
| GFGIFTS | Growth Factor: Gifts to Canada/provinces/culture (342) |
| GFGSTREB | Growth Factor: GST rebate (457) |
| GFHOMSTU | Growth Factor: College residence/resident homeowner |
| assistance (558) | |
| GFIALIMO | Growth Factor: Alimony Income |
| GFICAPG | Growth Factor: Capital gains (actual) (127 * 1.5) |
| GFIDIV | Growth Factor: Dividend income (actual) (120 / 1.5) |
| GFIEMP | Growth Factor: Employment income [province,sex] |
| GFIINT | Growth Factor: Interest income (121) |
| GFILOSS | Growth Factor: Business investment losses (217) |
| GFINOGV | Growth Factor: Other government income (non-taxable) |
| GFINOTH | Growth Factor: Other money income (non-taxable) |
| GFIOINV | Growth Factor: Other investment income with net rental |
| GFIPENS | Growth Factor: Pension income (115) |
| GFISA | Growth Factor: Social assistance income |
| GFISEFM | Growth Factor: Self-employed income - farming |
| GFISENF | Growth Factor: Self-employed income - non-farming |
| GFITC | Growth Factor: Federal investment tax credits (412) |
| GFITOGV | Growth Factor: Other government income (taxable) |
| GFITOTH | Growth Factor: Other non-government income (taxable) |
| GFITRRSP | Growth Factor: Taxable RRSP withdrawals |
| GFIVETP | Growth Factor: Veterans Pensions |
| GFWORKC | Growth Factor: Worker's compensation |
| GFLABTXG | Growth Factor: Labour funds tax credit (414) |
| GFMEDGRO | Growth Factor: Medical expenses, gross (330) |
| GFMINCAR | Growth Factor: Minimum tax carryover (504) |
| GFMOVEXP | Growth Factor: Imputed moving expenses (219) |
| GFMSCHPD | Growth Factor: Manitoba school taxes paid |
| GFNCLOS | Growth Factor: Allowable other years non-capital loss (252) |
| GFNORTH | Growth Factor: Northern deductions (255) |
| GFOTHDED | Growth Factor: Other deductions from total income (232) |
| GFOTHPE | Growth Factor: Other dependant exemptions (305) |
| GFPARTLO | Growth Factor: Limited partnership losses (251) |
| GFPOLCON | Growth Factor: Federal political contributions (409) |
| GFPROPTX | Growth Factor: Net property taxes paid (556) |
| GFPRVFTC | Growth Factor: Provincial foreign tax credit (Form T2036) |
| GFPRVPOL | Growth Factor: Provincial political contributions (565) |
| GFRENTPD | Growth Factor: Total rental payments (555) |
| GFRPP | Growth Factor: Registered pension plan contributions (207) |
| GFRRSP | Growth Factor: RRSP contributions (208) |
| GFSAURED | Growth Factor: Predicted benefits from Social Assistance |
| GFSCFCQP | Growth Factor: SCF CPP |
| GFSCFCTC | Growth Factor: Child tax credit |
| GFSCFFTC | Growth Factor: Federal tax credit |
| GFSCFINT | Growth Factor: SCF interest income |
| GFSCFOAS | Growth Factor: Old age security |
| GFSCFPTC | Growth Factor: SCF provincial tax credits |

GFSCFSA Growth Factor: SCF social assistance
 GFSCFUIB Growth Factor: Unemployment insurance benefits
 GFSTKDED Growth Factor: Stock option deduction (249)
 GFTUITN Growth Factor: Tuition fees (320)
 GFUIPRED Growth Factor: Predicted benefits from UI
 IEMPADJ Adjustment Factor: Employment income [employment income
 breaks,province]
 IEMPBRK Adjustment Factor: Income breaks for income
 adjustment[employment income breaks]
 IMPCQPOPT Imputation method, CQP [1=none 2=rank]
 IMPINTOPT Imputation method, Interest [1=none 2=imputed]
 IMPSAOPT Imputation method, SA [1=none 2=rank]
 IMPUIBOPT Imputation method, UI [1=none 2=rank]
 PURR Ratio current:base unemployment rate [prov]
 UIBASEYRMAX Maximum insurable earnings for base year
 UITARGYRMAX Maximum insurable earnings for target year
 FXVFLAG Read FAMEX expenditure vector file
 INSPSD Name of SPSD file (in) [string]
 WGTFLAG Read weight file

INPUT VARIABLES:

fhbfver SPSD/M binary format version (x100)
 fhdbver SPSD/M database/year version (x100)
 fhfiltyp File type (extension) [string]
 fhnhh Number of households in the file
 hrclohh Number of SCF clones
 hrevmv Expenditure vector matching variable
 hrprov Province
 hrtenur Tenure
 hrurb Size of urban area
 idage Age
 idccqp Converted CPP/CQP benefit
 idcintim Converted interest income (imputed)
 idcsa Converted social assistance
 idsex Sex
 irage Age
 irccqp Converted CPP/CQP
 ircfpub SCF CF publication flag
 ircfrh Relation to census family head
 ircfseq Census family sub-sequence number
 ircintim Converted interest income (imputed)
 ircluflg Common law union flag
 ircsa Converted social assistance
 ircuib Converted UI benefit
 iredlev Educational level
 irefpub SCF EF publication flag
 irefrh Relation to economic family head
 irefseq Economic family sub-sequence number
 irestat Educational status
 irhhrh Relation to household head
 irieflag Institutionalized elderly flag
 irimmi Years since immigrant arrival
 irind Industry
 irinseq Individual sub-sequence number
 irlfst Labour force status
 irlyfp Full or part-time last year
 irlystr Stretches of unemployment last year

| | |
|------------|-------------------------------------|
| irlyun | Weeks unemployed last year |
| irlyww | Weeks worked last year |
| irmarst | Marital status |
| irnonlf | Main activity for non-lf persons |
| irocc | Occupation |
| irrklyun | Raking foundation: weeks worked |
| irrklyww | Raking foundation: weeks unemployed |
| irscfflg | SCF high-income preservation flag |
| irschtp | School type |
| irsex | Sex |
| irsynthi | Synthetic high income person |
| m0val | Money item value |
| m1val | Money item value |
| m2val | Money item value |
| m3val | Money item value |
| urbtyp | Claim type |
| urdivwk | New EI Variable |
| ureff | Base year effective weekly benefit |
| urern | Base year insurable weekly earnings |
| urexhas | Exhaustee flag |
| urgotpa | |
| urhrwk | New EI Variable |
| urmtyp | Claim type |
| urnere | New EI Variable |
| urothbr | New EI Variable |
| urothwk | New EI Variable |
| urrpeat | Repeat claim flag |
| urstart | Week claim established |
| urtpcng | Type change flag |
| urtrnbr | Training benefit weekly rate |
| urtrnwk | Weeks of training benefits |
| uruer | Local unemployment rate (x10) |
| urweeks | Claim weeks of benefits |
| urwork | Weeks of work prior to claim |
| ury1 | |
| ury2 | |
| ury3 | |
| ury4 | |
| ury5 | |
| wrwgt | Household weight (float) |
| CANCELFLAG | Cancellation request flag |
| DBVERSION | Version of the database (x100) |
| WGTTOT | Sum of weights on tax file |

OUTPUT VARIABLES:

| | |
|---------|---|
| fhash | Hashed code of header information |
| hdclohh | Number of SCF clones |
| hdevmv | Expenditure Vector Matching Variable |
| hdnpers | Number of persons in household |
| hdprov | Province |
| hdseqhh | Household sequence number |
| hdtenur | Tenure |
| hdurb | Size of urban area |
| hdwgthh | Household weight |
| hhnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idalexp | Other allowable employment expenses (229) |
| idcapgex | Capital gains exemptions (254) |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idccqp | Converted CPP/CQP benefit |
| idcfpub | SCF CF publication flag |
| idcfrh | Relationship to census family head |
| idcfseq | Census family sub-sequence number |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idcintim | Converted interest income (imputed) |
| idcloss | Allowable other years capital loss (253) |
| idcluflg | Common-Law union flag |
| idcsa | Converted social assistance |
| idcuib | Converted UI benefit |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idedlev | Educational level |
| ideducm | Eligible months of education allowance |
| idefpub | SCF EF publication flag |
| idefrh | Relationship to economic family head |
| idefseq | Economic family sub-sequence number |
| idemplo | Employee home relocation loan dedn (248) |
| idestat | Educational status |
| idexplor | Exploration and development expenses (224) |
| idext | Extra numbers [array] |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idgstreb | GST rebate (457) |
| idhhrh | Relationship to head of household |
| idhomstu | College res/resdnt homeowner assist (558) |
| idialimo | Alimony income received |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idimmi | Years since immigration |
| idind | Industry |
| idinogv | Other government income (non-taxable) |
| idinoth | Other money income (non-taxable) |
| idinseq | Individual sub-sequence number |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisa | Social assistance income |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| iditogv | Other government income (taxable) |

| | |
|-----------|--|
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idivetp | Veterans pensions and allowances |
| idiworkc | Workers compensation benefits |
| idlabtxg | Gross Labour funds bought (413) |
| idlfst | Labour force status |
| idlyfp | Last year full/Part time |
| idlystr | Last year stretches unemployed |
| idlyun | Weeks unemployed |
| idlyww | Weeks worked |
| idmarst | Marital status |
| idmedgro | Medical expenses, gross (330) |
| idmincar | Minimum tax carryover (504) |
| idmovexp | Imputed moving expenses (219) |
| idmschpd | Manitoba school taxes paid |
| idnage | Age |
| idnclos | Allowable other years non-capital loss (252) |
| idninco | No income flag (SPSD variables) |
| idnonlf | Major non-LF activity |
| idnorth | Northern deductions (255) |
| idocc | Occupation |
| idothded | Other deductions from total income (232) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idproptx | Net property taxes paid (556) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrentpd | Total rental payments (555) |
| idrkllyun | Raking foundation: weeks unemployed |
| idrkllyww | Raking foundation: weeks worked |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| idscfcqp | CPP/QPP income (SCF) |
| idscfctc | Child tax credit |
| idscfflg | SCF high-income preservation flag |
| idscfftc | Federal tax credit |
| idscfint | Interest income (SCF) |
| idscfoas | Old age security |
| idscfptc | Provincial tax credits as reported on SCF |
| idscfsa | Social assistance income (SCF) |
| idscfuib | Unemployment insurance benefits |
| idschtp | School type |
| idsex | Sex |
| idstkded | Stock option deduction (249) |
| idsynthi | Synthetic high income person |
| idtuitn | Tuition fees (320) |
| iduipred | Predicted amount of UI received |
| iduirank | Predicted ranked likelihood of getting UI |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucexhas | Exhaustee flag |
| ucgotpa | Received paternity benefits |

| | |
|---------|--|
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucuero | Local unemployment rate (x10)-original value |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucy1 | Weeks on UI in first year before claim |
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

gai Compute new refundable credits or guarantees

SUMMARY

This is a stub function for use by glass-box users who wish to incorporate a new program that does not affect current programs in the tax system (i.e. a new refundable tax credit). It is called by drv after all taxes have been calculated.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|------------------------|
| imiosa | Other SA or guarantees |
|--------|------------------------|

SUMMARY

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested. The SPSM gis function is based on the age of the individual and the years since immigration as well as family net income and family type. The function can calculate GIS, SPA, Extended SPA, and Widowed SPA benefits. The functions contain one sub-function, gissub, which calculates the income on which GIS/SPA benefits are tested.

The GIS/SPA benefits are zeroed out if the Seniors Benefit is turned on. When activated, the Seniors Benefit takes precedence over OAS/GIS. Persons age 60 or over in May 1996 may elect to receive OAS/GIS rather than the seniors benefits if their benefits are higher.

Program Description

The Guaranteed Income Supplement is a monthly, non-taxable, income tested benefit paid to residents of Canada who are in receipt of a basic Old Age Security pension. Recipients must re-apply annually. The Guaranteed Income Supplement is not payable outside of Canada for periods of longer than six months. Income testing is based on net income as defined for income tax purposes with the exception of Old Age Security benefits. In the case of a married couple, including common-law, the combined income of the pensioner and his or her spouse is taken into account. Where the individual or couple have an income above a specified amount, the Guaranteed Income Supplement is reduced at a rate of either \$1 for every \$2 of income, or \$1 for every \$4 of income, dependent upon the individuals' marital status and the benefit status of their spouses (if present).

The Guaranteed Income Supplement was established in 1966 to provide monthly benefits to OAS pensioners born on or before December 31, 1910, whose income is below a specified amount. For 1967, the monthly benefit was \$40 and set at 40 percent of the OAS pension thereafter. The Guaranteed Income Supplement has been changed on various occasions, the most important of which were as follows: 1970, which extended GIS to all OAS beneficiaries who met the income criterion; 1972, provided for annual indexation of GIS based on the CPI; 1973, changed indexation to quarterly from annual; 1977, provided the payment of GIS to partial OAS recipients; 1984, provided an increase in maximum GIS benefits to recipients of partial OAS pensions in the amount of the difference between full and partial OAS benefits.

The Spouse's Allowance is a monthly benefit designed to recognize the difficult circumstances faced by those couples living on the pension of only one spouse, and by many widowed persons. The Allowance is payable to the 60 to 64 year old spouse of an Old Age Security pensioner as well as to any low-income widow or widower age 60 to 64, providing the potential recipient has been a resident of Canada for at least 10 years after reaching age 18. This benefit is income-tested based upon the combined income of both the beneficiary

and his/her spouse and must be re-applied for annually. Benefits are not considered as income for income tax purposes and are not payable outside Canada for periods of more than six months.

The Spouse's Allowance came into effect October 1, 1975 and provided for the payment of benefits to persons aged 60 to 64 inclusive who are married to and living with an OAS pensioner. The amount was set at a sum equal to the monthly OAS pension plus the maximum monthly GIS at the married rate. Significant changes to the Spouse's Allowance were made in 1977 with the provision for partial Spouse's Allowance using the same criterion as for OAS; 1979, the extension of the Spouse's Allowance to include surviving spouses of deceased Old Age Security pensioners; 1985, with the provision for Spouse's Allowance to be paid to all widows/widowers age 60 to 64 regardless of deceased spouse's prior pension status.

The GIS, and SPA programs have been designed with the overall income of elderly Canadians in mind and ensure that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. Because the programs are interrelated, a better understanding is facilitated by discussing them together across the five different family types listed below and discussed in turn. These categories define the basic structure of the SPSM implementation of these programs. In these descriptions pensioner is understood to mean a recipient of either full or partial OAS benefits.

| GIS/SPA Type | Family Status |
|---|---|
| 1. Single Pensioner: | Unattached Individual, OAS Pensioner |
| 2. Widowed Pensioner: | Unattached Individual, Age 60-64, Widowed |
| 3. Married 2 Pensioner: | Married Couple, Both OAS pensioners |
| 4. Married pensioner with SPA spouse: | Married Couple, OAS Pensioner with SPA recipient |
| 5. Married pensioner with non-pensioner spouse: | Married couple, 1 OAS pensioner, spouse ineligible for OAS or SPA |

Single Pensioner

If an individual is receiving a full Old Age Security Pension he or she may be eligible for the federal Guaranteed Income Supplement (GIS). GIS is an income tested benefit payable to OAS beneficiaries with little or no income beyond to the basic OAS benefit. In the case where a beneficiary of a full OAS pension has no additional income or income of up to a maximum of \$24 per year, his/her GIS benefit will be the maximum. For every two dollars of income in excess of \$24 annually, the GIS benefit is reduced by one dollar until the benefit is reduced to zero.

In the case where the beneficiary is eligible for only partial OAS benefits, but has little or no other income (again, to a maximum of \$24 per year), supplementary GIS is available. Supplementary GIS makes up the difference between the partial OAS benefit that the beneficiary is receiving and full OAS benefits. Thus, a beneficiary with 20 years of residence in Canada would receive 30/40 of a full OAS pension and supplementary GIS benefits up to an amount equivalent to 10/40 of a full OAS pension. This ensures that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. In addition to the partial OAS pension and the supplementary GIS benefits, an individual may also receive the regular GIS benefit. Both the regular and the supplementary GIS benefits are income tested and reduced at a rate of one dollar for every two dollars of income in excess of \$24 per year.

Widowed pensioner

The Spouse's Allowance is an income-tested benefit payable to individuals who are between 60 and 65 years of age and are spouses of Old Age Security beneficiaries. In order to qualify for this benefit, the applicant must meet the same residence requirements set out for the basic Old Age Security Pension. The guarantee for the benefit is equivalent to the sum of the full basic Old Age Security Pension plus the Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of the beneficiary's monthly income or the couple's combined monthly income until the OAS-equivalent is reduced to zero. At that point the GIS portion reduces at the rate of \$1 for every \$4 of combined income until benefits are reduced to zero.

If an individual receiving Spouse's Allowance becomes a widow or widower, they are then eligible for an Extended Spouse's Allowance until they reach the age of 65 at which time they will become eligible for a basic Old Age Security Pension and the Guaranteed Income Supplement. The amount of the Extended Spouse's Allowance is somewhat higher than the regular Spouse's Allowance to account for the fact that the beneficiary is now in a single income family.

In addition to the regular and Extended Spouse's Allowances, benefits exist for widows and widowers between 60 and 65 years of age whose spouse died prior to becoming a pensioner. The Widowed Spouse's Allowance pays benefits at the same rate as the Extended Spouse's Allowance. Both the Extended and Widowed Spouse's Allowances are reduced by \$3 for every \$4 of monthly income until the OAS-equivalent portion is reduced to zero and then by \$1 for every additional \$2 of monthly income until the GIS-equivalent portion is reduced to

zero.

The Spouse's Allowance is not considered as income for income tax purposes but may, however, affect taxes indirectly via the spousal exemption amount.

Married Couple, Both Pensioners

GIS eligibility for couples is first based upon receipt of OAS. If the applicant is not eligible for OAS, then he or she is not eligible for GIS. Once eligibility for GIS has been established, then the rate of recovery or rate at which GIS is reduced because of additional income, must be established. For two pensioner couples, where both are OAS beneficiaries, GIS is reduced by one dollar for every four dollars of the couple's combined monthly income in excess of \$48 per year. In 1984, the maximum regular GIS payable to a married beneficiary was less than that payable to a single beneficiary. As in the case of a single beneficiary receiving only partial OAS benefits, a supplementary GIS benefit is available which makes up the difference between partial and full OAS benefits.

Married Pensioner with SPA Spouse

GIS is payable to the pensioner at the same rate as is paid to an individual in married couple where both spouses are pensioners. The amount of SPA benefit is equivalent to the combination of the full basic Old Age Security Pension and Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of combined monthly income (75%) until the OAS-equivalent is reduced to zero. At that point both the remaining portion of the Spouse's Allowance, and the pensioner's Guaranteed Income Supplement are each reduced by \$1 for every additional \$4 (50%) of the couple's combined monthly income.

The benefits payable to a pensioner with a given income could vary depending on whether the couple had applied for SPA; the benefit being higher for single pensioner couples. To ensure benefits are equal in these cases the SPA couple's benefits begin to be reduced at the effective rate of 25%, \$1 for each \$4 of family income after the crossover point. This is done by holding the pensioner's benefits fixed from the crossover point until the SPA benefits are reduced to zero; then the pensioners benefits continue to be reduced at the same married rate (see following figure).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

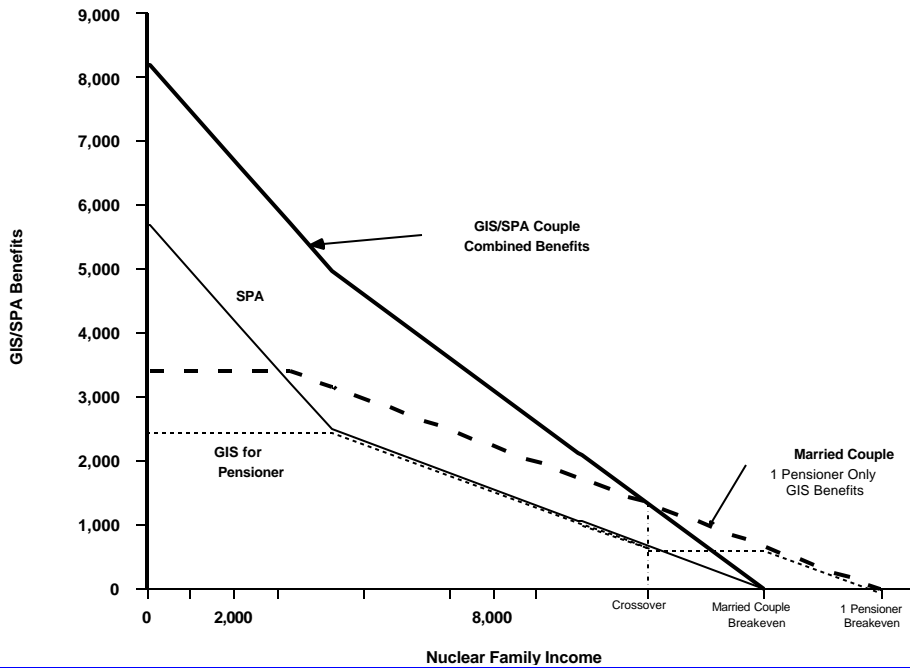


Figure 2 GIS/SPA Benefits for Married Pensioner with Non-Pensioner Spouse

Married Pensioner with Non-Pensioner Spouse

In the case of a pensioner whose spouse is under 60 years of age or is a recent immigrant, and therefore not eligible for OAS, GIS or SPA, the pensioner receives GIS at the higher single rate and benefits are reduced \$1 for every \$4 of the couple's combined monthly income with the first reduction being made only when their combined monthly income exceeds an amount equivalent to basic OAS plus \$4 per month. (see figure above)

SPSM Implementation

The gis function determines benefits based on the age of the individual, the years since immigration as reported at the time of the SCF survey in April 1985, combined family income, and family type. The function makes use of the imoasres, imoaspar variables created in the oas function to determine residential eligibility.

The function initially performs some screenings and pointer assignments for efficiency, and then makes a call to the gissub function to determine the previous years income, which will be used when calculating GIS/SPA benefits. This sub-function adds together all the components of total income listed below and multiplies them by a deflator PYINC to estimate the value of the previous year's income.

| | |
|----------------------|--|
| Net Income = PYINC * | Deflator To Simulate Previous Years Income |
| imicapgt | Taxable Capital Gains |
| + imidivt | Dividends Received |
| + idiint | Investment Income |

| | |
|-----------|--------------------------------------|
| + idiemp | Employment Income |
| + idisenf | Non-Farm Self Employment Income |
| + idisefm | Farm Self Employment Income |
| + idioinv | Other Investment Income |
| + iditoh | Other Income |
| + idicqp | CPP/QPP Benefits |
| + idipens | Private Pension Income |
| + iditogv | Other Taxable Government Transfers |
| + imiuib | Unemployment Insurance Benefits |
| - imalexp | Other allowable Employment Expenses |
| - imcqpc | CPP/QPP Contributions |
| - imuic | Unemployment Insurance Contributions |

Benefits are then calculated in each of the five groups discussed above. Every individual is assigned a value for the variables imoldtyp and ingistyp which define the type of pensioner couple and are used in the gist function.

The GIS supplement for the OAS shortfall for immigrants is calculated conditional on the setting of GISOASFLAG in all cases except the SPA recipient in a married couple. This should be set to one in years 1984 and later. No adjustment is made to account for the first quarter in 1984 for which no shortfall adjustment was made.

Take-up rates for GIS and SPA benefits are optionally applied depending on the value of the GISTURFLAG parameter. The rates are applied to individuals and to one spouse of a married couple. The algorithm assumes that the take-up rate look-up table margins are all dollar denominated GIS or SPA benefit levels.

Relation to Other SPSM Routines

GIS and SPA depends on the input parameters for basic GIS/SPA benefits and various variables calculated in the oas function. The function also makes use of parameters derived in the mpc function. The mpc function also ensures that GIS is not calculated without OAS being calculated first. The calculation of OAS and other modeled variables occurs prior to and effects the calculation of GIS and related GIS 'top-up' programs in the gist function. The gist function is called after txprov (calculation of provincial income taxes) by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-------|-----------------------------------|
| BESPA | Basic GIS portion of extended SPA |
| BGISM | Basic GIS - married |

| | |
|----------------|---|
| BGISS | Basic GIS - single |
| BOAS | Basic OAS |
| ESPAT | Extended SPA take-up rate by benefit level [benefit,rate] |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISCT | GIS take-up rate: pensioner couple by benefit level |
| [benefit,rate] | |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISOASFLAG | 1984 GIS top-up to OAS residence shortfall flag |
| GISOT | GIS take-up rate: one pensioner couple by benefit level |
| [benefit,rate] | |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| GISRRS | Basic GIS reduction rate: single pensioners |
| GISST | GIS take-up rate: single pensioner by benefit level |
| [benefit,rate] | |
| GISTURFLAG | GIS take-up flag: apply 5 take-up tables |
| PYINC | Deflator to calculate previous year income |
| SPAOSRR | OAS portion of SPA taxback rate |
| SPARL | SPA reduction point: one married/ widowed |
| SPAT | SPA take-up rate by benefit level [benefit,rate] |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |

INPUT VARIABLES:

| | |
|----------|--|
| hhnfnf | Number of nuclear families in household |
| idage | Age |
| idicqp | CPP/QPP income (114) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmarst | Marital status |
| idrand | Random numbers [array] |
| imalexp | Allowable employment expenses |
| imcqpcc | CPP/QPP contributions |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imioas | OAS benefits |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |
| imuic | UIC contributions |
| nfageeld | Age of eldest in nuclear family |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imigis | GIS benefits |

| | |
|----------|--------------------------------|
| imispa | Spouse's allowance |
| imninc | No income flag |
| imoldtyp | Type of GIS/SPA nuclear family |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |

gist Compute Provincial GIS top-ups for elderly

SUMMARY

The gist function calculates benefits for eight provincial GIS supplementation programs in eight provinces; Newfoundland, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. The function requires that both OAS and GIS be calculated first. All provincial senior's programs within SPSM are in this function. Please note that the provincial programs here are not exhaustive, but all major benefits are covered.

Program Description

Eight provinces provide cash benefits to pensioners in receipt of federal OAS, GIS, and in some cases, SPA benefits. The eight programs differ in terms of the level of benefits payable, eligibility requirements, etc. Each program listed below is modeled and documented independently.

| | |
|------------------|--|
| Newfoundland | Low-income Seniors Benefit |
| Nova Scotia | Special Social Assistance |
| New Brunswick | Low-income Seniors Benefit |
| Ontario | Guaranteed Annual Income System (GAINS-A) |
| Ontario | Sales Tax Grant Program |
| Ontario | Property Tax Grant Program |
| Manitoba | Supplement for Pensioners (55+) |
| Saskatchewan | Income Plan (SIP) |
| Alberta | Assured Income Plan AAIP |
| Alberta | Alberta Seniors Benefit |
| Alberta | Widow's Pension |
| British Columbia | GAIN for Seniors Supplement (Guaranteed Available Income for Need) |

Newfoundland Low-Income Seniors Benefit

A benefit is given to seniors (aged 65 and over) with annual family income less than NFSBTD. The maximum benefit NFSBBAS is reduced by NFSBRR for each dollar of family income over NFSBTD.

Nova Scotia Special Social Assistance

Up to 1991, all residents of the province of Nova Scotia who are in receipt of GIS in March

of a given year were eligible for Special Social Assistance. Application for benefits had to be made each year. SPA recipients were not eligible. One lump-sum payment was made yearly in one of four amounts scaled to the proportional GIS of the recipient as follows:

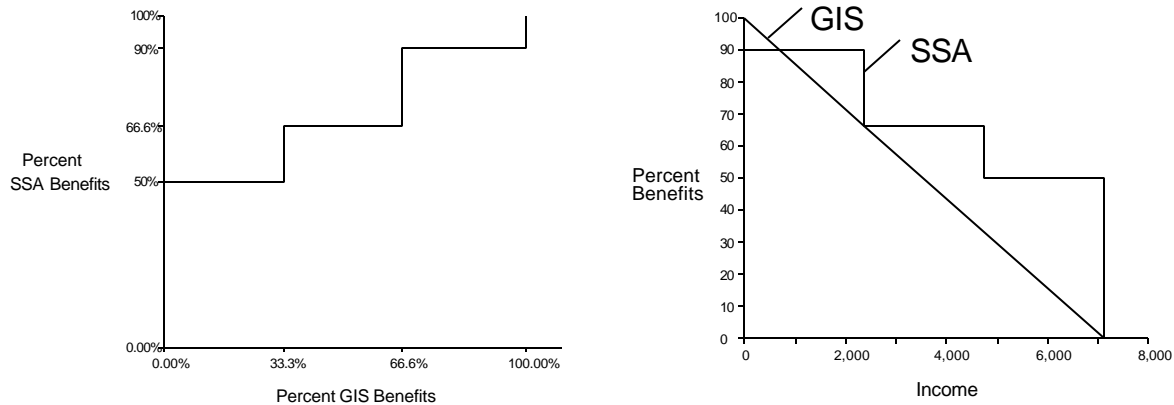


Figure 3. Nova Scotia Special Social Assistance

So, for example, a pensioner receiving maximum GIS benefits would have received maximum SSA benefits and a pensioner receiving 80% of maximum GIS benefits would have received 90% of maximum SSA benefits.

New Brunswick Low-Income Seniors Benefit

A benefit is given to seniors who receive GIS. If both spouses received GIS, the benefit is given to the spouse with the lower net income.

Ontario Guaranteed Annual Income System (GAINS-A)

GAINS-A provides a monthly benefit to Ontario residents in receipt of GIS who meet certain income and residence requirements. A person must have lived in Ontario for the year prior to applying for GAINS-A or for at least 20 years after turning 18 years of age. GIS recipients need not apply since their eligibility is reviewed automatically. SPA recipients are not eligible. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

Ontario Sales Tax Grant Program

The sales tax grant has been a flat \$50 per person over age 65 from 1984 to 1989. The maximum value of the sales tax grant is stored in the ONTSTG parameter. The variable impstg is used to store individual sales tax grants calculated by the model.

Ontario Property Tax Grant Program

The property tax grant is payable to seniors who are head of their household. The amount of the grant varies by tenure and actual costs. For years 1984 to 1989 renters receive 20% of their rental costs up to a maximum of \$500. Homeowners receive the maximum benefit. The fraction of rental costs allowed is contained in the ONTFPTG parameter while the

maximum benefit is stored in the parameter ONTPPTG. Calculated benefits are stored in the variable impptg.

Calculated benefits for both the sales tax grants and the property tax grants are also added to the variable imigist.

Manitoba Supplement for Pensioners (MSP, 55+)

The MSP provides quarterly benefits to Manitoba residents who are in receipt of certain levels of GIS and SPA benefits, including extended and widowed SPA recipients. MSP also provides benefits to persons aged 55 and over who are not in receipt of OAS benefits but whose income falls in a specified range and is derived at least 50% from pension sources. Eligibility is renewed automatically for GIS and SPA recipients, but non-GIS/SPA pensioners 55 years of age and over must apply.

In the case of GIS/SPA recipients there are two levels of benefits, single and married. An SPA recipient is treated as a single pensioner. Benefits are reduced at the same rate as GIS based on family income. Non GIS/SPA pensioners are treated in exactly the same manner except for couples benefits are reduced based on individual annual income.

Saskatchewan Income Plan

SIP provides monthly benefits to Saskatchewan residents in receipt of GIS and whose incomes don't exceed specified levels. SPA recipients are not eligible for SIP benefits. There are two levels of benefits, single and married. There are three different reduction rates. Unattached Individuals and Married Couples where both are GIS pensioners SIP benefits are reduced by \$1 for each \$1 reduction in GIS. For a pensioner whose spouse is not eligible for OAS/GIS/SPA the benefit is reduced by \$3 for each \$1 reduction in GIS benefits. The pensioner spouse of an SPA recipient has their benefit reduced by \$1 for each \$3 reduction in their spouse's SPA. There are monthly minimum benefits at both single and married levels.

Alberta Assured Income Plan

AAIP benefits are payable monthly to all Alberta residents who are in receipt of GIS benefits or who became eligible for the extended SPA prior to May 1983. Regular SPA recipients are ineligible. Since May 1983 all extended SPA recipients are referred to the Alberta Widow's pension. Application is not required. There is one individual benefit which is reduced by 50¢ for each \$1 reduction in GIS benefits to a minimum of \$10 monthly.

Alberta Seniors Benefit

Starting in 1994, the AAIP was replaced by the Alberta Seniors Benefit. When ALTASOPT is set to 2, the Alberta Seniors Benefit is calculated. Seniors are split into six categories:

- single seniors who rent their home,
- single seniors who own their home,
- seniors married to non-seniors who rent their home,
- seniors married to non-seniors who own their home,
- two senior couples who rent their home,

and two senior couples who own their home

When ASBSSOPT is set to 2, seniors married to non-seniors are treated in the same manner as two senior couples. Benefits and reduction rates vary by these categories (ASBBASIC, ASBRENT, ASBSS, ASBNSS, ASBRR). Maximum benefits are phased out using non-deductible income which is defined as last year's total income (imitot) minus OAS benefits (imioas), registered pension plan contributions (idrpp), RRSP contributions (idrrsp), and ASBEMP times idiemp.

For persons who do not qualify for OAS because of residency requirements, a proportion of the total benefit is assigned depending on marital status and household tenure (ASBNOAS). For these persons, BOAS is deducted from their non-deductible income. When ASBSSOPT is set to 1, a two senior couple in which one of the seniors does not meet the OAS eligibility requirement is treated as 1 senior couple.

Alberta Widowed Pension

The Alberta Widow's pension provides monthly benefits to widows and widowers aged 55 to 64 years who reside in Alberta. Yearly Application must be made. Maximum benefits are reduced by \$1 for each \$1 of previous year's non-exempt annual income. Extended SPA recipients may apply however their SPA benefits are included in their income when calculating entitlement.

British Columbia GAIN for Seniors Supplement

GAIN provides a monthly benefit to British Columbia residents in receipt of GIS or SPA who meet certain income and residence requirements. GIS/SPA recipients need not apply since their eligibility is reviewed automatically. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

SPSM Implementation

The user is invited to read the source code in order to examine the implementation of these programs. A subsequent update will include a written description of the implementation of these programs.

Interpretation

In general the problems of coverage, including take-up, discussed in the interpretation of OAS and GIS are also present here. Specifically there are no tests made for residential eligibility applied on Ontario GAINS-A. Currently double counting occurs for the benefits for Manitoba residents under the age of 65. This is because the calculated income is reported in one variable (imigist) and reported income from the survey is reported in another (imisa). There are plans to fix the problem; however, the dollar amounts are small in any case.

Relation to Other SPSM Routines

Provincial GIS supplement programs depend on various program specific input parameters as

well as variables calculated in the oas and gis functions. The mpc function ensures that provincial GIS supplements are not calculated without GIS being calculated first. The calculation of OAS and GIS occurs prior to and effects the calculation GIS 'top-up' programs in the gist function. The gist function is called after gis by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALTAMIN | Alberta GIS supplement minimum annual benefit |
| ALTASC | Alberta GIS supplement maximum annual benefit |
| ALTASOPT | Alberta seniors option [1=GIST,2=new seniors benefit 1994] |
| ALTAWP | Alberta widow's pension maximum annual benefit |
| ASBBASIC | Alberta seniors benefit annual basic benefit |
| ASBEMP | Alberta seniors benefit employment inclusion rate |
| ASBNOAS | Alberta seniors benefit reduction if no OAS [senior type] |
| ASBNSS | Alberta seniors benefit non-senior spouse supplement |
| ASBRENT | Alberta seniors benefit renter supplement |
| ASBRR | Alberta seniors benefit reduction rate [senior type] |
| ASBSS | Alberta seniors benefit senior spouse supplement |
| ASBSSOPT | Alberta seniors benefit 1 senior couple option [1=model separately,2=model as senior couples] |
| BCC | British Columbia GIS supplement: married pensioners |
| BCS | British Columbia GIS supplement: single pensioners |
| BOAS | Basic OAS |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISTFLAG | Provincial GIS top-up flag |
| MANC | Manitoba GIS supplement: married pensioners |
| MANCNPF | Manitoba GIS supplement reduction point: married |
| MANS | Manitoba GIS supplement: single pensioners |
| MANSNPF | Manitoba GIS supplement reduction point: single |
| NBSB | New Brunswick Low-Income Seniors' Benefit |
| NBSBSPA | N.B. Low-Income Seniors' Benefit - SPA eligibility |
| NFSBBAS | NFLD Low-Income Seniors' Benefit base amount |
| NFSBRR | NFLD Low-Income Seniors' Benefit reduction rate |
| NFSBTD | NFLD Low-Income Seniors' Benefit turndown |
| NS13 | Nova Scotia GIS supplement for 1/3 GIS |
| NS23 | Nova Scotia GIS supplement for 2/3 GIS |
| NSLT13 | Nova Scotia GIS supplement for less than 1/3 GIS |
| NSMAX | Nova Scotia maximum GIS supplement level |
| ONTC | Ontario GIS supplement: married pensioners |
| ONTFPTG | Ontario property tax grant (fraction of rent) |
| ONTPTG | Ontario property tax grant for seniors |
| ONTS | Ontario GIS supplement: single pensioners |
| ONTSTG | Ontario sales tax grant for seniors |
| PYINC | Deflator to calculate previous year income |
| SASKC | Saskatchewan GIS supplement: married pensioners |
| SASKMINC | Saskatchewan GIS supplement minimum benefits: married |

| | |
|------------|--|
| SASKMINS | Saskatchewan GIS supplement minimum benefits: single |
| SASKRR1 | Saskatchewan GIS supplement reduction rate: regular |
| SASKRR2 | Saskatchewan GIS supplement reduction rate: 1 GIS |
| SASKRR3 | Saskatchewan GIS supplement reduction rate: SPA |
| SASKS | Saskatchewan GIS supplement: single pensioners |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|--|
| hdageeld | Age of eldest in household |
| hdprov | Province |
| hdtenur | Tenure |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawls |
| idmarst | Marital status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imalexp | Allowable employment expenses |
| imcqpcc | CPP/QPP contributions |
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imicapgt | Capital gains (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoasres | Partial OAS fraction |
| imrentpd | Imputed rent paid |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|---------|---|
| imiasb | Alberta seniors benefit |
| imigist | GIS provincial top-up |
| imninc | No income flag |
| impptg | Provincial property tax grant for seniors |
| impstg | Provincial sales tax grant for seniors |

isneg Is argument negative ?

SUMMARY

```
int isneg(var);
```

```
NUMBER var
```

The `isneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a negative value. If the argument is zero or positive, a value of zero is returned. Note that, unlike a function, the `isneg` macro cannot take an expression as an argument. The expression `isneg(var)` is functionally equivalent to an expression of the form `(var < 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnneg Is argument non-negative?

SUMMARY

```
int isnneg(var);
```

```
NUMBER var;
```

The `isnneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-negative value. If the argument is negative, a value of zero is returned. Note that, unlike a function, the `isnneg` macro cannot take an expression as an argument. The expression `isnneg(var)` is functionally equivalent to an expression of the form `(var > 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnzero Is argument non-zero?

SUMMARY

```
int isnzero(var);
```

```
NUMBER var;
```

The `isnzero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-zero value. If the argument is zero, a value of zero is returned. Note that, unlike a function, the `isnzero` macro cannot take an expression as an argument.

The expression `iszero(var)` is functionally equivalent to an expression of the form `(var != 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

iszero Is argument zero?

SUMMARY

```
int iszero(var);
```

```
NUMBER var;
```

The `iszero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains the value zero. If the argument is non-zero, a value of zero is returned. Note that, unlike a function, the `iszero` macro cannot take an expression as an argument. The expression `iszero(var)` is functionally equivalent to an expression of the form `(var == 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

lkup1 Table look-up with interpolation/extrapolation

SUMMARY

```
NUMBER lkup1(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The `lkup1` function is used to perform table look-ups with interpolation. Expressed another way, `lkup1` evaluates continuous piecewise linear functions.

The first argument (`tbl`) is the address of an SPSM look-up table, which is an $n \times 3$ array of floating point numbers. The first two columns of `tbl` contain the (X,Y) pairs that define the piece-wise linear function. The third column of `tbl` contains the slope of the segment that starts at the (X,Y) pair. SPSM look-up tables are defined in parameter input files, and come in two varieties, as perceived by the user. One variety allows the user to specify the (X,Y) pairs, and computes the slopes automatically. The other variety allows the user to specify all the X values, the first Y value, and the slopes, and computes the remaining Y values automatically. In both cases the internal representation of the lookup table is identical and is the same as that expected by the `lkup1` function.

The second argument of `lkup1` is an integer giving the number of rows in `tbl`. Generally this value is another member of the same parameter structure in which the `tbl` is defined.

The third argument of lkup1 is the X value whose corresponding Y value is to be determined. lkup1 returns the corresponding Y value.

lkup2 Table look-up without interpolation

SUMMARY

```
NUMBER lkup2(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The lkup2 function is used to perform table look-ups without interpolation. Expressed another way, lkup2 evaluates step functions.

The first argument (tbl) is the address of an SPSM look-up table, which is an n x 3 array of floating point numbers. The first two columns of tbl contain the (X,Y) pairs that define the left-most point of each step in the step function. The third column of tbl contains the slope of the segment that starts at the (X,Y) pair, but the lkup2 function only makes use of the (X,Y) pairs in the look-up table. The slopes, though always present in look-up tables, are not used.

The second argument of lkup2 is an integer giving the number of rows in tbl. Generally this value is another member of the same parameter structure in which the tbl is defined.

The third argument of lkup2 is the X value whose corresponding Y value is to be determined. lkup2 returns the corresponding Y value.

maxn Find the maximum of two numbers

SUMMARY

```
NUMBER maxn(x, y);
```

```
NUMBER x;  
NUMBER y;
```

The maxn function returns the value of the larger of its two input arguments.

memo1 Compute memo items for reporting

SUMMARY

The memo1 function is used to calculate several reporting variables as aggregates of other

modeled variables. The function calculates all dollar denominated reporting variables up to the level of disposable income. In addition taxable filer status is determined.

SPSM Implementation

The `memo1` function operates at the individual level of analysis and skips individuals with no income. The algorithm first assigns filer status as relevant/non-relevant and taxable/non-taxable based on taxes paid and credits received. The function then calculates several reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|---|
| <code>imiemp =</code> | <code>idiemp;</code> |
| <code>imiself =</code> | <code>idisenf + idisefm;</code> |
| <code>imfoth =</code> | <code>iditogv + idinogv;</code> |
| <code>impoth =</code> | <code>ZERO;</code> |
| <code>imicqp =</code> | <code>idicqp;</code> |
| <code>immemp =</code> | <code>idiemp + idisenf + idisefm;</code> |
| <code>imminv =</code> | <code>idiint + ididiv + idicapg + idioinv;</code> |
| <code>immoth =</code> | <code>idipens + iditoth + idinoth;</code> |
| <code>immmkt =</code> | <code>immemp + imminv + immoth;</code> |
| <code>imftran =</code> | <code>imffa + imioas + imiotg + imigis + imispa + imctc + imfcben + imicqp + imfoth + imiuib + imfstc + imqtar + imfsa + imiosa + imfortc;</code> |
| <code>imctcben =</code> | <code>imctc + imfcben;</code> |
| <code>imfothtr =</code> | <code>imfoth + imfortc;</code> |
| <code>imfnewpg =</code> | <code>imiotg + imiosa;</code> |
| <code>imigispa =</code> | <code>imigis + imispa;</code> |
| <code>impfp =</code> | <code>impfa + imqaafa + imqnbfa + imiafetc + imnbcben + imibcfb + imoccea + imqfatc + imscb + imses + imnscb + imibceib;</code> |
| <code>imptran =</code> | <code>impfp + imigist + imptc + impfa + importc + iminsda;</code> |
| <code>immtran =</code> | <code>imptran + imftran;</code> |
| <code>immtot =</code> | <code>immmkt + immtran;</code> |
| <code>imftax =</code> | <code>imuic + imcqppc + imrepay + imtxf;</code> |
| <code>imptax =</code> | <code>imtxp;</code> |
| <code>immtax =</code> | <code>imftax + imptax;</code> |
| <code>immdisp =</code> | <code>immtot - immtax;</code> |
| <code>immicons =</code> | <code>immdisp; (initial assignment, may be re-assigned in memo2)</code> |

Relation to Other SPSM Routines

The `memo1` function is called by `drv` immediately after the income tax and cash transfer algorithms have executed. It is called just before the execution of the commodity tax model (`ctmod`) which makes use of some of the aggregated output variables. The `memo2` function follows `ctmod` to add information to the reporting variables calculated in the `memo1` function.

CROSS REFERENCE

| Function | Description |
|-----------------------|---|
| INPUT VARIABLES: | |
| <code>hhnin</code> | Number of individuals in household |
| <code>idialimo</code> | Alimony income received |
| <code>idicapg</code> | Capital gains (actual) |
| <code>idicqp</code> | CPP/QPP income (114) |
| <code>ididiv</code> | Dividend income (actual) |
| <code>idiemp</code> | Wages & salaries |
| <code>idiint</code> | Interest income (121) |
| <code>idinogv</code> | Other government income (non-taxable) |
| <code>idinoth</code> | Other money income (non-taxable) |
| <code>idioinv</code> | Other investment income with net rental |
| <code>idipens</code> | Pension income (115) |
| <code>idisefm</code> | Self-employed income - farming |
| <code>idisenf</code> | Self-employed income - non-farming |
| <code>iditogv</code> | Other government income (taxable) |
| <code>iditoth</code> | Other non-government income (taxable) |
| <code>idivetp</code> | Veterans pensions and allowances |
| <code>idiworkc</code> | Workers compensation benefits |
| <code>imbft</code> | Basic federal tax |
| <code>imcqqpc</code> | CPP/QPP contributions |
| <code>imctc</code> | Child tax credit |
| <code>imfcben</code> | Total Federal Child Benefits |
| <code>imffa</code> | Federal portion of family allowances |
| <code>imfortc</code> | Federal other refundable tax credits |
| <code>imfsa</code> | Federal social assistance |
| <code>imfstc</code> | Federal sales tax credit |
| <code>imheatrl</code> | Federal relief for heating expenses |
| <code>imiafetc</code> | Alberta Family Employment Tax Credit Benefits |
| <code>imibceib</code> | B.C. Earned Income Benefit |
| <code>imibcfb</code> | B.C. Family Bonus |
| <code>imigis</code> | GIS benefits |
| <code>imigist</code> | GIS provincial top-up |
| <code>iminet</code> | Net income |
| <code>iminsda</code> | NS Direct Assistance Program |
| <code>imioas</code> | OAS benefits |
| <code>imiosa</code> | Other SA or guarantees |
| <code>imiotg</code> | Other taxable demogrants |
| <code>imispa</code> | Spouse's allowance |

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imnbcben | Total NB child tax Benefits |
| imnccb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnscb | Nova Scotia Child Benefit |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| impfa | Provincial family allowance |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| importc | Other refundable provincial tax credits |
| impsa | Provincial social assistance |
| imptc | Refundable provincial tax credits |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqnbfa | Quebec newborn Allowance |
| imqtar | Quebec tax abatement (refundable) |
| imrepay | Social Benefits Repayments |
| imscb | Saskatchewan Child Benefit |
| imses | Saskatchewan Employment Supplement |
| imtxf | Federal income tax payable |
| imtxp | Provincial income tax payable |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|---|
| imctcben | Federal child tax credit and child benefits |
| imfiler | Taxable filer status |
| imfnewpg | Federal new programs |
| imfoth | Federal other government income |
| imfothtr | Federal other trans income and ref. credits |
| imftax | Federal taxes |
| imftran | Federal transfer income |
| imicqp | CPP/QPP payable |
| imiemp | Wages and salaries |
| imigispa | GIS and spouse's allowance |
| imiself | Total self-employment income |
| immdisp | Disposable income |
| immemp | All employment income |
| immicons | Consumable income |
| imminv | Investment income |
| immmkt | Market income |
| immoth | Other income |
| immtax | All taxes |
| immtot | Total income |
| immtran | All transfer income |
| impalltc | All refundable provincial tax credits |
| impfp | Provincial family programs |
| impoth | Provincial other government income |
| imptax | Provincial taxes |
| imptran | Provincial transfer income |

SUMMARY

The `memo2` function is used to calculate several reporting variables as aggregates of other modeled variables. The function calculates all dollar denominated reporting variables up to the level of consumable income.

SPSM Implementation

The `memo2` function operates at the individual level of analysis and skips individuals with no income. Aspects of the function are not executed if the commodity tax model has not been run (`CTMOD=0`). The function first adjusts several reporting variables calculated in `memo1` as follows.

| Reporting Variable | Formula |
|-------------------------|--|
| <code>imftax =</code> | <code>imftax + imtxfc</code> |
| <code>imptax =</code> | <code>imptax + imtxpc</code> |
| <code>immtax =</code> | <code>immtax + imtxfc + imtxpc</code> |
| <code>immicons =</code> | <code>immdisp - imtxfc - imtxpc</code> |

The function next calculates additional reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|--------------------------------------|
| <code>imnettr =</code> | <code>immtran - immtax</code> |
| <code>imothrep =</code> | <code>imrepay - imuibr</code> |
| <code>imqta =</code> | <code>imqtaa + imqtar</code> |
| <code>imfedbal =</code> | <code>imftax - imftran</code> |
| <code>imprvbal =</code> | <code>imptax - imptran</code> |
| <code>impovinc =</code> | <code>immtot - imctc - imfstc</code> |

Relation to Other SPSM Routines

The `memo2` function is called by `drv` immediately after the commodity tax algorithms (`ctmod`) have executed. The function adds information to the reporting variables calculated in the `memo1` function.

Please refer to the [Variable Guide](#) for detailed descriptions of the variables listed above.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

CTFLAG Commodity tax activation flag

INPUT VARIABLES:

hhnin Number of individuals in household
imftran Federal transfer income
immdisp Disposable income
immtot Total income
immtran All transfer income
imninc No income flag
imptran Provincial transfer income
imqtaa Quebec tax abatement (applied)
imqtar Quebec tax abatement (refundable)
imrepay Social Benefits Repayments
imtxfc Federal commodity taxes
imtxpc Provincial commodity taxes
imuibr UI benefit recovery

OUTPUT VARIABLES:

efin First person in economic family [pointer]
idef Person's economic family [pointer]
imfedbal Federal taxes less transfers
imftax Federal taxes
immicons Consumable income
immtax All taxes
imnettr Net transfers to person
imothrep Other federal repayments
impovinc Income for low income measurement
imprvbal Provincial taxes less transfers
imptax Provincial taxes
imqta Quebec tax abatement (total)

minn Find the minimum of two numbers

SUMMARY

NUMBER minn(x,y);

NUMBER x;

NUMBER y;

The minn function returns the value of the smaller of its two input arguments.

mpc Calculate derived model parameters and do edits

SUMMARY

The mpc function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters. The function currently calculates derived parameters for

use in the commodity tax (`ctmod`) function, the Guaranteed Income Supplement (`gis`) function, and the head/spouse transfer (`txhstr`) function. Performing the calculations in `mpc` increases the efficiency of the program by avoiding multiple calculations for every household. Edit checks are performed for aspects of the commodity tax model and the old age income system. Please refer to the appropriate section in the [Algorithm Guide](#) for details of the specific social and tax programs.

SPSM Implementation

Calculation of Derived Parameters

Two derived parameters for use in the `ctmod` are calculated: a total federal government effective commodity tax rate (CTFTOT) and a total provincial government effective rate (CTPTOT). The federal rate is calculated by adding together the six detailed federal rates produced by the Input/Output model: CTFCID, CTFEXT, CTFMFG, CTFEXT, CTFOEN, and CTFGST. The aggregate provincial rate is calculated in the identical fashion, summing up the 6 provincial rates: CTPRST, CTPLGL, CTPPLQ, CTPTOB, CTPGAS, and CTPAMU.

These parameters are used to ensure equivalent results between the detailed and non-detailed commodity tax model options. When the detailed option is turned off (i.e. the CTDFLAG parameter is set to zero), commodity tax revenues are produced by multiplying the two aggregate rates by the total expenditure of each household. This requires a fraction of the operations for each household when compared to the detailed method.

A single derived parameter, UIBRA, is calculated for use in the `txitax` function. This parameter contains the individual's UIC repayment base amount and is derived from two further parameters: UIBAF, the UI benefit recovery base amount factor, and UIERNMAX, the dollar value of maximum insurable earnings. Please refer to section in this manual for further information on the `txitax` function.

Three derived parameters are calculated for use in the `gis` function. The income breakeven points for GIS/SPA couples and married 1 pensioner couples are calculated here as GISBE1 and GISBE2 respectively. The breakeven points represent the level of family income at which combined GIS/SPA benefits are reduced to zero based on combined family income. They in turn are used to calculate an income crossover point (SPAXO) for the two types of pensioner couples (see following Chart).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

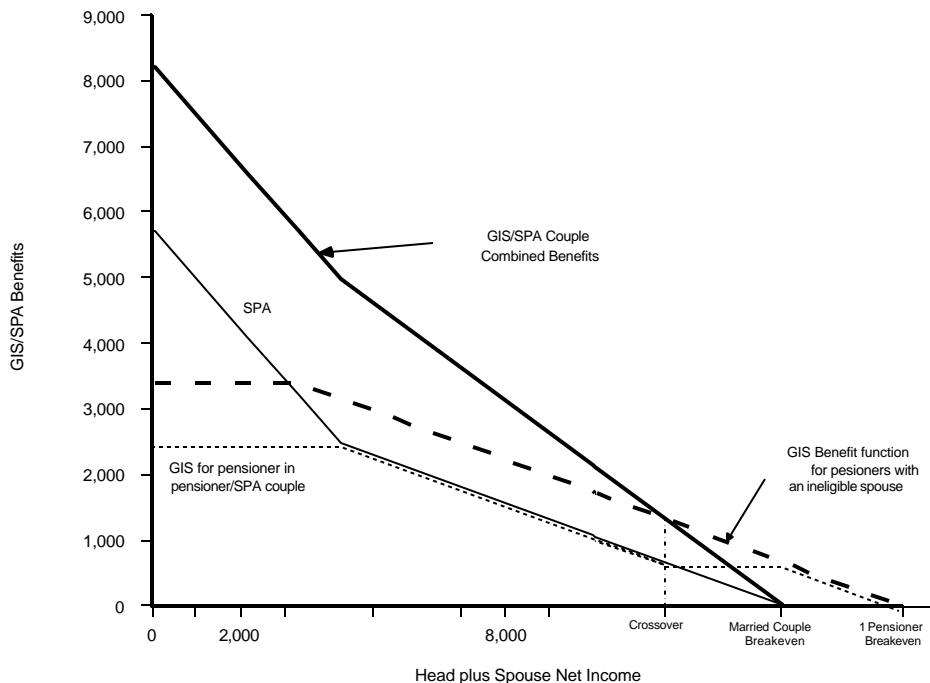


Figure 1 GIS/SPA Benefits for One OAS Pensioner Couples

GISBE1 represents the level of family income at which the GIS benefits of a pensioner married to a non pensioner have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "1 Pensioner Breakeven". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{GISBE1} = \text{BGISS}/\text{GISRRM} + \text{BOAS} + \text{GISRLS}$$

GISBE2 represents the level of family income at which the combined GIS and SPA benefits of a pensioner married to a SPA recipient have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "Married Couple Breakeven".

$$\text{GISBE2} = (\text{BGISM} * 2) / (\text{GISRRM} * 2) + \text{BOAS} / \text{SPA} + \text{OASRR} + \text{GISRLM}$$

SPAXO represents the level of family income at which the dollar benefits for GIS to a single pensioner married to a non-pensioner spouse exactly equal the combined GIS/SPA dollar benefits payable to a GIS/SPA married couple. On the figure above this is the point on the X axis labelled "Crossover". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{SPAXO} = 2 * \text{GISBE2} - \text{GISBE1}$$

Please refer to the Guaranteed Income Supplement Section of this guide for further details on the use of these derived parameters.

For all of the parameters described above users may refer to the [Parameter Guide](#) for further information.

Edit Checks

Three parameter edit checks are currently implemented in the `mpc` function.

- A check is made to ensure that the tax credit rate parameter `FNTCR` is non-zero. If zero, an error message is issued but processing continues.
- A similar check is made to ensure that the tax credit rate is non-zero. Error handling is also the same as above.
- If the `CTFLAG` parameter is set to 1 (thereby specifying that commodity taxes will be calculated) and the `FXVFLAG` parameter is set to 0 (indicating no FAMEX expenditure data is to be read) then an error message will result and `CTFLAG` will be reset to 0 and no commodity taxes will be calculated.
- If the OAS algorithm is switched off (`OASFLAG=0`) and the GIS algorithm is switched on (`GISFLAG=1`) GIS benefits will be incorrectly calculated as they depend on variables calculated in the `oas` function. If this condition is met an error message will result and `GISFLAG` will be set to 0 and consequently no GIS benefits will be calculated.
- If the GIS algorithm is switched off (`GISFLAG=0`) and the provincial GIS supplement algorithm is switched on (`GISTFLAG=1`) provincial GIS supplement benefits will be incorrectly calculated as they depend on variables calculated in the `gis` function. If this condition is met an error message will result and `GISTFLAG` will be set to 0 and consequently no provincial GIS supplement benefits will be calculated.

Relation to Other SPSM Routines

The `mpc` function is called before `drv` and as such is only executed once for every program run. The function currently calculates parameters and performs edits which can effect a number of functions directly; the `ctmod` function, the `gis` function, the `gist` function, the `txitax` function, and the head/spouse transfer `txhstr` function.

CROSS REFERENCE

| Function | Description |
|----------------------|------------------------------------|
| INPUT PARAMETERS: | |
| <code>FXVFLAG</code> | Read FAMEX expenditure vector file |
| <code>BGISM</code> | Basic GIS - married |
| <code>BGISS</code> | Basic GIS - single |
| <code>BOAS</code> | Basic OAS |
| <code>CTFCID</code> | Federal custom import duties [com] |
| <code>CTFEXD</code> | Federal excise duties [com] |
| <code>CTFEXT</code> | Federal excise taxes [com] |
| <code>CTFGST</code> | Federal GST [com] |
| <code>CTFMFG</code> | Federal manufacturer's sales [com] |

| | |
|-----------|---|
| CTFOEN | Federal other energy taxes [com] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| OASFLAG | Old age security flag |
| QNTCR | Quebec nominal tax credit rate |
| SPAOSRR | OAS portion of SPA taxback rate |
| UIBAF | UI benefit recovery base amount factor (UI and EI) |
| UIBAFNR | UI EI benefit recovery base amount factor for non-repeaters |
| (EI only) | |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIERNMAX | Maximum insurable earnings (UI and EI) |

OUTPUT PARAMETERS:

| | |
|----------|--|
| CTFLAG | Commodity tax activation flag |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| GISBE1 | Breakeven for GIS one pensioner couple |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISTFLAG | Provincial GIS top-up flag |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |

nneg Change negative numbers to zero

SUMMARY

NUMBER nneg(arg);

NUMBER arg;

The nneg function returns either zero or the value of arg, whichever is larger. In other words, nneg changes negative values to zero, leaving positive values unchanged.

SUMMARY

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. Benefits are either full or partial depending on a person's history of residency in Canada. The program is not income tested. The SPSM oas function is based on the age of the individual and, for immigrants, the years since immigration as reported at the time of the SCF survey in April 1985.

The Seniors Benefit program was added to the model based on the description provided with the 1996 Federal Budget. The Seniors Benefit will replace the OAS/GIS benefits in 2001. It will be a tax-free; income tested benefit which will be determined on the basis of the incomes from both spouses. The maximum benefits will be \$120 more than the maximum OAS/GIS for 2001. These rates are fully indexed for inflation.

People aged 60 or over on December 31, 1995 will be able to choose to move to the Seniors Benefit or keep the existing OAS/GIS payments. The SPA program remains in place but is enriched by \$120.

Program Description

As amended in 1957 and 1965 the OAS program provides full benefits to persons born in Canada or those having immigrated to Canada more than 10 years before their 65th birthday with no provisions for partial benefits. In June 1977 the program was modified to provide partial benefits to immigrants having resided in Canada for between 10 to 39 years at the time of their 65th birthday. These individuals are eligible for benefits in proportion to the number of years in Canada at age 65 divided by 40. Note that years of eligibility do not increase after the year of the beneficiary's 65th birthday. Thus an immigrant of twenty years at his/her 65th birthday would be eligible for 20/40 or 50% of full OAS benefits. Persons having immigrated to Canada less than ten years prior to their 65th birthday were ineligible for OAS until 1987. In that year the OAS program was modified to allow for immigrants from certain countries having reciprocal arrangements with Canada to use years of residency in the country of emigration to count towards meeting the minimum 10 years residency requirement. However, in these cases it is only the years of residence in Canada which are used to determine the rate of partial benefits.

SPSM Implementation

The oas function determines benefits based on the age of the individual and the years since immigration as reported at the time of the SCF survey in April 1985. Because OAS provides an individually determined benefit the simulation operates at the level of a household assigning benefits to all eligible individuals. The model first adjusts years since immigration in two ways:

1. It determines the years since immigration at the time of the potential beneficiary's 65th

birthday. This is done by subtracting the difference between the individual's age and 65 years from the reported years since immigration. [immi = immi - (idage-65)]

2. It adjusts the immigration status of persons who were eligible for Full OAS under the original program specifications but would qualify for only partial benefits since 1977. This is done by setting the years since immigration to 40 for persons having 10 or more years since immigration at the time of their 65th birthday if that birthday was in 1977 or earlier. [immi =40 if(immi >=10 and TARGETYEAR- idage <= 12)]

Notice that the years since immigration for any given individual after adjustment number 1 will remain the same regardless of the year for which the simulation is being run. For example an immigrant of 38 years, age 73, would have an adjusted years since immigration of 30 years, (immi = (38-(73-65)=30). Because of adjustment 2 above that individual would receive full OAS benefits in simulations run for 1984 but would receive 75% partial benefits in simulations run for 1988. In other words, a pensioner who is 73 years old in 1984 would have been 65 years old in 1976; the year before partial benefits were introduced. However a 73 year old in 1988 would have been age 65 in 1980; after partial benefits were introduced.

The model next determines if full eligibility requirements have been met for benefits and if so the full year equivalent of maximum OAS benefits are assigned (see BOAS in the *Parameter Guide*). Next, persons ineligible for OAS are screened out. Lastly, the model assigns partial benefits to persons with an adjusted years since immigration of between 10 and 39 years.

With the new Senior Benefit program, first, the seniors benefit (senben.c) is calculated. Then ccept calls drv again, and the benefit is zeroed out and OAS/GIS is calculated instead. For persons who lost under this change, drv is called a third time with the seniors benefit package.

Interpretation

The results of the model are not directly comparable with and thus will not match administrative OAS expenditure figures. The discrepancy arises due to administrative irregularities as well as survey data deficiencies.

There are five major sources of underestimation by the oas function. The benefits of persons having received benefits during 1984, yet who had died before the date of the survey, will not be accounted for in the SPSD/M. The survey coverage excludes native Canadians on reservations as well as persons living in the Yukon and North West Territories; thus the OAS benefits of these persons are excluded from SPSM totals. Published figures include payments to persons not residing in Canada as well as retroactive lump-sum payments for late applicants. A further provision not accounted for in this algorithm is the use of years of residence in another country to meet minimum residency requirements. This will not affect the model results if run in years before 1988. The effect is small in any case.

Due to the discrepancy between reported age on the SCF and actual age in 1984 overestimation of aggregate OAS benefits for persons aged 65 and 66 arises. For example 25% of those reporting their age as 65 in March of 1985, and thus receiving full OAS

Benefits in SPSM, would actually have been born between January and March 1985 (assuming births are distributed approximately evenly by month). As such they would have actually received no OAS. Furthermore, the other 75% of the 65 year olds and 17% of 66 year olds would have actually received OAS for only part of 1984. Currently, the SPSM makes no stochastic adjustments for such cases.

Relation to Other SPSM Routines

OAS depends on the input parameters for basic OAS benefits and years since immigration. The calculation of OAS and other modeled variables occurs prior to and affects the calculation of net income and related GIS and GIS 'top-up' programs. The modeled benefits are reported in net income, elderly income, disposable income, transfer income, total income, consumable income. The oas function is called before txinet (calculation of individual net income) by drv.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|------------|-----------------------|
| BOAS | Basic OAS |
| OASFLAG | Old age security flag |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| hdageeld | Age of eldest in household |
| hdseqhh | Household sequence number |
| hhnin | Number of individuals in household |
| idage | Age |
| idimmi | Years since immigration |

OUTPUT VARIABLES:

| | |
|----------|----------------------------|
| imioas | OAS benefits |
| imninc | No income flag |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |

| | |
|-----------------|----------------------------|
| pmaddent | Define and add a parameter |
|-----------------|----------------------------|

SUMMARY

The pmaddent function is used to define a new parameter to the SPSM parameter manipulation facilities. Please see the [Programmer's Guide](#) for more information.

randrnd Randomly round a floating point number to an integer

SUMMARY

The `randrnd()` function can be used to round fractional quantities to integer values in such a way that the sum of the values will remain (virtually) unchanged. Conventional rounding techniques do not have this property. For example, say that we have a set of 1000 numbers, each of which has the value 0.1. The sum of this set of numbers is 100.0. If we round each member of this set to the nearest integer, the sum of values would become 0.0. If we rounded randomly up or down, the sum would be 500. Neither of these rounding processes preserve the original sum. What we wish to do is to round 100 of the values up to 1.0 and 900 of the numbers down to 0.0. The `randrnd()` function simplifies this process.

The first argument to `randrnd()` is the value which is to be integerized, while the second is a uniformly distributed random number between 0.0 and 1.0 used to perform the rounding. The second argument is normally one of the built-in random number streams created by the SPSM Random Number Facility (see the [Users' Guide](#) for more details on this facility). The result of `randrnd()` is an unbiased, randomly rounded integerized value. In the following example, the variable `intval` has the value 2.0 for 30% of the time and 3.0 for 70% of the time.

```
intval = randrnd(2.7, idrand0);
```

The `randrnd()` function can be used to simplify operations such as the production of alternate weight files. For a specific example, see the description of the `bldwgt.exe` utility found in the *SPSM Tools Users Manual*.

The `vardef` function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.

round Round to nearest integer

SUMMARY

```
NUMBER round(arg);
```

```
NUMBER arg;
```

The `round` function converts its argument to the nearest whole number.

SUMMARY

Social assistance payments are not currently calculated by the SPSM. Data requirements are too great for a detailed micro-simulation. For example, the database contains no information on the holding or recent sale of liquid or fixed assets. This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here. It is also intended as a function in which algorithms for social assistance or other guarantees can be developed by glass box users.

Program Description

There are a number of federal, provincial and municipal programs which provide some form of social assistance payments to various target groups. The SPSM simulates six GIS supplementation programs (see the description of the gist function) which are classified with the other social assistance programs by the SCF. In fact the SCF records benefits received from over 30 provincial and municipal social assistance programs under one title of which six are simulated by the SPSM. This algorithm is designed to ensure no double counting of provincial GIS supplement program benefits occurs between simulated social assistance (imisa) and the provincial GIS supplement programs (imigist).

SPSM Implementation

If the function is deactivated with SAFLAG, no social assistance benefits are reported for any individual. If the function is turned on the database values of reported Social Assistance payments is used as the reported value of social assistance for all persons under the age of 65. For persons aged 65 and over there are three possible means of calculating social assistance which are controlled by the SAELDOPT parameter. These options are as follows.

- Social assistance is set to zero for all persons aged 65 and over.
- For individuals over age 64 who received simulated Provincial GIS supplementation benefits Social Assistance benefits are set to zero. If no Provincial GIS supplement is assigned to an individual over age 64, the simulated social assistance reported by the SPSM is the same as the reported value on the database.
- For all individuals over the age of 64 the value of simulated social assistance is set to the positive difference between reported and simulated social assistance.

In addition to performing the calculations for Social Assistance, samod computes the splitting of payments between the Federal and Provincial governments. This splitting corresponds to the federal/provincial cost sharing agreements in the Canada Assistance Plan.

The payment splitting is controlled by the parameter SAFS which is the federal proportional share of SA benefits. This parameter is available to be changed in black box mode and will determine the value of the variable imfsa which represents the value of the federal share. The provincial share of SA benefits is calculated as the difference between total SA benefits and the calculated federal amount and is represented by the variable impsa.

Relation to Other SPSM Routines

The samod function is called by drv after the calculation of provincial GIS supplements in gist.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|--|
| SAELDOPT | SA for elderly calculation method [1=~SA,2=GIST->~SA,3=diff] |
| SAFLAG | Social assistance flag |
| SAFS | Federal share of social assistance [prov] |
| SAPFLAG | Social assistance predicted value flag |
| SATARGET | Social assistance target for predicted SA |
| SFAOUT | Proportion of social assistance to eliminate |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hhncf | Number of census families in household |
| idage | Age |
| idisa | Social assistance income |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| imigist | GIS provincial top-up |

OUTPUT VARIABLES:

| | |
|--------|--|
| imfsa | Federal social assistance |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |
| impsa | Provincial social assistance |

SUMMARY

The strn function is used by the SPSM to print prompts and error messages in a language-independent way. The argument to the function identifies which string is to be retrieved. strn retrieves the string from a language-specific database of strings into an internally-maintained buffer and returns a pointer to the retrieved string. This function is not intended to be used by the SPSM user, and is documented here for reference purposes only.

taxbk1One level tax-back function

SUMMARY

```
NUMBER taxbk1(inc, exmpt, lvl1, rr1);

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level of benefit                       */
NUMBER rr1;          /* reduction rate for tax-back           */
```

The taxbk1 function is used to reduce a benefit at a fixed rate based on income in excess of a specified exemption level. If the benefit (*lvl1) is reduced to zero, taxbk1 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the income in excess of the break-even income for the benefit.

taxbk2Two level tax-back function

SUMMARY

```
NUMBER taxbk2(inc, exmpt, lvl1, rr1, lvl2, rr2)

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level (#1) of benefit                 */
NUMBER rr1;          /* reduction rate (#1) for tax-back      */
NUMBER *lvl2;        /* level (#2) of benefit                 */
NUMBER rr2;          /* reduction rate (#2) for tax-back      */
```

The taxbk2 function is used to reduce a two-tiered benefit at a fixed rates based on income in excess of a specified exemption level. The first tier benefit (*lvl1) is first reduced at rate rr1 based on income (inc) in excess of the specified threshold (exmpt). If the first tier benefit is reduced to zero, the second tier of benefit (*lvl2) is reduced at rate rr2 based on remaining income. If the second tier benefit (*lvl2) is reduced to zero, taxbk2 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the

income in excess of the break-even income for the benefit.

SUMMARY

Program Description

Calculation of the Alberta taxes.

When ATXFLG is off, Basic Alberta Tax (imbpt) is a proportion (APTF) of Basic Federal Tax (imbft). A tax reduction is calculated as a basic amount (ATRBC) minus a proportion (ATRF) of Basic Alberta Tax (imbpt). Alberta Tax Payable (imtxp) is calculated as Basic Alberta Tax (imbpt) minus the tax reductions.

The 2000 budget stated that Alberta would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (ATXFLG), a provincial tax table (APT) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (APNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (ABXM) |
| impatxc | Age amount tax credit | (AAXM, AAXRR, AAXTD, AAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (AMXM, AMXMT, AEMXM, AEMXMT) |
| impcgtc | Caregiver tax credit | (ACGTC, ACGTCFLG, ACGTCTC, ACGTCTD, ACGTCTK) |
| impchrtc | Charitable donations | (ACHATL1, ACHATR1, ACHATR2) |
| impcppte | CPP/QPP contribution | |
| impdistc | Disability tax credit | (AMAXDX) |
| impdtxc | Dividend tax credit | (ADTCR) |
| impdtxc | Education tax credit | (AEDXPM, AMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (AYPNDL) |
| imptutxc | Tuition Tax credit | (AMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using AAMTOPT.

Calculation of the Alberta Family Employment Tax Credit.

When the parameter AFETCFLAG is set to 1, the value of imiafetc variable is calculated as a percentage (AFETCBR) of nuclear family employment income above a threshold (AFETCCI) to a maximum dollar level which is calculated as AFETCBPC times the number of eligible children (nfnkids) up to a maximum number of children of AFETCNC. The maximum benefit is reduced by a percentage (AFETCRR) of nuclear family net income in excess of the threshold AFETCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AAMTOPT | Alta alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| AAMTPCTF | Alta amt rate as pct of additional fed tax due to minimum tax |
| AAMTPCTM | Alta amt rate as pct of federal minimum tax amount |
| AAMTTX | Alta amt rate as tax on adjusted income |
| AAXM | Alta Age Amount |
| AAXPI | Alta Age Amount phase in rate for 1994 and beyond |
| AAXRR | Alta Age Amount credit reduction rate |
| AAXTD | Alta Age Amount net income turndown |
| ABXM | Alta Basic Personal Exemption/amount |
| ACGTC | Alta Caregiver Tax Credit |
| ACGTCFLG | Alta Caregiver Tax Credit activation flag |
| ACGTCTC | Alta Caregiver tax credit take-up rate by age of elderly [age,rate] |
| ACGTCTD | Alta Caregiver Tax Credit Turn Down Income |
| ACGTCTK | Alta Caregiver tax credit take-up rate by income level [employment income,rate] |
| ACHATL1 | Alta Charitable Donations amount level 1 |
| ACHATR1 | Alta Charitable Donations tax credit rate 1 |
| ACHATR2 | Alta Charitable Donations tax credit rate 2 |
| ADTCR | Alta dividend tax credit rate |
| AEDXPM | Alta Education Amount per month |
| AEMXM | Alta equivalent to married amount |
| AEMXMT | Alta equivalent to married turndown level |
| AFETCBPC | Alberta Family Employment Tax Credit Benefit Per Child |
| AFETCBR | Alberta Family Employment Tax Credit Benefit Rate |
| AFETCCI | Alberta Family Employment Tax Credit Benefit Cut-in Level |
| AFETCFLG | Alberta Family Employment Tax Credit Activation Flag |
| AFETCNC | Alberta Family Employment Tax Credit Maximum Number of Children |
| AFETCRR | Alberta Family Employment Tax Credit Reduction Rate |
| AFETCTD | Alberta Family Employment Tax Credit Turndown Level |
| AFTAX | Alberta flat surtax rate on taxable income |
| AHEATFLG | Alberta Energy Tax Refund activation flag |
| AHEATREB | Alberta Energy Tax Refund amount |

| | |
|---------|--|
| AMAXDX | Alta Maximum Disability deduction/amount |
| AMAXET | Alta maximum on transfer of education and tuition amount |
| AMXM | Alta married amount |
| AMXMT | Alta married amount turndown level |
| APNTCR | Alta provincial non-refundable tax credit rate |
| APTC | Alberta political contribution table [total donations, donation allowed] |
| APTCBEN | Maximum Alberta political tax credit allowed |
| APTF | Alberta provincial tax fraction |
| APTX | Alta tax table [taxable income, basic provincial tax] |
| ASCI | Alberta surtax cut-in |
| ASF | Alberta surtax fraction |
| ATRBC | Alberta tax reduction basic claim |
| ATRF | Alberta tax reduction fraction |
| ATXFLG | Alta tax on taxable income activation flag |
| AYPNDL | Alta Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |

| | |
|----------|--|
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| imiafetc | Alberta Family Employment Tax Credit Benefits |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txbc Compute provincial taxes for British Columbia

SUMMARY

When CTXFLG is turned off, the Basic British Columbia Tax (imbpt) is a proportion (CPTF)

of Basic Federal Tax (imbft). British Columbia Tax Payable (imtxp) is the Basic Tax plus the BC Surtax plus the BC Health Care Maintenance Surtax.

The BC Surtax is a proportion (CSF) of Basic BC Tax (imbpt) exceeding the surtax level (CSCI).

The 2000 budget announced that British Columbia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (CTXFLG), a provincial tax table (CPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (CPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (CBXM) |
| impatxc | Age amount tax credit | (CAXM, CAXRR, CAXTD, CAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (CMXM, CMXMT, CEMXM, CEMXMT) |
| impcgtc | Caregiver tax credit | (CCGTC, CCGTCFLG, CCGTCTC, CCGTCTD, CCGTCTK) |
| impchrtc | Charitable donations | (CCHATL1, CCHATR1, CCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (CMAXDX) |
| impdtxc | Dividend tax credit | (CDTCR) |
| impedtxc | Education tax credit | (CEDXPM, CMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (CYPNDL) |
| imptutxc | Tuition Tax credit | (CMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using CAMTOPT.

The British Columbia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The BC provincial credit is modelled as CLVCRT times the gross amount up to CLVCMAX. The credit cannot be more than provincial taxes (imtxp).

B.C. Family Bonus

Total benefits received under the British Columbia Family Bonus program commencing in July 1996.

When the parameter BCFBFLAG is set to one the value of this variable is calculated as BCFBBAS times the number of children in the nuclear family (nfnkids) reduced by a proportion of head plus spouse net income (iminet + imisa) above the turndown of BCFBTD. This proportion for families with one child is BCFBRRS and for multiple child families is BCFBRR. The value calculated in this manner is multiplied times the parameter BCFBPI.

B.C. Family Bonus benefits (imibcfb) are assigned to the mother if present, or if not to the head of the nuclear family.

The calculation of the B.C. Family Bonus was changed to include the level of the National Child Supplement beginning in 1998. The flag BCFBIFS was added to turn on or off the inclusion of the National Child Supplement in the calculation of the B.C. Family Bonus.

The British Columbia Earned Income Benefit which was also introduced in 1998, was added to the code. When BCEIBFLG is assigned a value of 1, the calculation of the British Columbia Earned Income Benefit is activated, depending on the presence of children in the family. For families with lower incomes, the benefit starts to be phased in at BCEIBPI, and reaches its maximum at incomes of BCBEMX. The slope of the phase in is therefore calculated as the maximum working income supplement a family can receive divided by (BCBEMX – BCEIBPI).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BCBEIS1 | B.C. Earned Income Benefit for first child |
| BCBEIS2 | B.C. Earned Income Benefit for second child |
| BCBEIS3 | B.C. Earned Income Benefit for each additional child |
| BCBEITD | B.C. Earned Income Benefit Turndown |
| BCBEMX | B.C. Earned Income Benefit Income Reduction |
| BCBERR1 | B.C. EIB reduction rate for families with 1 child |
| BCBERR2 | B.C. EIB reduction rate for families with 2 children |
| BCBERR3 | B.C. EIB reduction rate for families with 3+ children |
| BCEIBFLG | Activate B.C. Earned Income Benefit Program |
| BCEIBPI | B.C. Earned Income Benefit Income Phase In |
| BCFBBAS | B.C. Family Bonus amount per child |
| BCFBFLAG | Activate B.C. Family Bonus Program |
| BCFBIFS | Activate B.C. Family Bonus to include Federal NCS |
| BCFBNCS1 | B.C. Family Bonus National Child Supplement for first child |
| BCFBNCS2 | B.C. Family Bonus National Child Supplement for second child |
| BCFBNCS3 | B.C. Family Bonus National Child Supplement for each additional child |

| | |
|-------------------------------------|---|
| BCFBNCSSRR1 child | B.C. Family Bonus NCS reduction rate for families with 1 child |
| BCFBNCSSRR2 children | B.C. Family Bonus NCS reduction rate for families with 2 children |
| BCFBNCSSRR3 children | B.C. Family Bonus NCS reduction rate for families with 3+ children |
| BCFBNCSTD | B.C. Family Bonus National Child Supplement Turndown |
| BCFBPI | B.C. Family Bonus phase-in |
| BCFBRR | B.C. Family Bonus multiple child reduction rate |
| BCFBRRS | B.C. Family Bonus single child reduction rate |
| BCFBTD | B.C. Family Bonus Turndown |
| CAMTOPT adj inc, 4=% min amt) | B.C. alternative minimum tax option (1=none, 2=% fed, 3=fed) |
| CAMTPCTF tax | B.C. amt rate as pct of additional fed tax due to minimum tax |
| CAMTPCTM | B.C. amt rate as pct of federal minimum tax amount |
| CAMTTX | B.C. amt rate as tax on adjusted income |
| CAXM | B.C. Age Amount |
| CAXPI | B.C. Age Amount phase in rate for 1994 and beyond |
| CAXRR | B.C. Age Amount credit reduction rate |
| CAXTD | B.C. Age Amount net income turndown |
| CBXM | B.C. Basic Personal Exemption/amount |
| CCGTC | B.C. Caregiver Tax Credit |
| CCGTCFLG | B.C. Caregiver Tax Credit activation flag |
| CCGTCTC [age,rate] | B.C. Caregiver tax credit take-up rate by age of elderly |
| CCGTCTD | B.C. Caregiver Tax Credit Turn Down Income |
| CCGTCTK [employment income,rate] | B.C. Caregiver tax credit take-up rate by income level |
| CCHATL1 | B.C. Charitable Donations amount level 1 |
| CCHATR1 | B.C. Charitable Donations tax credit rate 1 |
| CCHATR2 | B.C. Charitable Donations tax credit rate 2 |
| CDTCR | B.C. dividend tax credit rate |
| CEDXPM | B.C. Education Amount per month |
| CEMXM | B.C. equivalent to married amount |
| CEMXMT | B.C. equivalent to married turndown level |
| CHEATFAM | British Columbia Refundable Energy Credit for families |
| CHEATFLG | British Columbia Refundable Energy Credit activation flag |
| CHEATSNG | British Columbia Refundable Energy Credit for singles |
| CLVCMAX | Maximum B.C. labour-sponsored funds tax credit allowed |
| CLVCRT credit | Percent of B.C. labour-sponsored funds cost allowed as credit |
| CMAXDX | B.C. Maximum Disability deduction/amount |
| CMAXET | B.C. maximum on transfer of education and tuition amount |
| CMXM | B.C. married amount |
| CMXMT | B.C. married amount turndown level |
| CPNTRC | B.C. provincial non-refundable tax credit rate |
| CPTCBEN | Maximum B.C. political tax credit allowed |
| CPTCT allowed] | B.C. political contribution table [total donations, donation allowed] |
| CPTF | British Columbia provincial tax fraction |
| CPTX | B.C. tax table [taxable income,basic provincial tax] |
| CRFLAG | British Columbia rental reduction flag |
| CRTRB | British Columbia renter tax reduction basic credit |
| CRTRD dependants | British Columbia renter tax reduction credit for other dependants |

| | |
|----------|---|
| CRTRP | British Columbia renter tax reduction proportion of rent allowed |
| CRTRPN | British Columbia renter tax reduction proportion of net income |
| CRTRS | British Columbia renter tax reduction credit for spouse |
| CRTRT | B.C. renter tax reduction base amount turndown [dependants, amount] |
| CSCI | British Columbia surtax first cut-in level |
| CSCI2 | British Columbia surtax second cut-in level |
| CSDC | British Columbia provincial surtax dependant credit |
| CSF | British Columbia surtax first level rate |
| CSF2 | British Columbia surtax second level rate |
| CSTC | British Columbia stc amount |
| CSTCFLAG | British Columbia sales tax credit flag |
| CSTCR | British Columbia stc reduction rate |
| CSTHINC | British Columbia family head income threshold (stc) |
| CSTKINC | British Columbia kid income threshold top-up (stc) |
| CSTSINC | British Columbia spousal income threshold top-up (stc) |
| CTCINC | CTC family income scaling factor |
| CTXFLG | B.C. tax on taxable income activation flag |
| CYPNDL | B.C. Pension Income Deduction Amount |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |

| | |
|----------|---|
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchclm | Number of dependent children claimed |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imibceib | B.C. Earned Income Benefit |
| imibcfb | B.C. Family Bonus |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |

| | |
|----------|--|
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txcalc Calculate federal income tax

SUMMARY

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Federal Labour Sponsored Venture Capital Tax credit
- Basic Federal Tax (including tax credits transfers from dependants or spouse)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement
- Federal refundable medical expense supplement
- Caregiver Tax Credit

Federal Dividend Tax Credit

If the filer declared dividends from taxable Canadian corporations, he or she is eligible to claim the Dividend Tax Credit which amounts to a fixed proportion of taxable dividends. This credit is non-refundable, i.e., it may be used to reduce Basic Federal Tax, but an unused portion is not refunded.

SPSM Implementation

The Federal Dividend Tax Credit (imfdtxc) is calculated as a proportion (FDTCR) of Net Taxable Dividends (imidivt). The amount is added to Total Non-transferable Tax Credits (imtaxcr) which is applied to reduce Basic Federal Tax (imbft).

Federal Dividend Tax Credit

The Labour-sponsored venture capital funds tax credit is modeled from the imputed gross amount purchased (idlbtxg). The credit (imlbtxc) is equal to FLVCRT times the gross

amount (idlabt_{xg}) up to a maximum (FLVCMAX). The rate is provincially based.

Basic Federal Tax

Basic Federal Tax is defined as Federal Tax Payable on Taxable Income minus certain tax credits.

SPSM Implementation

Basic Federal Tax (imbft) is calculated the same way whether or not the tax credits proposed by the White Paper are applied. First, Federal Tax Payable on Taxable Income (imfedtax) is calculated using the interpolating lookup function lkup1 to determine taxes payable on Taxable Income (imitax) from the table FTX.

Dependants are treated separately from the head and spouse since the rules applying to the transfer of deductions from dependant to parent differ from those applying to the transfer of deductions from the spouse.

Transfers from Dependant to Parent

In calculating the dependant's Basic Federal Tax, the following nontransferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Age Tax Credit (imatxc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Federal Dividend Tax Credit (imfdtxc)
- Medical Expense Tax Credit (immedatc)
- Pension Income Tax Credit (impentxc)
- UI Contributions Tax Credit (imuictc)

A dependant may transfer an unused portion of certain tax credits to a supporting parent. Since a limit may be imposed on the amount of the combined Education Tax Credit and Tuition Tax Credit, these are treated separately from the Disability Tax Credit.

If a dependant requires all transferable tax credits to further reduce Basic Federal Tax, i.e., Basic Federal Tax (imbft) exceeds Total Transferable Tax Credits, then the tax credits are subtracted from imbft and no transfer occurs.

If the dependant's Total Transferable Tax Credits (txcrt) exceeds Basic Federal Tax, imbft is reduced to zero and the amount potentially transferable to a supporting parent is calculated as the amount of Disability Tax Credit (imdisatc) not required to reduce Basic Federal Tax plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imttxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

The total amount of tax credits transferable from all dependants is accumulated in the variable ctxcrt which is subsequently used to reduce Basic Federal Tax for the parent with the higher Net Income (iminet).

These algorithms do not allow the partitioning of the dependant's tax credits between both supporting parents and, therefore, in some cases, the total taxes paid by the family may not be minimized.

Transfers From Spouse

In calculating the Basic Federal Tax of the head and spouse, the following non-transferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Tax Credit for Dependant Children (imctxcs)
- Federal Dividend Tax Credit (imfdtxc)
- Married Tax Credit (immartxc)
- Medical Expense Tax Credit (immedatc)
- UI Contributions Tax Credit (imuictc)

An unused portion of certain transferable tax credits may be transferred from the spouse. The transferable tax credits are:

- Age Tax Credit (imatxc)
- Disability Tax Credit (imdisatc)
- Pension Income Tax Credit (impentxc)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)

Since a limit may be imposed on the amount of the combined Education and Tuition Tax Credits, these are treated separately from the others.

If the filer requires all Transferable Tax Credits (txcrt) to reduce Basic Federal Tax (i.e., imbft exceeds txcrt) then the tax credits are subtracted from Basic Federal Tax and no transfer occurs.

If the filer's Transferable Tax Credits (txcrt) exceed Basic Federal Tax, then imbft is reduced to zero and the remainder of the Potentially Transferable Tax Credits (ttxcrt) is calculated as the sum of:

- Disability Tax Credit (imdisatc)
- Age Tax Credit (imatxc)
- Pension Income Tax Credit (impentxc)

which is not required to reduce Basic Federal Tax to zero plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imtxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

Although this value is calculated for both head and spouse, the one with the higher Net Income (iminet) actually receives the transfer. The amount transferred from the spouse is stored in the variable imstxcrt. The amount transferred from all dependants is stored in imctxcrt.

Federal Surtax

In 1985 a Federal Surtax was introduced as an additional tax based on Basic Federal Tax payable.

SPSM Implementation

The model allows for two surtax levels and two surtax rates. The total Federal Surtax (imfsur) is calculated as:

- a proportion (FSURR1) of Basic Federal Tax exceeding Surtax Level 1 (FSURL1), plus
- a proportion (FSURR2) of Basic Federal Tax exceeding Surtax Level 2 (FSURL2), minus
- the amount of the additional Federal Foreign Tax Credit from 1986 forward (represented by variable (idfdsft)).

The result is then added to Federal Taxes (imftax) (minus certain federal tax credits) to derive Federal Taxes Payable (imtxf).

Federal Surtax Reduction

The Federal Surtax reduction (imfsurtr) announced in the 1998 federal budget is calculated. The maximum value that the reduction may reach is FSURTRMX. The reduction is reduced by a proportion (FSURTRRR) of basic federal tax (imbft) which exceeds a certain level (FSURTRRL). This reduction is then subtracted from the federal surtax (imfsur).

Federal Taxes Payable

Federal Taxes Payable (imtxf) is defined as Federal Tax (imftax) plus the Federal Surtax (see above) minus the following tax credits:

- Federal Other Tax Credits
- Federal Political Contribution Tax Credit (imfptc), and

Alternate Minimum Tax

In 1986, a minimum tax on individuals was introduced with the intention of increasing the tax liability of those high income individuals who use the tax incentives provided by the current law to structure their affairs so as to pay little or no tax.

The Alternative Minimum Tax requires the calculation of an adjusted taxable income disallowing certain deductions, a list of which follows, which are added back to taxable income.

- Pension Income Deduction
- Interest and Dividend Income Deduction
- Disability Deduction Transferred from Dependant
- Education Deduction Transferred from Dependant
- Deductions Transferred from Spouse
- Employee Home Relocation Loan Deduction
- Stock Option and Shares Deduction
- Contribution to Deferred Income Plans (RPP and RRSP contributions)
- non-taxable portion of capital gains
- capital cost allowance on MURBS and Canadian Films

The grossed-up portion of taxable dividends and Allowable Business Investment Loss are subtracted from taxable income.

The minimum tax is then calculated as a proportion of this adjusted taxable income exceeding the exemption level.

SPSM Implementation

If the Minimum Tax Rate (AMTTX) is not set to zero, the minimum tax algorithms are executed.

The first step recalculates an adjusted taxable income for minimum tax purposes (imamtinc) by adding the following items to imitax:

- RPP Contributions (idrpp) when AMTRPFLG is set to 1
- RRSP Contributions (idrrsp) when AMTRPFLG is set to 1
- Other Deductions from Total Income (idothded, representing Capital Cost Allowances)
- the non-taxable portion of Capital Gains (idicapg * (AMTINCRT - CAPGIR))
- exploration and development expenses (idexplor)
- employee home relocation loan deduction (idemplo)
- stock option and shares deduction when AMTSTK is set to 1
- limited partnership losses (idpartlo)
- allowable other years non-capital losses (idnclos)

The taxable portion of dividends (imidivt) times AMTDIV, net non-deductible capital losses, the allowable portion of business investment losses (imiloss) times the applicable rates defined as $((AMTINCRT - CAPGIR)/CAPGIR)$ and the basic exemption (AMTEX) are subtracted from this value.

The Basic Minimum Tax (ambft) is calculated as a proportion (AMTTX) of Adjusted Taxable Income (imamtinc).

The second step in this process adjusts the Basic Minimum Tax (ambft) to account for allowable tax credits. This requires subtracting the following tax credits from Basic Minimum Tax:

- Basic Tax Credit (imbtc)
- Spouse or Equivalent Tax Credit (immartxc)
- Age Tax Credit (imatxc)
- Tax Credit for Dependant Children (imctxcs)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)
- Medical Expense Tax Credit (immedatc)
- Charitable Donations Tax Credit (imchartc)
- Disability Tax Credit (imdisatc) for self
- Other Dependent Tax Credit (imothpe)
- CPP/QPP Contribution Tax Credit (imcppctc)
- UI Contribution Tax Credit (imuictc)
- Basic Personal Amount Supplement (imbts)
- Caregiver Tax Credit (imcgtc)

If the value of the Basic Minimum Tax (ambft) exceeds Basic Federal Tax (imbft), Federal Tax Payable (imtxf) is recalculated as Basic Minimum Tax (ambft) plus any federal surtaxes on ambft. The federal surtax is calculated in the same manner as on Basic Federal Tax, previously described.

The database does not contain sufficient detail to accurately represent some of the deductions specified in the regulations concerning the calculation of the Minimum Tax. The Disability Deduction and Education Deduction transferred from dependants are not differentiable from those deductions claimed on behalf of the filer. The variable idothded (Other Deduction's from Total Income) includes Capital Cost Allowances on MURBS and Canadian Films but it also contains amounts for moving expenses and alimony payments. It is difficult to estimate the impact of these inaccuracies except to say that they are likely small compared to the large amounts of income and other deductions for the high income persons for whom the Minimum Tax is intended.

Quebec Tax Abatement

The Quebec Tax Abatement is a refundable credit on federal taxes provided to Quebec residents in lieu of direct cost-sharing by the federal government under the federal-provincial fiscal arrangements. It reduces the federal income tax payable by Quebec residents and may provide a refund. The abatement amounts to 16.5% of Basic Federal Tax.

SPSM Implementation

If the filer resides in Quebec, the full Quebec Tax Abatement (qta) is calculated as a proportion (QTAP) of Basic Federal Tax (imbft). This is divided into two portions for

accounting purposes:

- imqtaa is the Quebec Tax Abatement Applied to reduce federal taxes
- imqtar is the Quebec Tax Abatement Refunded

If the Quebec Tax abatement exceeds the Federal Tax payable then a refund is made for the balance of the abatement (imqtar) and the amount of Federal tax payable is reduced by the amount of the abatement. Users may wish to note that this abatement refund was an interesting side effect of the Federal Tax reduction in effect prior to 1986 (see notes in this section).

Federal Refundable Medical Expense Supplement

SPSM Implementation

The refundable medical expense supplement (immedref) was added to imfortc. The program is only available to persons aged 18 and over who have earnings over MEDREMIN and who had allowable medical expenses (immeda). The maximum supplement is calculated as the minimum of MEDRRATE times the allowable medical expenses and MEDRMAX. The benefit is reduced by MEDRRR times the family income over the turndown which is the sum of the basic exemption (BXM), the married exemption (MXM) and the maximum disability amount (MAXDX).

Caregiver Tax Credit

The calculation of the Caregiver Tax Credit (imcgtc) is activated by the flag CGTCFLG. The credit reduces federal taxes and started in 1998. The base level of the credit is CGTC. A take-up rate CGTCTC based on age of the potential parent assigns individuals with idefrh =3 as a parent according to SCF 1994 data. Users have access to a take-up rate CGTCTK based on employment income to select the appropriate number of beneficiaries.

The benefit, imcgtc, is reduced for each dollar of net income, iminet, in excess of CGTCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AMTDIV | Alternative minimum tax: percentage of taxable dividends |
| AMTEX | Alternate minimum tax: exemption level |
| AMTFORTX | Alternative minimum tax: Foreign Income Tax Rate |
| AMTINCRT | Alternative minimum tax: Inclusion Rate |
| AMTNEGTI | Alternative minimum tax: Allow Negative Taxable Income Flag |
| AMTPRVDF | Alternative minimum tax: prov. tax difference |
| definition[prov] | |
| AMTRPFLG | RRSP/RPP included in Alternate minimum tax (1=included) |
| AMTSTK | Alternative minimum tax: Stock Option Proportion |

| | |
|------------|---|
| AMTTX | Alternate minimum tax rate |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CGTC | Caregiver Tax Credit |
| CGTCFLG | Caregiver Tax Credit activation flag |
| CGTCTC | Caregiver tax credit take-up rate by age of elderly [age,rate] |
| CGTCTD | Caregiver Tax Credit Turn Down Income |
| CGTCTK | Caregiver tax credit take-up rate by income level [employment income,rate] |
| FDTCR | Federal dividend tax credit rate |
| FLVCMAX | Maximum labour-sponsored funds tax credit allowed |
| FLVCRT | Percent of labour-sponsored funds cost allowed as credit [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| FPTC | Federal political contribution table [total donations,donation allowed] |
| FPTCBEN | Maximum federal political tax credit allowed |
| FSURL1 | Federal surtax level 1 |
| FSURL2 | Federal surtax level 2 |
| FSURR1 | Federal surtax rate 1 |
| FSURR2 | Federal surtax rate 2 |
| FSURTRMX | Maximum federal surtax reduction |
| FSURTRRL | Federal surtax reduction reduction level |
| FSURTRRR | Federal surtax reduction reduction rate |
| FTX | Federal tax table [taxable income,basic federal tax] |
| GSTREBFLAG | Database variable(gstreb) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MAXET | Maximum on transfer of education and tuition amount |
| MEDREMIN | Minimum earnings for refundable medical expense supplement |
| MEDRMAX | Maximum expenses allowed for medical expense supplement |
| MEDRRATE | Proportion of expenses allowed for medical expense supplement |
| MEDRRR | Reduction rate for the medical expense supplement |
| MXM | Married exemption/amount |
| QTAP | Quebec tax abatement proportion of basic federal tax |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |

| | |
|----------|--|
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgstreb | GST rebate (457) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnclos | Allowable other years non-capital loss (252) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imbtcs | Basic personal tax credit supplement |
| imcapgx | Modelled capital gains deduction (254) |
| imchartc | Charitable donations tax credit |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imctxcs | Dependent children tax credits |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |
| imtutxc | Tuition tax credit |
| imuic | UIC contributions |
| imuictc | UIC contributions tax credit |

OUTPUT VARIABLES:

| | |
|----------|---|
| imamtdf | Difference due to minimum tax |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |

| | |
|----------|---|
| imatxcrt | Total tax credits applied |
| imbft | Basic federal tax |
| imcgtc | Caregiver Tax Credit Level |
| imcgtcp | Dependant caregiver tax credit amount |
| imctxcrt | Tax credits transferred from children |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imfdtxc | Federal dividend tax credit |
| imfedtax | Federal tax before tax credits |
| imfortc | Federal other refundable tax credits |
| imfortxc | Federal foreign tax credit (509) |
| imfptc | Federal Political Contribution Tax Credit |
| imfsur | Federal surtax |
| imfsurtr | Federal surtax reduction |
| imlabtxc | Federal labour-sponsored funds tax credit |
| immedref | Refundable medical expense supplement (452) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imoftca | Other federal tax credits applied (416) |
| imqtaa | Quebec tax abatement (applied) |
| imqtar | Quebec tax abatement (refundable) |
| imstxcrt | Tax credits transferred from spouse |
| imtaxcr | Total tax credits |
| imttxcrt | Total tax credits transferred |
| imtxf | Federal income tax payable |

txccea Compute child care expense allowance

SUMMARY

The txccea function calculates the value of the child care expense deduction.

Description of tax measure

Child care expenses are amounts paid for child care services to allow the parent or "supporting person" to:

- a) earn income from employment or self-employment, (this does not include a period of unemployment) or
- b) take an occupational training course for which the person received an adult training allowance, or
- c) carry on research or similar work for which the person received a grant.
- d) go to school full-time

A filer is eligible to claim child care expenses if:

- a) there is no other supporting person
- b) there is a supporting person with a higher net income (excluding child care expenses) than the filer
- c) there is a supporting person with a net income lower than the filer but
 - i. the filer and supporting person were separated for at least 3 months, or

- ii. the supporting person was in full-time attendance at a designated educational institution, or
- iii. the supporting person was infirm or in prison for at least 2 weeks.

A combination of limitations is applied to the amount claimable:

1. Two-thirds of earned income, and
2. a fixed amount per eligible child up to a fixed maximum is applied if the net income of the filer is less than that of a supporting person (conditions (a) and (b) above).

Under condition (c) above, i.e., the income of the supporting person is lower than that of the filer, the following additional limitation applies:

3. fixed weekly amount per child up to a maximum, multiplied by the number of weeks of separation, attendance at an educational institution, infirmity or imprisonment.

In 1982, the Child Care Expense Deduction was always taken by the mother of the child if she was present. Since then, the deduction or tax credit is normally allocated to the spouse with the lower net income, exclusive of the child care expense deduction, unless that person is separated, in school, infirm or in prison.

SPSM Implementation

The amount of Child Care Expenses Allowed is derived from income tax records during the database creation process (see the *Database Creation Guide*). This value represents the amount allowed according to the base year regulations. Though this amount may be grown or diminished by a fixed factor (GFC CET), the rules described above cannot be easily altered in the current version of SPSM.

The parameter CCEROPT determines which spouse in a two-parent family claims the Child Care Expense Deduction. If CCEROPT is given a value of 1, the deduction is always taken by the mother. With a value of 2, the deduction is taken by the parent with the lower Net Income (iminet).

The condition for a temporarily absent, lower income spouse (condition c. above) is not checked.

On the database, only one spouse of a two-parent family will have been attributed a value for Child Care Expense Deduction Allowed. The assignment of this value is done before we have complete information about the relative net incomes and may therefore be given to an inappropriate person. The model uses the current value of Net Income (iminet) to re-allocate the deduction if necessary.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| CCEAEMPF | CCEA fraction of employment income (Limit `B') |
| CCEALIM | CCEA overall limit |
| CCEAOAGE | CCEA Maximum eligible age for oldest child |
| CCEAOLD | CCEA old child limit |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| CCEAYNG | CCEA young child limit |
| CCEROPT | Child care expense deduction recipient [1=mother,2=lower income] |
| CCESFLAG | CCE full-time student flag |
| CCESOLD | CCEA old child limit for full-time students |
| CCESYNG | CCEA young child limit for full-time students |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| INPUT VARIABLES: | |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| ideducm | Eligible months of education allowance |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idsex | Sex |
| imccez | Is CCE zeroed? |
| imisa | Social assistance (or replacement program) |
| OUTPUT VARIABLES: | |
| imcce | Child care expenses allowed |
| imcce | Child care expenses claimed on behalf of child |
| imdedft | Deductions from total income |
| iminet | Net income |
| imninc | No income flag |

SUMMARY

The federal Child Tax Credit and the Child Tax Benefit provide benefits to help low and middle income families meet the costs of raising children under the age of 18. The txctc function calculates benefits from the federal Child Tax Credit (CTC) program based upon the number of children in a family and the net income of the family. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

The level of benefits varies with the number of children.

Program Description

The federal Child Tax Credit provides benefits to help low and middle income families meet the costs of raising children under the age of 18. It was implemented in 1979 and is administered by Revenue Canada, Taxation, through the income tax system.

Any person who receives Family Allowances is eligible to apply for the Child Tax Credit. The credit is available on behalf of a child for whom Family Allowances were paid for in the month of January following a given taxation year. An eligible person who voluntarily refrains from receiving Family Allowances may still claim the Child Tax Credit. The CTC must be applied for by filing an income tax return regardless of the income of the eligible parent or guardian. A foster parent in receipt of Special Allowances is not eligible for the CTC. Canadian residents living outside Canada, but paying Canadian taxes may apply for the credit.

The amount of the CTC is determined by the number of eligible children and the family's income. Family income is defined as the net income (as defined for income tax purposes) of both parents, whether married or not (provided they are living together), or the net income of a single parent. The net income of any other person who is claiming a personal exemption for a dependent child (whether or not the person lives with the claimant of the CTC) must also be included in family income. For families with taxable incomes the refundable credit to which they are entitled reduces the tax which must be paid; families whose taxes are less than the credit, or who pay no taxes at all receive a non-taxable lump sum payment.

The maximum annual credit is payable if net family annual income is less than a specified level of income called a benefit reduction level or turndown. Families with net incomes above this turndown are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum CTC for eligible parent(s) is zero. In 1993, the CTC was replaced by the Child Tax Benefit. This program is comprised of two parts: the basic Child Tax Benefit, and the Earnings supplement (also called the Working income supplement). The basic child tax benefit consists of \$1,020 per child, plus \$75 for the third child and subsequent children. There is an additional \$213

for each child under 7 with no child care expenses. The benefit is reduced at family incomes over \$25,921 at a 5% rate (or 2.5% if only 1 child).

The Working Income Supplement was a maximum of \$500 per family. It started at earnings of \$3,750, reached the maximum at earnings of \$10,000, and was then reduced, reaching \$0 at family incomes of \$25,921.

In 1997, the Working Income Supplement was enriched. Instead of \$500 per family, the benefit was \$605 for the first child, \$405 for the second child, and \$330 for the third and subsequent children. It was phased in at family earnings of \$3,750, reached a maximum at \$10,000, and was phased out starting at family incomes of \$20,921. The reduction rates were 12.1% for families with 1 child, 20.2% for families with 2 children, and 26.8% for families with 3 or more children.

In 1998, the program was renamed the Canada Child Tax Benefit (CCTB). The basic benefit has the same level and structure of the Child Tax Benefit. The Working Income Supplement was replaced by the CCTB National Child Benefit Supplement. It is no longer dependent on earnings, and therefore is not phased in. Otherwise, it follows the same rules as the 1997 Working Income Supplement.

SPSM Implementation

The `txctc` function calculates the federal Child Tax Credit based on the number of children in a family and the net income of the family. Residency requirements are deemed to have been met in all cases. The function always allocates the Child Tax Credit to the mother unless one is not present in the nuclear family. The function only outputs a value for the federal child tax credit and this reflects the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txctc` function operates at the nuclear family level. It first calculates a local variable for the family's net income by adding the eldest member's net income and that of their spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are then obtained by multiplying the number of children in the nuclear family by the maximum benefit per child (`nfkids * CTCPC`). The maximum CTC is then reduced at the specified reduction rate (`CTCRR`) applied to family net income in excess of the CTC turndown (`CTCTD`). This reduction is performed using the `taxbak1` function. Finally the federal Child Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

When the `FCBEIE` flag is turned on, the Working Income Supplement has a different rate according to the number of children in the household, `FCBEIS1`, `FCBEIS2`, `FCBEIS3` and is also reduced at varying rates, `FCBERR1`, `FCBERR2`, `FCBERR3`. The enriched WIS is phased in starting at family incomes `FCBECI` and reaches its maximum at `FCBEMX`. The phase in rate is linear and depends again on the number of children in the family.

There was also a fix for the Quebec child tax benefits. The benefits (`QCBC3`) are now being assigned to the third and each additional child in a family.

Interpretation

Results obtained from the SPSM with respect to Child Tax Credit benefits differ from Revenue Canada administrative data. Overall the SPSM reports 101.9% more 1984 tax year benefits than does Revenue Canada for provincial Canada. However, the number of children for which the credit is paid is 99.6% of Revenue Canada's figures. One would expect the number of children on the SPSD to be low due to the non-coverage of persons residing on reservations and outside Canada. Thus there would seem to be a small deficit on the SPSD in the net income of families with eligible children.

Relation to Other SPSM Routines

The txctc function is called by drv. The function outputs one dollar value variable that is used in memo1 for reporting purposes.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| ACBC1 | Alberta Child benefit per child aged 0 - 6 |
| ACBC2 | Alberta Child benefit per child aged 7 - 11 |
| ACBC3 | Alberta Child benefit per child aged 12- 15 |
| ACBC4 | Alberta Child benefit per child aged 16- 17 |
| CTCERF | CTC child care expense reduction fraction |
| CTCINC | CTC family income scaling factor |
| CTCOPT | Child tax credit option |
| CTCPC | Child tax credit per child |
| CTCREF | CTC post-reform rules flag |
| CTCRR | Child tax credit reduction rate |
| CTCSUP | CTC young child supplement |
| CTCTD | Family income child tax credit turndown |
| CTCTUR | CTC take up rate table [benefit,rate] |
| FCBBAS | Basic child benefit (per child) |
| FCBECE | Child benefits earning supplement cut-in level |
| FCBEIE | Flag for WIS dependent on number of children |
| FCBEIS | Child benefits earned income supplement |
| FCBEIS1 | Enriched WIS for first child |
| FCBEIS2 | Enriched WIS for second child |
| FCBEIS3 | Enriched WIS for each additional child |
| FCBEMX | Earnings where WIS phase-in is at maximum |
| FCBERR | Child benefits earning supplement reduction rate |
| FCBERR1 | WIS reduction rate for families with 1 child |
| FCBERR2 | WIS reduction rate for families with 2 children |
| FCBERR3 | WIS reduction rate for families with 3+ children |
| FCBESR | Child benefits earned income supplement rate |
| FCBETD | Child benefits earning supplement turndown level |
| FCBLRG | Supplement for 3rd and subsequent kids |
| FCBRR | Multi-children family income reduction rate |

| | |
|-------------|---|
| FCBRRS | Single-child family income reduction rate |
| FCBTD | Federal child benefits family income turndown |
| FCBYNG | Supplement for children under age 7 |
| FCBYNGR | Child care expense reduction rate |
| PYINC | Deflator to calculate previous year income |
| QCBC1 | Quebec Child benefit for 1st child |
| QCBC2 | Quebec Child benefit for 2nd child |
| QCBC3 | Quebec Child benefit for 3rd child |
| QCBCFLG | Quebec Child benefit flag for Quebec calculation |
| methodology | |
| QCBCS | Quebec Child benefit supplement child aged 12- 17 |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idrand | Random numbers [array] |
| idsex | Sex |
| imcce | Child care expenses claimed on behalf of child |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--|
| imctc | Child tax credit |
| imfcben | Total Federal Child Benefits |
| imfcbenb | Total Federal Child Benefits Base |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imninc | No income flag |

txfstc Compute federal sales tax credit

SUMMARY

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales

Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

Program Description

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. It was implemented for the 1986 and subsequent tax years and is administered by Revenue Canada, Taxation, through the income tax system.

Upon application, through the filing of an income tax return, the federal sales tax credit is available to any individual who at the end of the year was married, had a child, or was over 18 years of age. Eligible individuals may claim the credit for themselves, their qualified relations, and one spouse. Individuals who are not subject to tax in Canada or who were confined to a prison or similar institution for a period of over six months in the year for which a claim is made may not claim the credit. A married couple may make only one claim.

Maximum family benefits are a function of the type and number of individuals in the family as well as the net income of the family. There are three individual credit maximums; one for the filer; one for a spouse with whom the filer resided at the end of the year; and one for any other person under the age of 18 at the end of the year who was a child of the individual or their spouse or was a person in respect of whom the individual or his spouse has claimed a personal deduction. Family net income is the net income, for tax purposes, of the head of the family and their spouse if present.

The maximum annual credit is payable if net family annual income is less than a specified level of income (called turndowns, exemptions, or benefit reduction levels). Families with net incomes above this reduction point are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum STC is zero. In 1986 the maximum credit was \$50 per adult and \$25 per dependent child, the reduction point was \$15,000 and the reduction rate was 5%. So, for example, a family with a spouse and two eligible children and a net income of \$17,000 would receive a tax credit of \$100.00. (The 1986 credit becomes zero for families of this type with a net income at or above \$18,000.)

SPSM Implementation

The `txfstc` function calculates the federal Sales Tax Credit based on the number, age, and type of persons in a family and the net income of the family. The function always allocates the Sales Tax Credit to the spouse with the higher net income in the nuclear family. The function outputs values for the federal Sales Tax Credit and these reflect the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txfstc` function operates at the nuclear family level. It first increments two local variables based on information on the eldest member of the nuclear family; one for the family's net income by adding the eldest member's net income; and one for the maximum family benefits by adding the maximum entitlement for a filer. The program next increments both local

variables for the spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are incremented last by multiplying the number of children in the nuclear family by the maximum benefit per child ($nfnkids * FSTCC$). The maximum STC is then reduced at the specified reduction rate (FSTCR) applied to family net income in excess of the STC reduction point (FSTCL). This reduction is performed using the `taxbak1` function. Finally the federal Sales Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

The federal sales tax credit is claimable at age 19. Parents may claim additional amounts for children aged 18 and younger. When calculating the GST credit, the income concept used is the previous year's incomes. The GST credit for a given year, say 1992, would represent the amounts paid from July 1992 to July 1993.

Interpretation

Results obtained from the SPSM with respect to Sales Tax Credit benefits have no valid Revenue Canada administrative data with which to compare the results. In general, the SPSM should be slightly low due to certain coverage issues. Further analysis will be required to correctly estimate who in a married couple is claiming the benefit. Take-up issues may also be relevant.

Relief for Heating Expenses

When `HEATRLFLG` is turned on, persons will receive a transfer from the federal government for the relief of heating expenses (`imheatrl`). In order to receive it, a person has to have received a GST credit (`imfstc`). Qualifying persons who live with a spouse or children receive `HEATFAM` and others receive `HEATSNG`.

Note that, as indicated in the federal economic statement 2000, in order to receive a check in 2001 a person had to qualify for the GST credit in January 2001 or June 2000. In the SPSM this is the modeled GST credit for 2000 (we assume that the entire check is given in June), based on 1999 income. In order to simplify the code, we used receipt of the 2001 GST credit as a proxy for receipt of the 2000 GST credit. Given the fact that there was no change in the rules governing the GST credit in these two years, this should have a small effect.

Relation to Other SPSM Routines

The `txfstc` function is called by `drv`. The function outputs one variable that is used in `memo1` for reporting purposes. The function makes use of (calls) the `taxbak1` function.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| FSTCC | Federal sales tax credit amount for dependant |
| FSTCF | Federal sales tax credit amount for filer |
| FSTCL | Federal sales tax credit reduction level |
| FSTCR | Federal sales tax credit reduction rate |
| FSTCS | Federal sales tax credit amount for spouse |
| GSTAC | GST additional credit amount |
| GSTAR | GST additional credit rate of net income |
| GSTASPFLAG | Maximum GST additional credit for single parents flag |
| GSTAXM | GST additional credit exemption |
| GSTCTUNC | GST credit take up by number of children |
| GSTFLAG | GST credit activation flag |
| HEATFAM | Federal relief for heating expenses for families |
| HEATRLFLG | Federal relief for heating expenses activation flag |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| INPUT VARIABLES: | |
| cfageeld | Age of eldest in census family |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idrand | Random numbers [array] |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| OUTPUT VARIABLES: | |
| imfstc | Federal sales tax credit |
| imheatrl | Federal relief for heating expenses |
| imninc | No income flag |

SUMMARY

When IMSHTOPT is set to 1, imputation of provincial paid rents and property taxes are calculated based on Greenbook data, when set to .2 they are based on FAMEX. The rent and property tax are imputed to head's of census families and census family spouses reporting positive net income.

CROSS REFERENCE**Function Description**

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| IMSHTOPT | Paid rent and property tax imputation option |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| fxio | I/O expenditure categories [array] |
| fxprtax | Property tax |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hnnin | Number of individuals in household |
| idcfrh | Relationship to census family head |
| idhhrh | Relationship to head of household |
| idproptx | Net property taxes paid (556) |
| idrentpd | Total rental payments (555) |

OUTPUT VARIABLES:

| | |
|----------|---------------------------|
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |

SUMMARY

This function calculates exemptions or tax credits for dependants as well as performing transfers of deductions between spouses. The algorithms included in this function are:

- calculate and allocate Tax Credits for Wholly Dependant Children
- calculate and allocate Spouse (or Married) Tax Credit
- calculate Spouse (or Married) Equivalent Tax Credit
- calculate Deductions Transferred from Spouse

Calculate and Allocate Tax Credits for Wholly Dependant Children

Before 1988, filers with dependant children were eligible to claim a personal exemption based upon the age and net income of the child. The exemption was calculated as a fixed amount (adjusted annually) minus a proportion of the child's income exceeding the reduction level. The amounts varied with the age of the child. Children under 18 years of age were treated differently from children 18 and over. This claim could be split between supporting parents or grandparents.

The June 1987 White Paper on Tax Reform proposed the conversion of the exemption on behalf of children under 18 into a tax credit and the elimination of the exemption for children 18 and over.

SPSM Implementation

(Note: this paragraph needs to be rewritten.) The amount of the tax credit on behalf of dependants under 18 is calculated by subtracting a proportion (YCTCR) of the child's Net Income (iminet) which exceeds the Reduction Level (YCTCT) from the Maximum Young Child Tax Credit (YCTC).

The amounts for all children are accumulated in ctxct which may later be adjusted by the calculation of the Spouse Equivalent Tax Credit. If a spouse is present, the one with the higher Net Income iminet receives the full amount of the tax credit for all dependent children (imctxcs) which is used to reduce Basic Federal Tax imbft in the function txcalc.

There is no tax credit for dependent children 18 and over. The model has no provision for a tax credit for infirm dependants aged 18 and over.

The model does not partition exemptions for wholly dependant children between spouses as is allowed in tax regulations. If it were partitioned, certain families would pay slightly lower taxes.

Spouse Tax Credit

Persons legally married during the taxation year are eligible to claim a non-refundable Spouse Tax Credit. The tax credit amounts to a fixed amount reduced by a proportion of the spouse's net income exceeding a specified level. Net income for this purpose includes the spouse's GIS/SPA benefits.

SPSM Implementation

The Spouse Tax Credit (immartxc) amounts to a fixed value (MXM) reduced by the amount of the spouse's Net Income (imdepni) exceeding the reduction level (MXMT). This is

calculated only for the spouse with the higher Net Income.

The Spouse Tax Credit (immartxc) is used to reduce Basic Federal Tax in the function txcalc.

Although the regulations allow special considerations for persons who changed marital status during the taxation year, they are not implemented in the model.

Equivalent-to- Spouse Tax Credit

Filers who are single, divorced, separated or widowed and supported a relative related by blood, marriage or adoption are eligible to claim that relative for the Equivalent-to-Spouse Tax Credit, amounting to a fixed value reduced by a proportion of the relative's net income exceeding a reduction level.

SPSM Implementation

The SPSM calculates the Equivalent-to-Spouse Tax Credit on behalf of dependant children, not other relatives who may be eligible. If a non-claimable dependant is present, he or she is chosen to be claimed for the credit. If there is no such dependant, then the one with the lowest Net Income (iminet) is claimed.

The credit is calculated as a fixed amount (EMXM) reduced by the amount of the dependant's Net Income (imdepni) exceeding the reduction level (EMXMT). If the credit is being claimed on behalf of a dependant who is also eligible for the Wholly Dependant Child Tax Credit, the amount claimed for that dependant is subtracted from the total Wholly Dependant Child Tax Credit and the total number of children claimed is reduced by one.

The Spouse Equivalent Tax Credit is added to Total Nontransferable Tax Credits (imtaxcr) which is subtracted from Basic Federal Tax (imbft) in the function txcalc.

Calculate supplement to the basic personal tax credit

The supplement to the basic personal tax credit announced in the 1998 federal budget is calculated by reducing the maximum supplement (BXMS) by a proportion (BXMSRR) of taxable income above the level of the basic exemption (BXM) plus the maximum supplement (BXMS). The supplement is added to the basic personal tax credit (imbtc). Persons who claim the married amount or equivalent-to-spouse amount get an additional supplement. This program was cancelled in the 1999 federal budget.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----|---------------------------------|
| BXM | Basic personal exemption/amount |
|-----|---------------------------------|

| | |
|--------|--|
| BXMS | Basic personal exemption supplement |
| BXMSPI | Basic personal exemption supplement phase in |
| BXMSRR | Basic personal exemption supplement reduction rate |
| EMXM | Married equivalent exemption/amount |
| EMXMT | Married equivalent exemption/amount turndown level |
| FNTCR | Federal non-refundable tax credit rate |
| MXM | Married exemption/amount |
| MXMT | Married exemption/amount turndown level |
| YCXM1 | Dependent child amount (1st child) |
| YCXM2 | Dependent child amount (2nd child) |
| YCXM3 | Dependent child amount (3rd ,etc.) |
| YCXMT | Dependent child exemption/amount turndown level |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imbtcs | Basic personal tax credit supplement |
| imcchc | Child's non-refundable credit |
| imcemc | Child's equivalent to married credit |
| imchclm | Number of dependent children claimed |
| imctxcs | Dependent children tax credits |
| imdepni | Dependant's net income |
| immartxc | Married tax credit claimed |

txinet Compute net income

SUMMARY

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures which are discussed in order in terms of the description of the tax measure and its SPSM implementation.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Calculate Taxable Dividends
- Calculate Taxable Capital Gains
- Calculate Total Income
- CPP/QPP Contributions Tax Credit

- Unemployment Insurance Contributions Tax Credit
- Tuition Fees Tax Credit
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

Program Description

Other Allowable Employment Expenses

Certain special employment expenses not claimable elsewhere are allowed.

According to the 1984 definition, these expenses include:

- employee's expenses for travel, office and wages to assistants,
- commission sales employees may claim certain expenses paid to earn their income,
- transport employees may deduct the cost of meals and lodging while away from home, and
- power saw operators may claim expenses incurred in operating the power saw.

This is a special deduction from employment income and is not available to most employees.

SPSM Implementation

The value for Other Allowable Employment Expenses (idalexp) already exists on the database. This value is derived from actual taxation statistics. For more details, please see the [Database Creation Guide](#). This value is multiplied by the parameter ALEXPP (Proportion of Other Allowable Expenses to Use as a Deduction) to obtain imalexp, the modeled amount for Other Allowable Expenses.

Calculate Taxable Capital Gains

Capital Gains arise when an individual sells a property for more than it originally cost. If a property is sold for less than it cost, a capital loss may be claimable.

Only a portion of Capital Gains received are considered taxable. Similarly only a portion of capital losses may be claimed as a loss. The value of idicapg represents the actual amount of the Capital Gain or Loss Allowed. Losses, in 1984, were limited to \$2,000. This represents the lower limit of the variable idicapg. Modeled Taxable Capital Gains or Losses imicapgt are calculated by multiplying idicapg by the Capital Gains Inclusion Rate (CAPGIR).

Calculate Taxable Dividends

To avoid double taxation of dividends earned in Canadian business, the dividends from taxable Canadian corporations are treated differently from other sources of income. Before taxation, these dividends are "grossed-up" or increased to an amount which approximates the underlying corporate tax already paid on these earnings. A Dividend Tax Credit is paid based on the grossed-up amount and approximated the corporate taxes already paid.

The gross-up tax credit system ensures that income earned by Canadian corporations and then distributed in the form of dividends bears the same amount of total tax as if the income were earned directly by the shareholders.

SPSM Implementation

Total Dividends Received is represented on the database by the variable `idivid`. The taxable amount (`imidivt`) which is added to total income is calculated by multiplying `idivid` by the Federal Dividend Gross-up Rate (FDGUR).

Calculation of Total Income

At this point, the SPSM is able to calculate a first approximation of total income for tax purposes. This is not a final value since Family Allowances cannot be allocated to the mother or father until the Net Income of both is known. This temporary value of Total Income (`itot`) is the sum of:

| | |
|------------------------|--|
| <code>idiemp:</code> | Earnings From Employment |
| <code>idisenf:</code> | Self-employment Earnings (Non-farm), optionally scaled by the parameter <code>FACTISENF</code> |
| <code>idisefm:</code> | Self-employment Earnings (Farm) |
| <code>idiint:</code> | Interest Income |
| <code>idioinv:</code> | Other Investment Income |
| <code>idicqp:</code> | CPP/QPP Benefits Received |
| <code>iditogv:</code> | Other Taxable Government Income |
| <code>idipens:</code> | Pension Income |
| <code>iditoth:</code> | Other Taxable Income |
| <code>imiuib:</code> | Modeled Unemployment Insurance Benefits Received |
| <code>imiotg:</code> | Modeled New Taxable Demogrants |
| <code>imioas:</code> | Modeled OAS Benefits |
| <code>imidivt:</code> | Modeled Taxable Amount of Dividends |
| <code>imicapgt:</code> | Modeled Taxable Capital Gains and Losses |

Calculate CPP/QPP Contribution Tax Credit

All Canadians aged 18 to 64 and in the labour force are covered by either the Canada Pension Plan (CPP) or the Quebec Pension Plan (QPP). The pension plans provide retirement benefits as well as survivor benefits for a widow or dependant when the contributor dies prematurely, a death benefit and disability benefits. The plans are publicly funded, based on contributions from all employed persons aged 18 to 70 with pensionable earnings.

Contributions to the Canada and Quebec Pension Plans are based on employment income and are usually made through payroll deductions. Self-employed persons make their contribution through the tax system, the amount of the contribution is added to federal taxes payable.

The amount contributed is not subject to taxation and is therefore either deducted from total income or treated as a tax credit.

In most cases, an employee and his or her employer will contribute the same amount to the employee's pension plan. Self-employed persons contribute a twice the rate of employees.

Although employees have their CPP/QPP contribution deducted from their paycheck, refunds for overpayment are made through the personal income tax system.

SPSM Implementation

CPP/QPP Contributions are calculated separately on employment and self-employment earnings. Employment earnings subject to contribution are calculated by subtracting the amount of exemptable earnings (CPPXM) from Earnings from Employment (*idiemp*). This amount cannot exceed the Maximum Earnings Subject to Contribution (YMPE minus CPPXM). Earnings Subject to Contribution are then multiplied by the CPP/QPP contribution rate (WSCF) to derive the amount of the contribution (*wscon*).

Contributions from self-employment earnings (*secon*) is a proportion (SECF) of Earnings from Employment (*idiemp*) plus Earnings from Self-employment (*idisenf* + *idisefm*) that are in excess of the Annual Exemption Level (CPPXM) and less than the year's Maximum Pensionable Earnings Level, less a multiple (WSCM) of contributions made on Earnings from Employment (*wscon*). WSCM is the ratio of the contribution rate on earnings from self-employment to the rate on earnings from employment.

The total CPP/QPP Contribution is the sum of the Contribution Payable on Earnings from Employment (*wscon*) plus the Contribution Payable on Earnings from Self-employment (*secon*).

There is no information in the database concerning the actual amount deducted through payroll deductions; therefore, refunds for overpayment cannot be calculated.

The CPP/QPP Contribution tax credit (*imcppctc*) is calculated as a proportion (FNTCR) of the total contributions (*imcqppc*). The tax credit is applied in the function *txcalc*.

When CPPSEDEDFLG is turned on, a fraction (CPPSEDFRC) of a person's contributions to

the CPP/QPP in regards to their self employment earnings are treated as an exemption (imcppse) and is added to imdedft. The rest, along with the contributions on wages and salaries, can still be claimed as a tax credit (imcppct).

Unemployment Insurance Contributions

Unemployment Insurance is intended to provide short-term financial support to the unemployed. It also provides benefits for those suffering from extended sickness, for women leaving the labour force temporarily because of pregnancy and childbirth, and supplementary benefits to unemployed fishermen and to persons undertaking manpower training courses. The program is given its mandate by the Unemployment Insurance Act (1971). The act covers nearly all members of the labour force except self-employed persons and those who earn less than the minimum insurable earnings. The program is funded by employee and employer contributions as well as additional revenue from the consolidated revenue fund.

Contributions are calculated as a proportion of weekly earnings. Only earnings above the minimum insurable earnings and less than the maximum insurable earnings are subject to contribution.

Unemployment Insurance premiums are deducted from the employee's paycheck by the employer. Reimbursements for overpayment are made through the tax system. The amount contributed is not subject to tax. Before 1988, UI contributions were deducted from total income. The June 1987 White Paper on Tax Reform proposed the conversion of this deduction into a non-refundable tax credit.

Two major Employment Insurance Reforms were added, the difference in contributions, and the benefits repayable.

SPSM Implementation

The database contains no detail on an individual's weekly distribution of earnings throughout the year. Weekly earnings are estimated by dividing the annual Earnings from Employment (idiemp) by the Number of Weeks Worked (idlyww). This assumes that the earnings were evenly distributed throughout the year. It also assumes that the earner worked at least 20 hours during each week.

If average weekly earnings are less than $UIMINPCT * UIERNMAX$, no UI contributions are made. Otherwise, the annual UI Contribution (imuic) are calculated as a proportion (UIPF) of average weekly earnings not exceeding the Maximum Weekly Earnings Subject to Contribution (UIERNMAX), multiplied by the number of weeks worked.

The UI Contribution Tax Credit (imuictc) is calculated as a proportion (FNTCR) of the contributions. This tax credit is later applied to reduce Basic Federal Tax in the function txcalc.

When Employment Insurance is activated (UIEIOPT = 2), then the EI contributions (imuic) are calculated using the UI contribution rate on earnings (UIPF) with no weekly maximums and no exemptions for low income. The EI contribution refund (imuicrf) is then calculated

and subtracted from the contributions.

The method of calculating UI/EI benefit recovery (imuiobr) is also changed when UIEIOPT is activated. When UIEIREPOPT is set to 1, it now depends on the amount of previous weeks of EI received. If employment insurance benefits (imiuib) have been received and net income is in excess of: (a) UIBRA for persons with previous EI receipt, or (b) UIBRANR for persons with little previous benefits or for persons not on regular EI claims; UIEIRPR is applied to the lower of (a) total EI benefits and (b) the excess net income up to a maximum percent of their total benefits (UIEIBRP), to calculate the repayment.

When UIEIREPOPT is set to 2, sickness, maternity, and parental benefits are exempt from benefit repayment. Persons who claim EI for the first time are also exempt from benefit repayments. For the rest, the repayment is equal to the UIEIRPR times the minimum of net income in excess of UIBRANR and EI benefits.

See UIEIRPR, UIBRANR, UIEIBRP, UIBRA, and UIEINRT for more details.

Tuition Fees

Tuition fees paid to an educational institution may be claimed as a tax credit by the student or may be transferred to a spouse or supporting parent.

SPSM Implementation

A value for Tuition Deduction Allowed in the base year (idtuitn) exists on the database. This value is imputed from income tax records (see the [*Database Creation Guide*](#)). To calculate the Tuition Tax Credit, idtuitn, is multiplied by the Federal Non-Refundable Tax Credit Rate FNTCR and the result (imtutxc) is later applied as a tax credit in the function txcalc.

Assign Taxable Family Allowance

For tax purposes, Family Allowances are attributed to the person who claims a personal exemption (or post-reform, a tax credit) for the child. The model assumes that the exemptions are allocated to the spouse with the higher net income (iminet, excluding FA) if present. This is the spouse who would benefit most from claiming the children and, therefore, this is the one who also must claim Taxable Family Allowances.

Calculate Net Income

Net Income (iminet) is calculated as Total Income (imitot) minus All Deductions from Total Income (imdedft). imdedft is the sum of:

| | |
|----------|--|
| idrpp: | Registered Pension Plan Contributions |
| idrrsp: | Registered Retirement Savings Plan Contributions |
| iddues: | Union and Professional Dues |
| imiloss: | Allowable Business Investment Loss |

idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions
imuic: optionally, UI Contributions
idtuin: optionally, Tuition Fees
imcce: optionally, Child Care Expense Deduction Allowed (calculated separately in function txcea)

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALEXPP | Proportion of other allowable employment expenses to use as deduction |
| CAPGIR | Capital gains inclusion rate |
| CPP60T64 | CPP/QPP Contributions Take up (60 - 64) by earnings with CPP income |
| CPPGT64 | CPP/QPP Contributions Take up (over 64) by earnings with CPP income |
| CPPLT60 | CPP/QPP Contributions Take up (under 60) by earnings with CPP income |
| CPPSEDEDFLG | CPP/QPP contribution deduction for self-employed earnings flag |
| CPPSEDFRC | CPP/QPP contribution deduction fraction for self-employed earnings |
| CPPXM | CPP/QPP exemptible earnings |
| FACTISENF | Scale-up factor for non-farm self-employment income |
| FARR | Family allowance repayment rate |
| FATBPI | Family allowance take-back phase in |
| FATD | Family allowance turndown income |
| FDGUR | Federal dividend gross-up rate |
| FNTCR | Federal non-refundable tax credit rate |
| NETOASFLG | Net the clawback from Old Age Security |
| OASRR | OAS reduction rate |
| OASTBPI | OAS take-back phase in |
| OASTD | OAS turndown income |
| REPNETFLAG | Social program repayments reduce net income flag |
| SECF | CPP/QPP contribution rate on self-employment earnings |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |
| UIBRP | UI benefit recovery portion (UI only) |

| | |
|------------|--|
| UIEIBRP | Maximum clawback under EI reform [Past Wks ben][Rate] (EI only) |
| UIEINRT | UI EI Non repeater level for higher clawback turndown (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIREF | EI contribution refund cut-in (EI only) |
| UIEIREFTK | EI contribution refund take up |
| UIEIREPOPT | EI Benefit repayment option (1=repeaters have higher rate,2=one rate)(EI only) |
| UIEIRPR | UI EI benefit clawback rate (EI only) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIMINPCT | Exemption limit (percent of maximum insurable earnings) (UI only) |
| UIPF | UI contribution rate on earnings (UI and EI) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| WSCF | CPP/QPP contribution rate on employment earnings |
| WSCM | Ratio of self-employed to employed contribution fraction |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|----------|--|
| hdprov | Province |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcarry | Carrying charges (221) |
| iddalimo | Alimony paid (220) |
| iddues | Union and professional dues (212) |
| idexplr | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idlyww | Weeks worked |
| idmovexp | Imputed moving expenses (219) |
| idothded | Other deductions from total income (232) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idtuitn | Tuition fees (320) |
| iduirank | Predicted ranked likelihood of getting UI |
| imiotg | Other taxable demogrants |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| nfineld | Eldest person in nuclear family [pointer] |
| nfnspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |
| ubcalpd | Benefits paid in calendar year |

| | |
|---------|---------------------------|
| ubeiwbp | Weeks of past EI benefits |
| ucbtyp | Claim type |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|----------|---|
| imalexp | Allowable employment expenses |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedft | Deductions from total income |
| imfar | Family allowance recovery |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imioas | OAS benefits |
| imitot | Total income |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imtfa | Taxable family allowances |
| imtutxc | Tuition tax credit |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |
| imuicrf | UI EI contribution refund |
| imuictc | UIC contributions tax credit |

txitax Compute taxable income and individual credits

SUMMARY

The process of computing taxable income is divided into two separate routines. Deductions and tax credits which are not dependent upon information from other members of the family (e.g., Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

The algorithms contained in txitax are:

- Basic Personal Tax Credit
- Age Tax Credit
- Pension Income Deduction
- Medical Expense Tax Credit, Charitable Donations Tax Credit
- Disability Tax Credit
- Education Tax Credit
- Capital Gains Deduction

- UI Benefit Repayment Payable
- Family Allowance and OAS Repayment Payable (optional)
- Employee Home Relocation Loan Deduction
- Stock Option Deduction

Basic Personal Tax Credit

The non-refundable Basic Personal Tax Credit is calculated by assigning the value of the parameter BXM (Basic Personal Tax Credit) to the variable imbtc (Modeled Basic Personal Tax Credit) which is applied to reduce Basic Federal Tax in the function txcalc.

Age Tax Credit

All Canadians who were 65 years of age or older on December 31st of the taxation year would be eligible to claim the Age Tax Credit.

When the Age Tax Credit is calculated, imatxc (Modeled Age Tax Credit) receives the value assigned to the parameter AXM. The function txcalc performs any applicable transfer of the tax credit from the spouse and applies the tax credit to reduce Basic Federal Tax.

Pension Income Tax Credit

Certain pension income from a pension plan or upon the death of a spouse qualifies for a Pension Income Tax Credit. The deduction amounted to the lesser of the maximum deduction (fixed at \$1,000) and eligible income. Any amount of this deduction not required to reduce taxable income to zero is transferable to the spouse.

The June, 1987 White Paper on Tax Reform proposed the conversion of this deduction into a tax credit amounting to a proportion of eligible income up to a maximum of \$170. This tax credit would also be transferable.

SPSM Implementation

The Modeled Pension Income Tax Credit (impentxc) is assigned the minimum of:

- a) qualified pension income (idipens) and
- b) the Maximum Allowable Tax Credit (YPNDL),
times the Tax Credit Rate (FNTCR).

Any portion of the Pension Income Tax Credit not required to reduce a filer's Basic Federal Tax to zero is transferable to the spouse. The transfer is calculated in the function txcalc.

Medical Expense Tax Credit

The filer is allowed a non-refundable tax credit for certain medical expenses paid on behalf of the filer, spouse or dependants. All medical expenses claimed require supporting proof to be allowed as a tax credit and only medical expenses in excess of 3% of net income are claimable.

SPSM Implementation

The value of Medical Expenses Allowed (immeda) is calculated as the value of the gross medical expenses from the database (idmedgro) less either MEDANF percent of net income or MEDALL, whichever is less. The Medical Expense Tax Credit (immedatc) is calculated as a proportion (FNTCR) of the value of Medical Expenses Allowed (immeda). The Medical Expense Tax Credit is applied to reduce Basic Federal Tax in the function txcalc.

Although medical expenses paid on behalf of dependants are claimable by either spouse, no transfers between spouses are made for this tax credit.

Charitable Donations Tax Credit

The filer is allowed a non-refundable tax credit on behalf of charitable donations and gifts to Canada or a province. SPSM Implementation

The database contains a value for gross charitable donations (idcharit). The allowable charitable donations (imchara) are calculated as the lesser of idcharit and CHATNF percent of net income. The value of gifts or donations to Canada, a province or a cultural institution are then added to imchara.

A two-tier, non-refundable Charitable Donation Tax Credit (imchartc) is calculated. Allowable Donations (imchara) up to a set amount (CHATL1) are converted at the first tax credit rate (CHATR1) and the remainder is converted at the second rate (CHATR2).

The Charitable Donations Tax Credit is a component of the total non-refundable tax credits used to calculate Basic Federal Tax in the function txcalc.

Disability Tax Credit

Disabled persons whose impairment has markedly restricted or is expected to restrict their activities of daily living for a continuous period of at least 12 months are eligible to claim a special Disability Tax Credit. SPSM Implementation

The Disability Tax Credit (imdisatc) is assigned the value of the parameter MAXDX (Maximum Disability Tax Credit) for filers with reported disability amounts for self (iddisslf) or other dependents (iddisoht). Any portion of the tax credit not required to reduce Basic Federal Tax to zero may be transferred to the spouse or a supporting parent in the function txcalc.

Education Tax Credit

The Education Tax Credit represents the amount that students with full-time attendance at a designated post-secondary institution may claim. The number of eligible months is multiplied by a maximum allowable amount per month. The filer may transfer to a spouse, parent or grandparent the part of the education tax credit that is not needed to reduce the federal income tax to zero.

SPSM Implementation

The Education Tax Credit (*imedtxc*) is calculated as the number of eligible months of education amount (*ideducm*) multiplied by the Education Tax Credit per Month (*EDXPM*). The function *txcalc* may transfer unused amounts of the tax credit to a parent or spouse.

Capital Gains Deduction

Since 1985, a deduction has been allowed on behalf of capital gains income. The Capital Gains Deduction is being phased in with an increasing annual deduction limit amounting to \$10,000 in 1985 and \$25,000 in 1986. The amount an individual may claim during his or her lifetime is limited to a fixed amount. These measures were introduced in the May, 1985 Budget Papers and subsequently modified in the June, 1987 White Paper on Tax Reform.

SPSM Implementation

The Capital Gains Deduction is calculated as the minimum of:

- a) the Annual Capital Gains Deduction Limit (The Annual Limit based on gross Capital Gains, *CAPGAL*, times the Capital Gains Inclusion Rate, *CAPGIR*, and
- b) Taxable Capital Gains (*imicapgt*) minus:
 - Allowable Business Investment Loss (*idcloss*)
 - Net Capital Losses of Other Years (*imiloss*)

The resultant deduction is added to Total Deductions from Net Income (*imdedfn*).

The database contains no information on the filer's previous Capital Gains Deduction and therefore, the lifetime limit cannot be applied.

Unemployment Insurance Benefit Repayment Payable

If an individual has received Unemployment Insurance Benefits and his or her Net Income exceeds a fixed amount (\$38,610 in 1986), a portion of the benefits must be repaid. This repayment is added to Federal Taxes Payable. The amount repaid becomes a deduction from Net Income.

SPSM Implementation

The amount repayable is a proportion (*UIBRP*) of the UI Benefits received (*imiuib*) or a proportion of Net Income exceeding the Repayment Level (*UIBRA*) whichever is less. The Repayment Amount (*imuibr*) is a proportion (*UIBRP*) of the lesser of:

- (a) *imiuib*: Modeled UI Benefits
- (b) *iminet* *UIBRA*: the amount by which Net Income exceeds the Repayment Level

The value of *imuibr* is added into the variable *imrepay* which accumulates modeled repayment amounts. *imrepay* is added to Total Deductions from Net Income (*imdedfn*).

Family Allowance and OAS Repayments

The SPSM includes optional algorithms which allow the analysis of certain modifications to Family Allowances and the Old Age Supplement. These algorithms are presented with the SPSD/M for illustrating a glass box application. Users may consult the *Programmer's Guide* for further details.

The Family Allowance Repayment is calculated if the parameter FARR (Family Allowance Repayment Rate) is non-zero. The repayment is calculated as the lesser of:

- a) a proportion (FARR) of family net income (the net income of the head plus the net income of the spouse) exceeding the Family Allowance Reduction Level (FATD), and
- b) Taxable Family Allowances Received (imtfa).

The OAS repayment is based on the filer's own Net Income and is computed as the lesser of:

- a) OAS Received (imioas), and
- b) a proportion (OASRR) of Net Income (iminet) exceeding the OAS Repayment Reduction Level (OASTD).

Neither the FA nor the OAS repayments are stored in separate variables. They are accumulated into the variable imrepay which is applied as a deduction from Net Income in the function txitax and is added to Taxes Payable in the function memo1.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AXM | Age amount |
| AXPI | Age amount phase in rate for 1994 and beyond |
| AXRR | Age amount credit reduction rate |
| AXTD | Age amount net income turndown |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CHATL1 | Charitable donations amount level 1 |
| CHATNF | Charitable donations maximum net income fraction |
| CHATR1 | Charitable donations tax credit rate 1 |
| CHATR2 | Charitable donations tax credit rate 2 |
| EDXPM | Education amount per month |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MEDALL | Medical allowance maximum lower limit |
| MEDANF | Medical allowance lower limit net income fraction |
| REPNETFLAG | Social program repayments reduce net income flag |
| YPNDL | Maximum pension income deduction/amount |
| INPUT VARIABLES: | |
| hnnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idcapgex | Capital gains exemptions (254) |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idclose | Allowable other years capital loss (253) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idemplo | Employee home relocation loan dedn (248) |
| idforavg | Forward averaging amount withdrawal (237) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idipens | Pension income (115) |
| idmedgro | Medical expenses, gross (330) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idstkded | Stock option deduction (249) |
| imicapgt | Capital gains (taxable) |
| iminet | Net income |
| imninc | No income flag |
| imrepay | Social Benefits Repayments |

OUTPUT VARIABLES:

| | |
|----------|---|
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imcapgex | Modelled capital gains deduction (254) |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchartc | Charitable donations tax credit |
| imdedfn | All deductions from net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |

txman Compute provincial taxes for Manitoba

SUMMARY

When MTXFLG is turned off, Manitoba Basic Provincial Tax (imbpt) is calculated as a proportion (MPTF) of Basic Federal Tax (imbft).

The Manitoba Surtax is calculated based on a series of family credits. The surtax is added to Basic Provincial Tax to derive Manitoba Tax (imtxp).

When the tax on taxable income flag is turned on (MTXFLG), a provincial tax table (MPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax).

Non-refundable tax credits are calculated using the non-refundable tax credit rate (MPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (MBXM) |
| impatxc | Age amount tax credit | (MAXM, MAXRR, MAXTD, MAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (MMXM, MMXMT, MEMXM, MEMXMT) |
| impcgtc | Caregiver tax credit | (MCGTC, MCGTCFLG, MCGTCTC, MCGTCTD, MCGTCTK) |
| impchrctc | Charitable donations | (MCHATL1, MCHATR1, MCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (MMAXDX) |
| impdtxc | Dividend tax credit | (MDTCR) |
| impedtxc | Education tax credit | (MEDXPM, MMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (MYPNDL) |
| imptutxc | Tuition Tax credit | (MMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using MAMTOPT.

The refundable learning tax credit (immanltc) is equal to MANLTCF times (the tuition amount (idtuin) plus the education amount (imeducm * EDXPM) plus the education amounts transferred from a spouse or kids (imedrv) minus the education amounts which have been transferred to a spouse or parents (imedtrf)). It is included in the refundable tax credits (imptc). Beginning in 1998, the credit is limited to MANLTMAX for each student.

The Manitoba labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Manitoba provincial credit is modelled as MLVCRT times the gross amount up to MLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Manitoba homeowner's school tax assistance was introduced in 1993 and is part of the total property tax credit (impptxtc). MSCHFLAG turns it on or off. In order to qualify for assistance, Manitoba residents must be homeowners and be older than MSCHAGE. The basic credit is MSCHBXM which is reduced by income over the turndown MSCHTD by a rate MSCHRR. The value of the benefit is also rounded (see MSCHRND). The benefit may not exceed school taxes paid (idmschpd) less the minimum threshold of MSCHMNTH. The school tax assistance is added to the basic property tax credit and applied against occupancy

costs in order to derive the total property tax credit (impptxtc).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| EDXPM | Education amount per month |
| MAMTOPT | Man. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| MAMTPCTF | Man. amt rate as pct of additional fed tax due to minimum tax |
| MAMTPCTM | Man. amt rate as pct of federal minimum tax amount |
| MAMTTX | Man. amt rate as tax on adjusted income |
| MANLTCF | Manitoba learning tax credit factor |
| MANLTMAX | Manitoba learning tax credit maximum amount per student |
| MAXM | Man. Age Amount |
| MAXPI | Man. Age Amount phase in rate for 1994 and beyond |
| MAXRR | Man. Age Amount credit reduction rate |
| MAXTD | Man. Age Amount net income turndown |
| MBXM | Man. Basic Personal Exemption/amount |
| MCAXM | Manitoba cost-of-living age credit |
| MCBXM | Manitoba cost-of-living basic credit |
| MCDISEX | Manitoba cost-of-living disability credit |
| MCEMXM | Manitoba cost-of-living married equivalent credit |
| MCFINCR | Manitoba cost-of-living family income reduction rate |
| MCGTC | Man. Caregiver Tax Credit |
| MCGTCFLG | Man. Caregiver Tax Credit activation flag |
| MCGTCTC | Man. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| MCGTCTD | Man. Caregiver Tax Credit Turn Down Income |
| MCGTCTK | Man. Caregiver tax credit take-up rate by income level [employment income,rate] |
| MCHATL1 | Man. Charitable Donations amount level 1 |
| MCHATR1 | Man. Charitable Donations tax credit rate 1 |
| MCHATR2 | Man. Charitable Donations tax credit rate 2 |
| MCMXM | Manitoba cost-of-living married credit |
| MCODISEX | Manitoba cost-of-living old disabled dependant credit |
| MCSAXM | Manitoba cost-of-living spouse age credit |
| MCSDISEX | Manitoba cost-of-living spouse disabled credit |
| MCYCXM | Manitoba cost-of-living young dependants credit |
| MDTCR | Man. dividend tax credit rate |
| MEDXPM | Man. Education Amount per month |
| MEMXM | Man. equivalent to married amount |
| MEMXMT | Man. equivalent to married turndown level |
| MHMASOPT | Manitoba homeowner assistance option (1=Model 2=database) |
| MLVCMAX | Maximum Man. labour-sponsored funds tax credit allowed |
| MLVCRT | Percent of Man. labour-sponsored funds cost allowed as credit |
| MMAXDX | Man. Maximum Disability deduction/amount |
| MMAXET | Man. maximum on transfer of education and tuition amount |

| | |
|----------|---|
| MMXM | Man. married amount |
| MMXMT | Man. married amount turndown level |
| MNITR | Manitoba net income tax rate |
| MPAXM | Manitoba property tax credit senior citizen credit |
| MPBXM | Manitoba property tax credit basic credit |
| MPFINCRR | Manitoba property tax credit family income reduction rate |
| MPMINC | Manitoba property tax credit minimum credit |
| MPMNTH | Manitoba property tax minimum threshold |
| MPNTR | Man. provincial non-refundable tax credit rate |
| MPRIR | Manitoba property tax credit rental inclusion rate |
| MPTC | Manitoba political contribution table [total donations,donation allowed] |
| MPTCBEN | Maximum Manitoba political tax credit allowed |
| MPTF | Manitoba provincial tax fraction |
| MPTX | Man. tax table [taxable income,basic provincial tax] |
| MRAXM | Manitoba tax reduction age credit |
| MRBXM | Manitoba tax reduction basic credit |
| MRDISEX | Manitoba tax reduction disability credit |
| MREMXM | Manitoba tax reduction married equivalent credit |
| MRMXM | Manitoba tax reduction married credit |
| MRODISEX | Manitoba tax reduction old disabled dependant credit |
| MRSAXM | Manitoba tax reduction spouse age credit |
| MRYCXM | Manitoba tax reduction young dependants credit |
| MSAXM | Manitoba surtax age credit |
| MSBXM | Manitoba surtax basic credit |
| MSCHAGE | Manitoba school tax minimum age |
| MSCHBXM | Manitoba school tax basic amount |
| MSCHFLAG | Manitoba school tax assistance activation flag |
| MSCHMNTH | Manitoba school tax minimum threshold |
| MSCHRND | Manitoba school tax assistance rounding unit |
| MSCHRR | Manitoba school tax reduction rate |
| MSCHTD | Manitoba school tax turndown |
| MSDISEX | Manitoba surtax disability credit |
| MSEMXM | Manitoba surtax married equivalent credit |
| MSMXM | Manitoba surtax married credit |
| MSODISEX | Manitoba surtax old disabled dependant credit |
| MSSAXM | Manitoba surtax spouse age credit |
| MSYCXM | Manitoba surtax young dependants credit |
| MTCINCFL | Manitoba tax credit income definition flag |
| MTRNIO | Manitoba tax reduction net income offset |
| MTXFLG | Man. tax on taxable income activation flag |
| MYPNDL | Man. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdtenur | Tenure |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |

| | |
|----------|---|
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idmschpd | Manitoba school taxes paid |
| idothpe | Other dependant exemptions (305) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imatxc | Age tax credit |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imstxcrt | Tax credits transferred from spouse |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------|
| imbpt | Basic provincial tax |
| immanltc | Manitoba learning tax credit |
| immhmas | Manitoba Homeowners Assistance |

| | |
|-----------|---|
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impptxtc | Provincial Property tax tax credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnb Compute provincial taxes for New Brunswick

SUMMARY

When BTXFLG is turned off, the basic Provincial Tax (imbpt) for New Brunswick is simply a proportion (BPTF) of Basic Federal Tax (imbft).

The 2000 budget announced that New Brunswick would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (BTXFLG), a provincial tax table (BPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (BPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|---------|-----------------------|----------------------|
| impbtc | Basic amount | (BBXM) |
| impatxc | Age amount tax credit | (BAXM, BAXRR, BAXTD, |

| | | |
|-----------|--|--|
| | | BAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (BMXM, BMXMT, BEMXM, BEMXMT) |
| impcgtc | Caregiver tax credit | (BCGTC, BCGTCFLG, BCGTCTC, BCGTCTD, BCGTCTK) |
| impchrctc | Charitable donations | (BCHATL1, BCHATR1, BCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (BMAXDX) |
| impdtxc | Dividend tax credit | (BDTCR) |
| impdtxc | Education tax credit | (BEDXPM, BMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (BYPNDL) |
| imptutxc | Tuition Tax credit | (BMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using BAMTOPT.

The New Brunswick labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The New Brunswick provincial credit is modeled as BLVCRT times the gross amount up to BLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Child Tax Benefit

When NBCTBFLG is assigned a value of 1, the New Brunswick Child Tax Benefit calculation is activated. imnbcben is the total benefits received under the New Brunswick Child Benefits program announced in the 1997 New Brunswick Budget and commencing in April 1997. A first component is the base amount, imnbcbb, which is calculated as the base amount per child, NBCBBAS, times the number of children. The level of benefit is reduced, based on family income, at a rate NBCBRRS for families with only one child, and at rate NBCBRR for the others.

If the family gross employment income is higher than a threshold, NBCBECI, then the maximum supplement is NBCBEIS. The supplement is reduced at a rate NBCBESR for each \$ of employment income exceeding the threshold FCBECI. If the family income is higher than NBCBETD then the supplement is reduce at a rate NBCBERR. The final value of the work income supplement is stored in imnbwis.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BAMTOPT | N.B. alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| BAMTPCTF | N.B. amt rate as pct of additional fed tax due to minimum tax |
| BAMTPCTM | N.B. amt rate as pct of federal minimum tax amount |
| BAMTTX | N.B. amt rate as tax on adjusted income |
| BAXM | N.B. Age Amount |
| BAXPI | N.B. Age Amount phase in rate for 1994 and beyond |
| BAXRR | N.B. Age Amount credit reduction rate |
| BAXTD | N.B. Age Amount net income turndown |
| BBXM | N.B. Basic Personal Exemption/amount |
| BCGTC | N.B. Caregiver Tax Credit |
| BCGTCFLG | N.B. Caregiver Tax Credit activation flag |
| BCGTCTC | N.B. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| BCGTCTD | N.B. Caregiver Tax Credit Turn Down Income |
| BCGTCTK | N.B. Caregiver tax credit take-up rate by income level [employment income,rate] |
| BCHATL1 | N.B. Charitable Donations amount level 1 |
| BCHATR1 | N.B. Charitable Donations tax credit rate 1 |
| BCHATR2 | N.B. Charitable Donations tax credit rate 2 |
| BDCR | N.B. dividend tax credit rate |
| BEDXPM | N.B. Education Amount per month |
| BEMXM | N.B. equivalent to married amount |
| BEMXMT | N.B. equivalent to married turndown level |
| BLVCMAX | Maximum N.B. labour-sponsored funds tax credit allowed |
| BLVCRT | Percent of N.B. labour-sponsored funds cost allowed as credit |
| BMAXDX | N.B. Maximum Disability deduction/amount |
| BMAXET | N.B. maximum on transfer of education and tuition amount |
| BMXM | N.B. married amount |
| BMXMT | N.B. married amount turndown level |
| BPNTCR | N.B. provincial non-refundable tax credit rate |
| BPTC | New Brunsw. political contribution table [total donations,donation allowed] |
| BPTCBEN | Maximum New Brunswick political tax credit allowed |
| BPTF | New Brunswick provincial tax fraction |
| BPTX | N.B. tax table [taxable income,basic provincial tax] |
| BSCI | New Brunswick provincial tax above which surtax applies |
| BSF | New Brunswick provincial surtax rate |
| BTRBAS | Base N.B. low income tax reduction |
| BTRRR | N.B. low income tax reduction Reduction Rate |
| BTRSP | N.B. low income tax reduction for spouse or equivalent-to-spouse |
| BTRTD | N.B. low income tax reduction Turndown |
| BTXFLG | N.B. tax on taxable income activation flag |
| BYPNDL | N.B. Pension Income Deduction Amount |

| | |
|----------|---|
| CTCINC | CTC family income scaling factor |
| NBCBBAS | NB Basic child benefit (per child) |
| NBCBECI | NB Child benefits earning supplement cut-in level |
| NBCBEIS | NB Child benefits earned income supplement |
| NBCBERR | NB Child benefits earning supplement reduction rate |
| NBCBESR | NB Child benefits earned income supplement rate |
| NBCBETD | NB Child benefits earning supplement turndown level |
| NBCBPI | NB Child benefits phase-in rate |
| NBCBRR | NB Multi-children family income reduction rate |
| NBCBRRS | NB Single-child family income reduction rate |
| NBCBTD | NB child benefits family income turndown |
| NBCTBFLG | NB child benefit activation flag |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtsg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |

| | |
|-----------|--|
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnbcbb | NB child tax Benefits base amount |
| imnbcben | Total NB child tax Benefits |
| imnbwis | NB child tax Benefits WIS |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transferred |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnfld Compute provincial taxes for Newfoundland

SUMMARY

When NTXFLG is turned off, Basic Provincial Tax (imbpt) for Newfoundland is simply a

proportion (NPTF) of Basic Federal Tax (imbft).

For Newfoundland, the SPSM calculates provincial surtax (impsur) as NSF percent of provincial taxes (imtxp) above the level NSCI.

The 2000 budget stated that Newfoundland would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (NTXFLG), a provincial tax table (NPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (NPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (NBXM) |
| impatxc | Age amount tax credit | (NAXM, NAXRR, NAXTD, NAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (NMXM, NMXMT, NEMXM, NEMXMT) |
| impcgtc | Caregiver tax credit | (NCGTC, NCGTCFLG, NCGTCTC, NCGTCTD, NCGTCTK) |
| impchrctc | Charitable donations | (NCHATL1, NCHATR1, NCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (NMAXDX) |
| impdtxc | Dividend tax credit | (NDTCR) |
| impedtxc | Education tax credit | (NEDXPM, NMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (NYPNDL) |
| imptutxc | Tuition Tax credit | (NMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using NAMTOPT.

A new refundable sales tax credit was modeled and added to the provincial tax credit (imptc). Similar to the federal credit, it allows for NSTCA dollars for each adult, NSTCC dollars for each child, and it reduced starting at family incomes over NSTCL at a rate of NSTCR.

Newfoundland and Labrador Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget. The Newfoundland and Labrador Child Benefit (imncb) is a tax-free monthly payment to help low-income families with the cost of raising children under age 18. Benefits from this program are combined with the Canada Child Tax Benefit into a single monthly payment. The program was implemented in July 1999.

SPSM Implementation

This benefit is turned by NCBFLG. Under the Newfoundland and Labrador Child Benefit program, you may be entitled to receive a benefit of NCB1 for the first child, NCB2 for the second child, NCB3 for the third child, and NCB4 for each additional child. The benefit is reduced when net family income is greater than NCBTD and is completely phased out when net family income is at least NCBPO. The benefit (imncb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| NAMTOPT | NFLD alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| NAMTPCTF | NFLD amt rate as pct of additional fed tax due to minimum tax |
| NAMTPCTM | NFLD amt rate as pct of federal minimum tax amount |
| NAMTTX | NFLD amt rate as tax on adjusted income |
| NAXM | NFLD Age Amount |
| NAXPI | NFLD Age Amount phase in rate for 1994 and beyond |
| NAXRR | NFLD Age Amount credit reduction rate |
| NAXTD | NFLD Age Amount net income turndown |
| NBXM | NFLD Basic Personal Exemption/amount |
| NCB1 | Nfld. child benefit for first child |
| NCB2 | Nfld. child benefit for second child |
| NCB3 | Nfld. child benefit for third child |
| NCB4 | Nfld. child benefit for 4th and subsequent child |
| NCBFLG | Newfoundland child benefit activation flag |
| NCBPI | Nfld. child benefit program phase in |
| NCBPO | Nfld. child benefit family income phase out |
| NCBTD | Nfld. child benefit family income turndown |
| NCGTC | NFLD Caregiver Tax Credit |
| NCGTCFLG | NFLD Caregiver Tax Credit activation flag |
| NCGTCTC | NFLD Caregiver tax credit take-up rate by age of elderly [age,rate] |
| NCGTCTD | NFLD Caregiver Tax Credit Turn Down Income |
| NCGTCTK | NFLD Caregiver tax credit take-up rate by income level [employment income,rate] |
| NCHATL1 | NFLD Charitable Donations amount level 1 |
| NCHATR1 | NFLD Charitable Donations tax credit rate 1 |
| NCHATR2 | NFLD Charitable Donations tax credit rate 2 |
| NDTCR | NFLD dividend tax credit rate |
| NEDXPM | NFLD Education Amount per month |
| NEMXM | NFLD equivalent to married amount |
| NEMXMT | NFLD equivalent to married turndown level |
| NHEATFLG | Newfoundland home heating fuel rebate activation flag |

| | |
|----------|---|
| NHEATREB | Newfoundland home heating fuel rebate amount |
| NLVCMAX | Maximum NFLD labour-sponsored funds tax credit allowed |
| NLVCRT | Percent of NFLD labour-sponsored funds cost allowed as credit |
| NMAXDX | NFLD Maximum Disability deduction/amount |
| NMAXET | NFLD maximum on transfer of education and tuition amount |
| NMXM | NFLD married amount |
| NMXMT | NFLD married amount turndown level |
| NPNTCR | NFLD provincial non-refundable tax credit rate |
| NPTC | Newfoundland political contribution table [total donations, donation allowed] |
| NPTCBEN | Maximum Newfoundland political tax credit allowed |
| NPTF | Newfoundland provincial tax fraction |
| NPTX | NFLD tax table [taxable income, basic provincial tax] |
| NSCI | Newfoundland provincial tax above which surtax applies |
| NSCI2 | Newfoundland provincial surtax level 2 |
| NSF | Newfoundland provincial surtax rate |
| NSF2 | Newfoundland provincial surtax rate 2 |
| NSTCA | NFLD sales tax credit amount for adults |
| NSTCC | NFLD sales tax credit amount for children |
| NSTCFLAG | NFLD sales tax credit activation flag |
| NSTCL | NFLD sales tax credit reduction level |
| NSTCR | NFLD sales tax credit reduction rate |
| NTXFLG | NFLD tax on taxable income activation flag |
| NYPNDL | NFLD Pension Income Deduction Amount |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfageeld | Age of eldest in census family |
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| fxio | I/O expenditure categories [array] |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |

| | |
|----------|---|
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| imigist | GIS provincial top-up |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imncb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |

impuictc Prov UI/EI contributions tax credit
 imtxp Provincial income tax payable

txns Compute provincial taxes for Nova Scotia

SUMMARY

This function calculates provincial taxes and credits for Nova Scotia. The programs simulated are as follows:

- Basic provincial tax
- Two level surtax
- Family tax reduction
- Phamacare tax and tax credits
- Provincial foreign tax credit
- Provincial political tax credit
- Provincial labour-sponsored venture capital tax credit
- Stock savings plan tax credit
- Home ownership savings plan tax credit
- Direct Assistance

Basic Provincial Tax

When VTXFLG is turned off, the algorithm first calculates basic provincial tax. Basic provincial tax (imbpt) for Nova Scotia is calculated as a proportion (VPTF) of Basic Federal Tax (imbft). Provincial taxes payable (imtxp) are then initialized to the value of basic provincial tax (imbpt).

The 2000 budget announced that Nova Scotia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (VTXFLG), a provincial tax table (VPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (VPNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (VBXM) |
| impatxc | Age amount tax credit | (VAXM, VAXRR, VAXTD, VAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (VMXM, VMXMT, VEMXM, VEMXMT) |
| impcgtc | Caregiver tax credit | (VCGTC, VCGTCFLG, VCGTCTC, VCGTCTD, VCGTCTK) |
| impchrtc | Charitable donations | (VCHATL1, VCHATR1, |

| | | |
|-----------|-----------------------------|------------------|
| | | VCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (VMAXDX) |
| impdtxc | Dividend tax credit | (VDTCR) |
| impedtxc | Education tax credit | (VEDXPM, VMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (VYPNDL) |
| imptutxc | Tuition Tax credit | (VMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using VAMTOPT.

Provincial Surtax

The Nova Scotia surtax (impsur) is calculated as VSF percent of provincial taxes (imtxp) above the level VSCI plus VSF2 percent of provincial taxes above the level VSCI2. This amount is then added to provincial taxes payable (imtxp).

Family Tax Reduction

Program Description

The Nova Scotia tax reduction for low income individuals and families was introduced in 1994. To be eligible for the reduction a filer must be either over age 18, or have a spouse, or be a parent. This a family based tax reduction and only one person of a married couple may claim the reduction. The reduction has prescribed maximum amounts for the claimant, a spouse and children. There is an equivalent to married amount in cases where a claimant has filed for the federal equivalent to married non-refundable tax credit. The total of these amounts is then subject to a family income test.

SPSM Implementation

The calculation closely follows the structure on form T1C (N.S.). Individuals are first tested for eligibility on the basis of age (idage), marital status (idspoflg), and parental status. Parental status is only relevant for young (<19) families and single parents and so is tested using relation to head (idcfrh == 0) and presence of young children (nfnkids).

Persons without a spouse are assigned the basic amount (VTRBAS). Heads of census families with a spouse are assigned the basic and spouse amounts (VTRBAS + VTRSP). Equivalent to married amounts (VTREM) are given to spouseless heads who claim the federal married tax credit (immartxc). Amounts for children are given to the head of the census family. No child amounts are given with respect to children who triggered the equivalent to married amount.

The maximum deduction is then reduced by a fixed proportion (VTRRR) of the net income (iminet) of the head plus spouse (if present) in excess of the income base amount (VTRTD). This calculation is performed for persons without spouses or heads of census families with

spouses. The amounts for families with spouses are then assigned to the spouse with the higher net income. The tax reduction thus calculated is written to the non-refundable provincial tax reduction variable (imptr) and is used to decrease provincial taxes payable (imtxp).

Pharmacare Program

Program Description

Introduced in the 1995 provincial budget, the pharmacare program consists of an annual pharmacare premium payable by all seniors and a refundable tax credit for low income seniors.

SPSM Implementation

The pharmacare premium (VPHPREM) is assigned to the variable impeht for all Nova Scotians age 65 or older. This amount is then used to increase provincial taxes payable (imtxp).

The pharmacare refundable tax credit (impehtc) is calculated for all Nova Scotia seniors in receipt of GIS benefits (imigis). It is calculated as the basic tax credit (VPHTC) less a fixed proportion (VPHRR) of income (imgisinc) above a threshold (VPHTD). The pharmacare refundable tax credit (impehtc) is added to the variable for refundable provincial tax credits (imptc).

Starting in 1996, the tax credit no longer depended on whether or not a person received GIS. Instead, the credit is taxed back depending on family income. When VPHOPT is set to 1, the program depends on GIS receipt, and when it is set to 2 it depends on family income. There are now two turndowns, VPHTD for singles (also used in the original program) and VPHTDC for couples.

Provincial Foreign Tax Credit

The provincial foreign tax credit is imputed from the Greenbook (idprvftc). Only the amount of the foreign tax credit required to reduce provincial tax payable (imtxp) to zero is applied to the variable for non-refundable provincial tax credits (imnptc). Provincial tax payable (imtxp) is then reduced by the amount imnptc.

Political Contribution Tax Credit

Labour Sponsored Venture Capital Tax Credit

The Nova Scotia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Nova Scotia provincial credit is modeled as

VLVCRT times the gross amount up to VLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Direct Assistance

Program Description

Introduced in the 1997 provincial budget, direct assistance gives a benefit to low income Nova Scotians who would not be otherwise eligible for the tax reduction.

Beginning in 2000, direct assistance is only granted to families with children.

SPSM Implementation

Nova Scotia residents 19 and over are eligible for direct assistance if their income is below the cut-off (VDACI for families or VDASI for single individuals). The benefits are VDACB for families and VDASB for single individuals.

Differences between the SPSM estimate and reality will primarily come from two problems. Persons are eligible for Direct Assistance if they were full time students for 4 months or less or if they received Social Assistance for three months or less. In the SPSM model, anyone who is a full-time student in March (idestat==1) or anyone who receives Social Assistance was deemed ineligible for the program. This should lower estimates. But since people have to apply for the program, the take-up is probably not going to be 100% which will increase the SPSM estimate.

Nova Scotia Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget.

SPSM Implementation

The benefit is turned on by the flag VCBFLG, and families whose net income is less than VCBTD are eligible. They receive VCBBAS1 for their first child, VCBBAS2 for their second child, and VCBBAS3 for their third and each additional child. The benefit is completely phased out when the family net income reaches VCBPO. The benefit (imnscb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

CTCINC CTC family income scaling factor
 PYINC Deflator to calculate previous year income
 VAMTOPT N.S. alternative minimum tax option (1=none, 2=% fed, 3=fed
 adj inc, 4=% min amt)
 VAMTPCTF N.S. amt rate as pct of additional fed tax due to minimum
 tax
 VAMTPCTM N.S. amt rate as pct of federal minimum tax amount
 VAMTTX N.S. amt rate as tax on adjusted income
 VAXM N.S. Age Amount
 VAXPI N.S. Age Amount phase in rate for 1994 and beyond
 VAXRR N.S. Age Amount credit reduction rate
 VAXTD N.S. Age Amount net income turndown
 VBXM N.S. Basic Personal Exemption/amount
 VCBBAS1 NS child benefit for first child
 VCBBAS2 NS child benefit for second child
 VCBBAS3 NS child benefit for third or additional child
 VCBFLG NS child benefit activation flag
 VCBPO NS child benefit family income phase out
 VCBTD NS child benefit turndown
 VCGTC N.S. Caregiver Tax Credit
 VCGTCFLG N.S. Caregiver Tax Credit activation flag
 VCGTCTC N.S. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 VCGTCTD N.S. Caregiver Tax Credit Turn Down Income
 VCGTCTK N.S. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 VCHATL1 N.S. Charitable Donations amount level 1
 VCHATR1 N.S. Charitable Donations tax credit rate 1
 VCHATR2 N.S. Charitable Donations tax credit rate 2
 VDACB NS Direct assistance benefit for couples
 VDACI NS Direct assistance maximum income for couples
 VDAFLAG NS Direct assistance benefit flag
 VDAFWC NS Direct assistance benefit for families with children
 flag
 VDASB NS Direct assistance benefit for singles
 VDASI NS Direct assistance maximum income for singles
 VDTCR N.S. dividend tax credit rate
 VEDXPM N.S. Education Amount per month
 VEMXM N.S. equivalent to married amount
 VEMXMT N.S. equivalent to married turndown level
 VLVCMAX Maximum N.S. labour-sponsored funds tax credit allowed
 VLVCRT Percent of N.S. labour-sponsored funds cost allowed as
 credit
 VMAXDX N.S. Maximum Disability deduction/amount
 VMAXET N.S. maximum on transfer of education and tuition amount
 VMXM N.S. married amount
 VMXMT N.S. married amount turndown level
 VPHOPT Nova Scotia pharmacare premium option (1=GIS, 2=income)
 VPHPREM Nova Scotia pharmacare premium
 VPHRR Nova Scotia pharmacare tax credit reduction rate
 VPHTC Nova Scotia pharmacare refundable tax credit
 VPHTD Nova Scotia pharmacare tax credit turndown
 VPHTDC Nova Scotia pharmacare tax credit turndown for couples
 VPNTCR N.S. provincial non-refundable tax credit rate
 VPTC Nova Scotia political contribution table [total
 donations,donation allowed]
 VPTCBEN Maximum Nova Scotia political tax credit allowed

| | |
|--------|---|
| VPTF | Nova Scotia provincial tax fraction |
| VPTX | N.S. tax table [taxable income,basic provincial tax] |
| VSCI | Nova Scotia provincial tax above which surtax applies |
| VSCI2 | Nova Scotia provincial tax above which surtax applies (2nd level) |
| VSF | Nova Scotia provincial surtax rate |
| VSF2 | Nova Scotia provincial surtax rate (2nd level) |
| VTRBAS | Nova Scotia tax reduction basic amount |
| VTREM | Nova Scotia tax reduction equivalent to spouse amount |
| VTRKID | Nova Scotia tax reduction child amount |
| VTRRR | Nova Scotia tax reduction family income reduction rate |
| VTRSP | Nova Scotia tax reduction spouse amount |
| VTRTD | Nova Scotia tax reduction family income turndown |
| VTXFLG | N.S. tax on taxable income activation flag |
| VYPNDL | N.S. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idestat | Educational status |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtvg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imcemc | Child's equivalent to married credit |
| imchara | Allowable charitable donations and gifts (calculated) |

| | |
|----------|--|
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imgisinc | Individual's income for GIS/SPA reduction |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| idinspo | Person's spouse [pointer] |
| imbpt | Basic provincial tax |
| iminsda | NS Direct Assistance Program |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imnscb | Nova Scotia Child Benefit |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impeht | Provincial elderly health tax |
| impehtc | Provincial elderly health tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |

imtxp Provincial income tax payable

txont Compute provincial taxes for Ontario

SUMMARY

When OTXFLG is turned off, the Ontario Provincial Tax (imbpt) is calculated as a proportion (OPTF) of Basic Federal Tax (imbft). Added to Basic for some years is the Social Services Maintenance Tax which is a proportion (OSSMR) of Basic Provincial Tax (imbpt) exceeding the tax level (OSSML).

When the tax on taxable income flag is turned on (OTXFLG), a provincial tax table (OPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (OPNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (OBXM) |
| impatxc | Age amount tax credit | (OAXM, OAXRR, OAXTD, OAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (OMXM, OMXMT, OEMXM, OEMXMT) |
| impcgtc | Caregiver tax credit | (OCGTC, OCGTCFLG, OCGTCTC, OCGTCTD, OCGTCTK) |
| impchrctc | Charitable donations | (OCHATL1, OCHATR1, OCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (OMAXDX) |
| impdtxc | Dividend tax credit | (ODTCR) |
| impdtxc | Education tax credit | (OEDXPM, OMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (OYPNDL) |
| imptutxc | Tuition Tax credit | (OMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using OAMTOPT.

Ontario provides a tax reduction for persons with a low taxable income. This reduction amounts to a proportion (OTRF) of taxable income (imitax) below the Ontario Tax Reduction Level (OMTY). This is subtracted from Basic Provincial Tax to derive Provincial

Tax Payable (imtxp).

The Ontario labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Ontario provincial credit is modeled as OLVCRT times the gross amount up to OLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Employer Health Tax (imonteht) only applies to self-employed persons, and is calculated when OEHTFLAG is set to 1. When a person's income from self-employment is less than OEHTTD1, the Employer Health Tax is calculated using the rate OEHTRR1 on self-employment earnings over the exemption OEHTEX. When a person's income from self-employment is less than this value, but greater than OEHTTD1, the Employer Health Tax is calculated by adding OEHTRR1 times the difference between the first turndown (OEHTTD1) and the exemption rate (OEHTEX) and OEHTRR2 times the difference between earnings from self-employment and OEHTTD1. When self-employment earnings are greater than OEHTTD2, the Ontario Employer Health Tax is calculated as OEHTRR3 times earnings from self-employment which are greater than the exemption OEHTEX.

When the parameter OCCEAFLG is set to 1, the child care expense credit is calculated. The maximum amount of the benefit is calculated as the lower of either OCCEAPCT times actual child care expenses (imccea), or of a specified amount per child (OCCEAYNG) times the number of children age 6 and under in the census family. Maximum family benefits are then reduced by a proportion (OCCEARR) of family net income above the threshold (OCCEATD). The model assigns the imputed Child Care credit (imoccea) to the mother, if present.

When OCWISFLG is set to 1, the supplement for working families is calculated as a percentage (OCWISRR) of family income over a threshold OCWISTD. The percentage depends on the number of children under the age of 7 in the family. The Supplement cannot exceed OCCEAYNG times the number of children under the age of 7. In single parent families, the maximum cannot exceed OCWISSP times the number of children under the age of 7 as announced in the Ontario 2000 Budget. The benefit which is given is the maximum value of either the supplement or the childcare expenses credit.

The taxpayer dividend (imotxdv) announced in the 2000 Budget was implemented. It is equal to taxes paid in the previous year up to a maximum (OTXDVMAX). People who paid over 0\$ in taxes would get a minimum rebate of OTXDVMIN. The benefit is included in refundable tax credits of 2000. Since it is based on the previous year's taxes, the taxes are multiplied by OPYTAX in order to estimate the lagged effect.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CAPGIR | Capital gains inclusion rate |
| OAMTOPT | Ont. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| OAMTPCTF | Ont. amt rate as pct of additional fed tax due to minimum tax |
| OAMTPCTM | Ont. amt rate as pct of federal minimum tax amount |
| OAMTTX | Ont. amt rate as tax on adjusted income |
| OAXM | Ont. Age Amount |
| OAXPI | Ont. Age Amount phase in rate for 1994 and beyond |
| OAXRR | Ont. Age Amount credit reduction rate |
| OAXTD | Ont. Age Amount net income turndown |
| OBXM | Ont. Basic Personal Exemption/amount |
| OCAPGIR | Ont. Capital Gains Inclusion Rate |
| OCCEAFLG | Ont. Child Care Expense Credit activation flag |
| OCCEAPCT | Ont. Child Care Expense Credit qualifying percentage |
| OCCEARR | Ont. Child Care Expense Credit benefit reduction rate |
| OCCEATD | Ont. Child Care Expense Credit family income turndown |
| OCCEAYNG | Ont. Child Care Expense Credit allowance per child |
| OCGIRFLG | Ont. Capital Gains Inclusion Rate Activation Flag |
| OCGTC | Ont. Caregiver Tax Credit |
| OCGTCTFLG | Ont. Caregiver Tax Credit activation flag |
| OCGTCTC | Ont. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| OCGTCTD | Ont. Caregiver Tax Credit Turn Down Income |
| OCGTCTK | Ont. Caregiver tax credit take-up rate by income level [employment income,rate] |
| OCHATL1 | Ont. Charitable Donations amount level 1 |
| OCHATR1 | Ont. Charitable Donations tax credit rate 1 |
| OCHATR2 | Ont. Charitable Donations tax credit rate 2 |
| OCWISFLG | Ont. Child Care Working Income Supplement activation flag |
| OCWISRR | Ont. Child Care Working Income Supplement Rate [children][rr] |
| OCWISSP | Ont. Child Care Working Income Supplement maximum benefit for single parents |
| OCWISTD | Ont. Child Care Working Income Supplement minimum earnings |
| ODTCR | Ont. dividend tax credit rate |
| OEDXPM | Ont. Education Amount per month |
| OEHTDRR | OEHT - Income Tax Deduction Rate |
| OEHTEX | OEHT - Exemption |
| OEHTFLAG | OEHT - Ontario Employer Health Tax Flag |
| OEHTRR1 | OEHT - Rate 1 |
| OEHTRR2 | OEHT - Rate 2 |
| OEHTRR3 | OEHT - Rate 3 |
| OEHTTD1 | OEHT - Turndown 1 |
| OEHTTD2 | OEHT - Turndown 2 |
| OEMXM | Ont. equivalent to married amount |
| OEMXMT | Ont. equivalent to married turndown level |

| | |
|----------|---|
| OLVCMAX | Maximum Ont. labour-sponsored funds tax credit allowed |
| OLVCRT | Percent of Ont. labour-sponsored funds cost allowed as credit |
| OMAXDX | Ont. Maximum Disability deduction/amount |
| OMAXET | Ont. maximum on transfer of education and tuition amount |
| OMTY | Ontario tax reduction limit |
| OMXM | Ont. married amount |
| OMXMT | Ont. married amount turndown level |
| OPCRA | Ontario property tax college residence amount |
| OPNTCR | Ont. provincial non-refundable tax credit rate |
| OPOCAR | Ontario property tax percent of occupancy cost |
| OPOCM | Ontario property tax maximum occupancy cost |
| OPRIR | Ontario property tax credit rental inclusion rate |
| OPSMAX | Ontario property/sales tax credit maximum |
| OPTC | Ontario political contribution table [total donations,donation allowed] |
| OPTCBEN | Maximum Ontario political tax credit allowed |
| OPTCFLAG | Ontario political contribution refundable tax credit flag |
| OPTF | Ontario provincial tax fraction |
| OPTX | Ont. tax table [taxable income,basic provincial tax] |
| OPYTAX | Estimate of previous year's Ontario taxes |
| ORDOPT | Ontario tax reduction calculation option |
| OSPOCM | Ontario seniors property tax maximum occupancy cost |
| OSSML | Ontario surtax first cut-in level |
| OSSML2 | Ontario surtax second cut-in level |
| OSSMR | Ontario surtax first level rate |
| OSSMR2 | Ontario surtax second level rate |
| OSSTCP | Ontario seniors sales tax credit percent of income |
| OSTCB | Ontario sales tax credit basic credit |
| OSTCD | Ontario sales tax credit dependant credit |
| OSTCFLAG | Ontario seniors tax credit claimed flag |
| OSTCNIBA | Ontario seniors tax credit net income base amount |
| OSTCP | Ontario sales tax credit percent of income |
| OSTCS | Ontario sales tax credit spouse credit |
| OTCNIBA | Ontario tax credit net income base amount |
| OTRBPA | Ontario tax reduction basic personal amount |
| OTRDCA | Ontario tax reduction dependant child amount |
| OTRDDA | Ontario tax reduction disabled dependant amount |
| OTRF | Ontario tax reduction Ontario tax multiplier |
| OTRFP | Ontario tax reduction personal amount multiplier |
| OTXDVMAX | Maximum taxpayer dividend |
| OTXDVMIN | Minimum taxpayer dividend for people with non-zero taxes |
| OTXFLG | Ont. tax on taxable income activation flag |
| OYPNDL | Ont. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |

| | |
|----------|---|
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcapgex | Capital gains exemptions (254) |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnfn | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imccea | Child care expenses allowed |
| imchcara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdedft | Deductions from total income |
| imdepni | Dependant's net income |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfnkids | Number of children in nuclear family |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imiotax | Ontario taxable income |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| imonteht | Ontario Employers Health Tax (Self-employed) |
| imotxdv | Ontario Taxpayer Dividend |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgctc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txpei Compute provincial taxes for P.E.I.

SUMMARY

When PTXFLG is off, the Basic Provincial Tax (imbpt) for Prince Edward Island is simply a proportion (PTF) of Basic Federal Tax (imbft).

The 2000 budget announced that PEI would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (PTXFLG), a provincial tax table (PPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (PPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (PBXM) |
| impatxc | Age amount tax credit | (PAXM, PAXRR, PAXTD, PAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (PMXM, PMXMT, PEMXM, PEMXMT) |
| impcgtc | Caregiver tax credit | (PCGTC, PCGTCFLG, PCGTCTC, PCGTCTD, PCGTCTK) |
| impchrctc | Charitable donations | (PCHATL1, PCHATR1, PCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (PMAXDX) |
| impdtxc | Dividend tax credit | (PDTCR) |
| impedtxc | Education tax credit | (PEDXPM, PMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (PYPNDL) |
| imptutxc | Tuition Tax credit | (PMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using PAMTOPT.

The Prince Edward Island labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Prince Edward Island provincial credit is modeled as PLVCRT times the gross amount up to PLVCMAX. The credit cannot be more than provincial taxes (imtxp).

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|----------|---|
| PAMTOPT | P.E.I. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| PAMTPCTF | P.E.I. amt rate as pct of additional fed tax due to minimum tax |
| PAMTPCTM | P.E.I. amt rate as pct of federal minimum tax amount |
| PAMTTX | P.E.I. amt rate as tax on adjusted income |
| PAXM | P.E.I. Age Amount |
| PAXPI | P.E.I. Age Amount phase in rate for 1994 and beyond |
| PAXRR | P.E.I. Age Amount credit reduction rate |
| PAXTD | P.E.I. Age Amount net income turndown |
| PBXM | P.E.I. Basic Personal Exemption/amount |
| PCGTC | P.E.I. Caregiver Tax Credit |

PCGTCTCFLG P.E.I. Caregiver Tax Credit activation flag
PCGTCTC P.E.I. Caregiver tax credit take-up rate by age of elderly
[age,rate]
PCGTCTD P.E.I. Caregiver Tax Credit Turn Down Income
PCGTCTK P.E.I. Caregiver tax credit take-up rate by income level
[employment income,rate]
PCHATL1 P.E.I. Charitable Donations amount level 1
PCHATR1 P.E.I. Charitable Donations tax credit rate 1
PCHATR2 P.E.I. Charitable Donations tax credit rate 2
PDTCR P.E.I. dividend tax credit rate
PEDXPM P.E.I. Education Amount per month
PEMXM P.E.I. equivalent to married amount
PEMXMT P.E.I. equivalent to married turndown level
PLVCMAX Maximum P.E.I. labour-sponsored funds tax credit allowed
PLVCRT Percent of P.E.I. labour-sponsored funds cost allowed as
credit
PMAXDX P.E.I. Maximum Disability deduction/amount
PMAXET P.E.I. maximum on transfer of education and tuition amount
PMXM P.E.I. married amount
PMXMT P.E.I. married amount turndown level
PPNTCR P.E.I. provincial non-refundable tax credit rate
PPTC P.E.I. political contribution table [total
donations,donation allowed]
PPTCBEN Maximum P.E.I. political tax credit allowed
PPTF P.E.I. provincial tax fraction
PPTX P.E.I. tax table [taxable income,basic provincial tax]
PSCI P.E.I. provincial tax above which surtax applies
PSF P.E.I. provincial surtax rate
PTRBAS Base PEI low income tax reduction
PTRKID PEI low income tax reduction for dependent child
PTRRR PEI low income tax reduction Reduction Rate
PTRSP PEI low income tax reduction for spouse or equivalent-to-
spouse
PTRTD PEI low income tax reduction Turndown
PTXFLG P.E.I. tax on taxable income activation flag
PYPNDL P.E.I. Pension Income Deduction Amount

INPUT VARIABLES:

cfin First person in census family [pointer]
cfinch First child in census family [pointer]
cfineld Eldest person in census family [pointer]
cfinspo Spouse of eldest [pointer]
cfnchild Number of children (including 18+)
cfnpers Number of persons in census family
cfspoflg Census family contains married couple
efin First person in economic family [pointer]
efnpers Number of persons in economic family
hhncf Number of census families in household
hhnef Number of economic families in household
hhnin Number of individuals in household
hhnnf Number of nuclear families in household
idage Age
idcfrh Relationship to census family head
iddisab Disability status
iddisoth Disability amount for dependants (318)
iddisslf Disability amount for self (316)
ideducm Eligible months of education allowance

| | |
|----------|---|
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impdtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |

| | |
|----------|-------------------------------------|
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txprov Compute provincial taxes

SUMMARY

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax as in Newfoundland, Prince Edward Island, New Brunswick and Nova Scotia to a parallel of the federal system in Quebec. The other provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|--------|----------|
| hdprov | Province |
|--------|----------|

txqcalc Calculate income tax (Quebec)

SUMMARY

The txqcalc function calculates Quebec income tax for those individuals affected.

SPSM Implementation

Each census family is processed in turn. First, the basic provincial tax is computed via a table look-up for each person. Next the non-refundable tax credits are applied and unused credits are transferred between spouses, if appropriate. Subsequently, the 'family situation' and 'eligible income' are computed followed by the family tax reduction. After the family tax reduction has been calculated, the refundable property tax credit is computed.

Relation to Other SPSM Routines

txqcalc is called from within txprov and is in a subsidiary relationship to it. It does not call, and is not called by, any further functions.

Sales tax credit

The refundable sales tax credit (imqstr) is activated when QSTRFLAG is set to 1. The sales tax credit includes a base credit (QSTRBCRD), a credit (QSTRCHILD) is added for each child in the family. A second credit is added (QSTRFTP3) when no spouse is present and at least one dependent child is present. And finally another credit is added (QSTRFTP4) is for a person living alone or with at least one dependent. The credit is reduced by the income considered at a rate QSTRRR.

Housing of Parent tax credit

The Housing of Parent Tax Credit (imqhptc) calculation is activated by a flag (QHPTCFLG) and the base tax credit is QHPTC. An economic family is eligible to the imqhptc if the parent or grandparent of the head of the economic family, or his/her spouse is in the economic family. A take-up rate QHPTCTC based on age of the potential parent assigns individuals with idefrh=3 as a parent according to SCF data. A take-up rate QHPTCTK based on employment income select the appropriate number of beneficiaries according to Portrait de la fiscalité des particuliers au Québec.

Medical Expenses tax credit

The calculation of the refundable tax credit for medical expenses is activated by the flag QMRTCFLG. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). The tax credit is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. Eligibility is also limited to persons aged 18 and over with employment related earnings greater than QMEDRMIN. The medical expenses tax credit was introduced in 1997.

Dues as non-refundable tax credit

Starting in 1997, dues that where a deduction (iddues) in txqinet are a tax credit activated by the option QDUESOPT = 2. The value of the tax credit is imquetc. When QDUESOPT = 1, the dues are calculated in txqinet.

Tuition as non-refundable tax credit

Starting in 1997, tuition are considered as a deduction (idtuitn) in txqinet are now a tax credit activated by the option QTUIOPT = 2. The value of the tax credit is imquitc.

Family Allowance Tax Credit

The Quebec Family Allowance Tax Credit started in September 1997 but is implemented in the model starting 1998. The Quebec Family Allowance Tax Credit is a credit based on

previous year net family income and is non-taxable. The maximum credits vary with the number of children (QFATCMXK), and a supplement QFATCSUP is allocated to single parent families. For families with 4 kids and more, a supplement, QFATCK6, is added that varies with the number of kids and the number of kids under 6 years of age. The credit is the maximum until it reaches the first turn down income level with a specific reduction rate. The sequence of turn down incomes and reduction rates for single parent families are in QFATCSRR and for married couples in QFATCMRR. The turning point at QFATD4K is increased by QFATD4KI for each child over three. The benefits are reduced up to a minimum based on the number of children in the family (QFATCMNK) until the net family income reaches the last turning point in either QFATCSRR or QFATCMRR. At this last turning point the benefits are starting to reduce until they reach a minimum for payments of QFATCMIN. The program is implemented by copying the reduction rate table (QFATCSRR or QFATCMRR) into a temporary table. Then another temporary table assigns benefits and reduction rates to turning point incomes. Finally, the calculated benefits, imqfatc, are assigned to the women in the married couples or to the head of the single parent family. When activated, the take-up rate, QFATCTK, selects the assigned individual only if a random number is higher than the level specified by its total income. As a standard, QFATCTK is set to zero and all individuals are selected.

Alternative Minimum Tax

The Alternative Minimum Tax in Quebec started in 1986 and is now fully implemented. The calculation is activated by QAMTXFLG. The calculation of the income considered is slightly different than the Federal Alternative Minimum Tax because of difference in the rates considered for:

- . the inclusion of an amount of capital in the income considered (QCAPAMTX),
- . the dividing factor for the dividends (QDIVRAT), and
- . the allowable taxable portion the capital gains (QAMTINCRT - QCAPGIR).

The exemption level is QAMTX and the tax rate is QAMTTX. When the Alternative Minimum Tax is higher than the calculated tax using the standard algorithm, the difference is stored in imqamt. A flag, imqamtfg, identifies the individuals with the modified income tax. In 1995, the definition of income was changed and QAMTXREF indicates new components used in the calculation of taxable income.

When QAMTXSTKFLG is set to 1, the stock option deduction (imqstkdd) can be deducted when calculating the Quebec Alternative Minimum Tax.

Political Contribution

Starting in 1995, the political contribution is subject to two rates (QPCTR) instead of one (QPTC). The calculation procedure for 1995 and after is activated when QPCOPT is set to 2, otherwise it is the single rate that applies.

Labour-sponsored venture capital tax credit

The Quebec labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Quebec provincial credit is modeled as QLVCRT times the gross amount up to QLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Simplified tax program (low income credit)

The simplified tax program, which includes a flat tax credit, started in 1998. People were allowed to decide whether it was in their benefit to fill out the simplified or general tax form. A worksheet was provided in order to facilitate the choice.

The SPSM has implemented this tax system in the following way. When QSFOPT is set to 1, everyone in Quebec fills out the general tax form. This is the system which was in place prior to 1998. If QSFOPT is set to 2, then everyone fills in the simplified tax form. And when QSFOPT is set to 3, then an optimization procedure is run. In this scenario, an approximation of the worksheet which was provided with the 1998 tax form is calculated prior to the computation of taxes. People are assigned to either the general tax form (which includes all deductions) or the simplified tax form (which includes few deduction but an additional credit - QSFTC). The variable imqsfllg notes which form was chosen.

A person can transfer all of their extra credits and deductions to their spouse when both spouses fill out the simplified tax form. When using the general form, only a limited number of deductions can be transferred. Because the worksheet does not take into account all the inter-spouse complexities, the optimization procedure will tend to overstate taxes. While it is very accurate for single persons, it tends to maximize the individual's gain which is not necessarily the couple's gain. The model may therefore slightly overstate Quebec taxes.

At the same time, the number of income tax brackets in QTX is reduced from 5 to 3, the Surtax and the Tax Reduction are eliminated.

This tax change also signified the replacement of the age, living alone, and retirement credits with a combined family-based credit (imqcalr).

Improved Tax System for Self Employed Workers

The improved tax system for self employed workers in Quebec was added. This improved system was announced in the Quebec 2000 Budget to enable the increasing number of self-employed workers to benefit from the simplified tax form. This system will standardize the tax treatment applicable to that part of the contribution paid by a worker in respect of pensionable self-employed earnings that could be equated with an employer's contribution, and refrain from excluding a growing number of self-employed workers from the simplified tax system. When activated (QITSFSEW), it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new

deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine the contribution to the Health Services Fund payable by individuals. The calculated amount of the contributions to be converted is held in imqcpse.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. The value of the tax credit is calculated in txqitax.

Refundable Tax Credit for Medical Expenses

When QMRTCFLG is assigned to 1, the Quebec refundable tax credit for medical expenses (imqmedrc) is calculated for persons aged 18 and over who had employment related earnings greater than QMEDRMIN. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). It is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. When QMRTCFLG is assigned to 0, the calculation of the Quebec refundable tax credit for medical expenses is suppressed.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| PYINC | Deflator to calculate previous year income |
| QAMTCBX | Quebec Alternative Minimum Tax Calculate Basic Exemption |
| QAMTDIV | Quebec Alternative Minimum Tax Taxable Dividend Limit |
| QAMTINCRT | Quebec Alternative Minimum Tax Inclusion Rate |
| QAMTNEGTTI | Quebec Alternative Minimum Tax Allow Negative Taxable |
| Income | |
| QAMTRITC | Quebec Alternative Minimum Tax Retirement Income Credit |
| Deduction | |
| QAMTRPFLG | RRSP/RPP included in Quebec Alternative Minimum Tax |
| (1=include) | |
| QAMTTX | QAMTX tax rate |
| QAMTX | QAMTX exemption level |
| QAMTXFLG | Quebec alternative minimum tax, QAMTX, activation flag |
| QAMTXREF | Quebec alternative minimum tax 1995 reform indicator (flag) |

| | |
|------------------|--|
| QAMTXSTKFLG | QAMTX stock option deduction inclusion (1=stk can be deducted) |
| QAPFFLG | Quebec anti-poverty fund activation flag |
| QAPFRAT | Quebec anti-poverty fund rate |
| QAXM | Quebec age exemption/amount |
| QBXM | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPAMTX | QAMTX taxable capital ratio |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |
| QCCETCR | Refundable CCE credit rate [net income, % cce claimable] |
| QCRDFLG | Quebec income credit flag [1=if social contribution are deducted] |
| QDIVRAT | QAMTX dividends ratio |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEIA1 | Quebec eligible income family type #1 |
| QEIA2 | Quebec eligible income family type #2 |
| QEIA3 | Quebec eligible income family type #3 |
| QEIA4 | Quebec eligible income family type #4 |
| QEIA5 | Quebec eligible income family type #5 |
| QEIAA | Quebec eligible income aged amount |
| QFAMDED | Quebec Family related deduction on income in refundable credits |
| QFAMFLG | Quebec family income deduction activation flag |
| QFAMNETI | Quebec family allowance tax credit net income concept flag |
| QFAMRAT | Quebec family income rate |
| QFATCHIRR | QFATC High income reduction rate |
| QFATCHITD | QFATC High income turndown |
| QFATCK6 | QFATC Supplement for kids under 6 in large families |
| [#kids][#kids<6] | |
| QFATCK6PYR | QFATC supplement for kids under 6 phase out year proportion |
| QFATCK6YR | QFATC Supplement for kids under 6 phase out year |
| QFATCMIN | QFATC minimum benefit paid |
| QFATCMNK | QFATC Minimum benefits by kid rank |
| QFATCMRR | QFATC turn down income levels and reduction rate for married parents |
| QFATCMXK | QFATC Maximum benefits by kid rank |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFATCSRR | QFATC turn down income levels and reduction rate for single parent |
| QFATCSUP | Quebec Family Allowance Tax Credit Supplement for single parent |
| QFATCTK | QFATC Take-up rates by total income |
| QFATD4K | QFATC turn down income for 4 children and more |
| QFATD4KI | QFATC turn down income increase by child for 4 children and more |
| QFTRA1 | Quebec family tax reduction family type #1 |
| QFTRA2 | Quebec family tax reduction family type #2 |
| QFTRA3 | Quebec family tax reduction family type #3 |
| QFTRA4 | Quebec family tax reduction family type #4 |
| QFTRFLAG | Quebec family tax reduction activation flag |
| QFTRRR | Quebec family tax reduction reduction rate |

QGIFTOPT Quebec gifts as tax credit
 QHPTC Quebec Housing Parent Tax Credit
 QHPTCFLG Quebec Housing Parent Tax Credit activation flag
 QHPTCTC QHPTC take-up rate by age of elderly [age,rate]
 QHPTCTK QHPTC take-up rate by income level [employment income,rate]
 QHSCI Quebec surtax first cut-in level
 QHSCI2 Quebec surtax second cut-in level
 QHSF Quebec surtax first level rate
 QHSF2 Quebec surtax second level rate
 QITSFSEW Quebec improved tax system for self-employed worker
 activation flag
 QLAXM Quebec living alone exemption/amount
 QLVCMAX Maximum Quebec labour-sponsored funds tax credit allowed
 QLVCRT Percent of Quebec labour-sponsored funds cost allowed as
 credit
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDRATE Proportion of expenses allowed for refundable tax credit
 for medical expenses
 QMEDRMAX Maximum expenses allowed for Que. refundable tax credit for
 medical expenses
 QMEDRMIN Minimum earnings for Quebec refundable tax credit for
 medical expenses
 QMEDRRR Reduction rate for the Que. refundable tax credit for
 medical expenses
 QMEDRTD Turndown level for Que. refundable tax credit for medical
 expenses
 QMRTCFLG Quebec refundable tax credits for medical expenses
 activation flag
 QNTPCR Quebec nominal tax credit rate
 QPCOPT Quebec political contribution option
 QPCTR Quebec political contribution tax rates
 QPTC Quebec political contribution table [total
 donations,donation allowed]
 QPTCBEN Maximum Quebec political tax credit allowed
 QPTRGISB Quebec property tax rebate GIS bonus
 QPTRMTP Quebec property tax minimum tax per person
 QPTRMTR Quebec property tax maximum tax for reduction
 QPTRRR Quebec property tax rebate reduction rate
 QPTRTF Quebec property tax fraction
 QRTRFLAG Quebec real estate rebate activation flag
 QSFDISFLAG Quebec Simplified Form Disability tax credit inclusion flag
 QSFOPT Quebec Simplified Form Option (1=general 2=simplified
 3=optimized)
 QSFTC Quebec Simplified Form tax credit
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QSTRBCRD Quebec sales tax rebate base credit
 QSTRCHILD Quebec sales tax rebate children dependent credit
 QSTRFLAG Quebec sales tax rebate activation flag
 QSTRFTP3 Quebec sales tax rebate family type 3 credit
 QSTRFTP4 Quebec sales tax rebate family type 4 credit
 QSTROPT Quebec sales tax rebate option=1 based on imigis, =2
 otherwise
 QSTRRR Quebec sales tax rebate reduction rate
 QTRBE Quebec Tax Reduction Breakeven
 QTROPT Quebec Tax Reduction calculation option 1=universal
 2=income tested

| | |
|------------|---|
| QTRP | Quebec tax Reduction proportion |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QYPDL | Quebec deduction limit for pension income |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfindeld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdnadult | Number of adults in household |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idnorth | Northern deductions (255) |
| idpartlo | Limited partnership losses (251) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsex | Sex |
| idspoflg | Person has spouse |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| immtot | Total income |
| improptx | Imputed property tax paid |
| imqalexp | Quebec allowable employment expenses |
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |

| | |
|----------|--|
| imqcchc | Quebec child's non-refundable credit |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdctc | Quebec dependent child tax credits |
| imqdedfn | Quebec all deductions from net income |
| imqdedft | Quebec deductions from total income |
| imqdistc | Quebec disability tax credit |
| imqduetc | Quebec Dues Tax Credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqidivt | Quebec taxable dividends |
| imqinet | Quebec net income |
| imqitax | Quebec taxable income |
| imqitot | Quebec total income |
| imqlatc | Quebec living alone tax credit |
| imqmeda | Quebec medical expenses allowed |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |
| imqritc | Quebec retirement income tax credit |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqstkdd | Quebec modelled Stock option deduction (249) |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| implvctc | Provincial labour-sponsored funds tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impsur | Provincial surtax |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| imqamt | Quebec Minimum Tax Amount |
| imqamtfg | Quebec Minimum Tax flag |
| imqapf | Quebec Anti-Poverty Fund |
| imqcalr | Quebec combined age, living alone, retirement credit |
| imqcceni | Quebec net income for refundable cce credit calculation |
| imqccetc | Quebec refundable child care expenses Tax Credit |
| imqdtxc | Quebec dividend tax credit |
| imqei | Quebec eligible income for tax reduction |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqfs | Quebec family situation (1-5) |
| imqftr | Quebec family tax reduction |
| imqhptc | Quebec Home Parent Tax Credit level |
| imqittr | Quebec income tested tax reduction |
| imqmedrc | Quebec refundable tax credit for medical expenses |
| imqptr | Quebec property tax refund |
| imqstr | Quebec sales tax refund |
| imqtca | Quebec tax credits applied |
| imqtct | Quebec tax credits transferable |
| imqtcts | Quebec tax credits transferred from spouse |
| imqtottc | Quebec total tax credits |

imtxp Provincial income tax payable

txqceea Compute child care expense allowance (Quebec)

SUMMARY

Since the amounts allowable for the Child Credit Expense Deduction differ slightly between the federal and Quebec provincial tax systems, it would be desirable to use the actual amount allowed for Quebec provincial tax purposes in the calculation of this deduction. The rules for eligibility exactly parallel the federal (see txceea). The algorithms are therefore essentially the same as the ones modeling the allocation of the federal Child Care Expense Deduction.

Unlike the federal algorithm, child care expenses are always treated as a deduction from total income. There is no option for treating them as a tax credit.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|----------|---|
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| QCCEAC1 | Quebec CCEA earned income fraction (1 child) |
| QCCEAC2 | Quebec CCEA earned income fraction (2 children) |
| QCCEAC3 | Quebec CCEA earned income fraction (3+ children) |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |

INPUT VARIABLES:

| | |
|----------|---|
| cfinch | First child in census family [pointer] |
| cfined | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |

OUTPUT VARIABLES:

| | |
|----------|---|
| imqccea | Quebec child care expenses allowed (dedn) |
| imqdedft | Quebec deductions from total income |
| imqinet | Quebec net income |

txqhstr Compute family-related deductions or credits (Quebec)

SUMMARY

This function parallels txhstr which performs similar calculations for federal taxes. The major difference is that the model does not incorporate the conversion of deductions into tax credits for the calculation of Quebec taxes. The algorithms include:

- calculate and allocate Personal Exemptions for Wholly Dependent Children
- calculate and allocate Married Exemption
- calculate Family Support Exemption (similar to federal Married Equivalent Exemption)
- calculate and transfer deductions from spouse

Calculate and Allocate Personal Exemptions for Wholly Dependent Children

Quebec filers with dependent children are eligible to claim an exemption based on the age and net income of the child. The exemption is calculated as a fixed amount minus a proportion of the child's net income exceeding the reduction level. The young child exemption is claimable on behalf of children aged 16 or 17. The old child exemption is claimable on behalf of children 18 and over but under 21, or over 20 and attending school full-time.

For taxation year 1986 and later, the definition of dependant's net income for the purpose of calculating the Exemption for Wholly Dependent Children requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The exemptions for all children are accumulated in cdeds which may later be adjusted by the calculation of the Family Support Exemption. If a spouse is present, the one with the higher Net Income (imqinet) receives the full amount of the exemption for all dependent children (imqcdeds) which is used to reduce Taxable Income (imqitax).

The model does not partition the exemptions for dependent children between spouses as is allowed by the tax regulations. This means that the tax burden of spouses with similar net incomes is not minimized.

In calculating the amount of the exemption, the model does not adjust the Net Income of the dependant to include certain non-taxable amounts of the Guaranteed Income Supplement (GIS), Spouse's Allowance (SPA) or Social Assistance as is specified in the Quebec tax regulations.

Calculate and Allocate Married Tax Credit

Persons legally married during the taxation year are eligible to claim a Married Tax Credit amounting to a fixed value reduced by the spouse's net income. The definition of spouse's net income for the purpose of calculating the Married Tax Credit requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The Married Tax Credit (imqmtc) is calculated only for the spouse with the lower Net Income (imqinet). It amounts to a fixed value (QMXM) reduced by the other spouse's Net Income. imqmtc is used to reduce the taxable income (imqitax) of the claiming spouse.

Note that the value of Net Income is not adjusted to include GIS, SPA, Social Aid and non-taxable amounts from international sources. GIS and SPA are calculated later in the model and the amounts are not available when this function is executed. Non-taxable amounts from international sources cannot be separated from other non-taxable income in the database.

Calculate Family Support Exemption

The definition of the Family Support Exemption is similar to the federal Married Equivalent Exemption. Filers who are single, divorced, separated or widowed and who supported a relative related by blood, marriage or adoption are eligible to claim that relative for a Family Support Exemption. This exemption amounts to a fixed value reduced by a proportion of the dependant's net income exceeding a reduction level.

The definition of the dependant's net income for the purpose of calculating the Family Support Exemption requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- Earnings from international sources which are tax exempt in Canada

SPSM Implementation

SPSM calculates the Family Support Exemption on behalf of dependent children and not other relatives who may be eligible.

The model attempts to make the claim on behalf of the dependant for whom a claim will benefit the filer most. The first choice for the exemption is a dependant who is not claimable for the child exemption, i.e., one who is 15 years of age or younger, or one who is over 21 and not attending an educational institution. If more than one dependant is eligible under these conditions, then the one with the lower Net Income (imqinet) is chosen. If there is no such dependant, the dependant claimable for the child exemption with the lowest Net Income is chosen.

If the Family Support Exemption is claimed on behalf of a dependant who is also claimable for the child exemption, the accumulated amount of the child exemption is adjusted by subtracting the amount claimed for that dependant.

The Family Support Exemption (imqmarex) is added to Total Personal Exemptions (imqpex) and subtracted from Taxable Income (imqitax).

Calculate and Transfer Deductions From Spouse

As in the federal case (see the function txhstr) Quebec allows the transfer of certain deductions from the spouse in the calculation of provincial income taxes. Deductions that may be transferred are:

- Age Exemption
- Interest and Dividend Income Deduction
- Deduction for Retirement Income
- Disability Deduction

Only the amount not required to reduce the spouse's taxable income to zero may be transferred. There is a limit to the amount of combined Interest and Dividend Income Deduction and Pension Income Deduction transferable which amounts to the unused proportion of the Married Exemption, i.e., if the full Married Exemption was claimed, no portion of these two deductions may be transferred.

SPSM Implementation

For the spouse with the lower Net Income (imqinet) the model calculates a value for potentially transferable deductions as the sum of:

- Age Exemption (imqaxm)
- Disability Deduction (imqdisex)

the lesser of:

- Total Pension Income Deduction (imqpendn) and Interest Income Deduction (imqintdn),
and
- the unused portion of the Married Exemption (QMXM minus imqmarex).

minus any amount required to reduce the spouse's Taxable Income to zero (imqinet minus QBXM).

The amount transferred from the spouse is subtracted from the filer's Taxable Income (imqitax) and added to Total Deductions from Net Income (imqdedfn). The spouse's Taxable Income and deductions are not adjusted because, if a transfer occurs, taxable income is zero by definition. The amounts recorded for the individual deductions (e.g., imqaxm, imqpendn) are not adjusted to reflect the transfer.

The value of Net Income used in the calculation of the transfer is not adjusted to include GIS, SPA and Social Aid income.

Calculate Living alone tax credit

The calculation of the living alone tax credit imqlatc is based on the value of the tax credit QLAXM adjusted by the nominal tax credit rate (QNTCR).

Starting in 1996, the calculation of the living alone tax credit is subject to turndown income (QLAXTD) and a reduction rate (QLAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QLAXPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqlatc is set to zero.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QLAXM | Quebec living alone exemption/amount |
| QLAXPI | Quebec living alone phase-in |
| QLAXRR | Quebec living alone reduction rate |
| QLAXTD | Quebec living alone turn down |
| QLPXM | Quebec lone parent exemption/amount |
| QMEDINC | Income definition for Que. refundable tax credit for medical expenses |
| QMXM | Quebec married exemption/amount |
| QNTCR | Quebec nominal tax credit rate |
| QPSXM | Quebec post-secondary exemption/amount |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QYCXM1 | Quebec dependent child #1 amount |
| QYCXM2 | Quebec dependent child #2 amount |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |

| | |
|----------|--|
| cfspoflg | Census family contains married couple |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idestat | Educational status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqinet | Quebec net income |
| imqitot | Quebec total income |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imqcchc | Quebec child's non-refundable credit |
| imqdctc | Quebec dependent child tax credits |
| imqdepni | Quebec dependant's net income |
| imqlatc | Quebec living alone tax credit |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |

txqinet Compute net income (Quebec)

SUMMARY

The Quebec provincial personal income tax system largely parallels the federal system: deductions and exemptions reduce total income to a taxable amount for which the basic provincial tax is calculated, then tax credits are applied to derive the amount of provincial tax payable. The function calculates net income for Quebec taxpayers and is similar to the process for calculating net income for federal income tax purposes.

SPSM Implementation

The algorithms for calculating Net Income for Quebec Provincial Income Tax Purposes are similar to the algorithms for calculating federal Net Income described under the function txinet. The major difference is that there are no options to treat deductions and personal exemptions as tax credits.

Whenever possible values already calculated in the computation of federal Net Income are applied here. The implementation of specific measures are described below.

Employment Expense Deduction

The calculation of the Quebec Employment Expense Deduction (imqdedia) is the same as the federal case. imqdedia is a proportion (QEAP) of Earnings from Employment (idiemp) up to a maximum deduction of QEAMAX. There is no flag controlling the calculation of

this value. If this deduction is to be eliminated, the values of QEAP and QEAMAX may be set to zero.

This value is added into Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Other Allowable Employment Expenses

The model assumes that the definition for Other Allowable Employment Expenses as applied to Quebec Provincial Taxes is the same as the federal definition (see txinet). The same value as used in the federal algorithm (idalexp) is used here. The value of idalexp may be scaled up or down by supplying an appropriate value for the parameter QALEXP (Proportion of Other Allowable Employment Expenses to Use as a Deduction).

The amount idalexp is added to Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Calculate Taxable Capital Gains

Capital Gains are treated as they are for federal taxes (see function txinet). Taxable Capital Gains for Quebec Provincial Tax Purposes (imqcapgt) is calculated as Total Capital Gains Received (idicapg) multiplied by the Capital Gains Inclusion Rate for Quebec Provincial Taxes (QDGUR).

Taxable Dividends

The treatment of dividends is similar to the federal algorithms described under the function txinet. Taxable Dividends for Quebec Provincial Taxes (imqdivt) are calculated as Total Dividends Received (idivid) multiplied by the Quebec Dividend Gross-up Rate (QDGUR).

Calculation of Total Income

As in the federal case (see function txinet), Total Income at this stage does not include Family Allowances which cannot be allocated until it is known whether the mother or the father have the higher net income. Total Income (imqitot) is calculated as the sum of:

| | |
|----------|---|
| idiemp: | Earnings From Employment |
| idisenf: | Self-employment Earnings (Non-farm), optionally scaled by the parameter FACTISENF |
| idisefm: | Self-employment Earnings (farm) |
| idiint: | Interest Income |
| idioinv: | Other Investment Income |
| idicqp: | CPP/QPP Benefits Received |
| iditogv: | Other Taxable Government Income |
| idipens: | Pension Income |
| iditoth: | Other Taxable Income |
| imiuib: | Modeled Unemployment Insurance Benefits Received |
| imiotg: | Modeled New Taxable Demogrants |
| imffa: | Modeled Family Allowance Benefits (optional) |

imioas: Modeled OAS Benefits
imqidivt: Modeled Taxable Amount of Dividends for Quebec
imqcapgt: Modeled Taxable Capital Gains and Losses for Quebec

The parameter QFAIFLAG controls whether federal Family Allowances are included in total income. If QFAIFLAG is set to one then imffa is added to imqitot. Also, Employment Expenses (imqdedia) and Other Allowable Employment Expenses (imqalexp) are added into All Deductions from Total Income (imqdedft) and not subtracted from Total Income as in the federal algorithms.

Calculation of Net Income

All Deductions from Total Income (imdedft) is calculated as the sum of:

idrpp: Registered Pension Plan Contributions
idrrsp: Registered Retirement Savings Plan Contributions
iddues: Union and Professional Dues
idtuitn: optionally, Tuition Fees
imqiloss: Allowable Business Investment Loss
idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions (calculated in txinet)
imuic: optionally, UI Contributions (calculated in txinet)
imqceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txqceca)
imqdedia: Employment Expenses
imqalexp: Other Allowable Employment Expenses

Dues as a tax credit

The dues as a deduction is activated by the option QDUESOPT = 1. Starting in 1997, dues are used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Tuition as a tax credit

The tuition as a deduction is activated by the option QTUIOPT = 1. Starting in 1997, tuition is used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Improved Tax System for Self-Employed Workers

The improved tax system for self employed workers in Quebec was added. When activated by QITSFSEW, it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine

the contribution to the Health Services Fund payable by individuals.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CPPXM | CPP/QPP exemptible earnings |
| QALEXP | Quebec proportion of other allowable employment expenses to use |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCPPOPT | Quebec CPP/QPP contribution deduction/credit option [1=deduction,2=credit] |
| QDGUR | Quebec dividend gross-up rate |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEAMAX | Quebec maximum employment allowance deduction |
| QEAP | Proportion of earnings for Quebec employment allowance deduction |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QITSSEF | Quebec percentage of self-employ CPP/QPP contributions to convert to deduction |
| QMAXDX | Quebec maximum disability deduction/amount |
| QMEDANF | Quebec medical allowance lower limit net income fraction |
| QNTCR | Quebec nominal tax credit rate |
| QREPNETFG | Social program repayments reduce Quebec net income flag |
| QSFDISFLAG | Quebec Simplified Form Disability tax credit inclusion flag |
| QSFOPT | Quebec Simplified Form Option (1=general 2=simplified 3=optimized) |
| QSFSMXI | Quebec simplified form spouse maximum income for work sheet |
| QSFTC | Quebec Simplified Form tax credit |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QUICOPT | Quebec UI contributions deduction/credit option [1=deduction,2=credit] |
| WSCF | CPP/QPP contribution rate on employment earnings |
| YMPE | CPP/QPP maximum pensionable earnings |
| INPUT VARIABLES: | |
| hhnin | Number of individuals in household |
| idalexp | Other allowable employment expenses (229) |

| | |
|----------|--|
| idcarry | Carrying charges (221) |
| idcclos | Allowable other years capital loss (253) |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmedgro | Medical expenses, gross (330) |
| idmovexp | Imputed moving expenses (219) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imcqpcc | CPP/QPP contributions |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imiotg | Other taxable demogrants |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|--|
| imqalexp | Quebec allowable employment expenses |
| imqcapgt | Quebec taxable capital gains |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdedia | Quebec employment allowance |
| imqdedft | Quebec deductions from total income |
| imqduetc | Quebec Dues Tax Credit |

| | |
|----------|--|
| imqidivt | Quebec taxable dividends |
| imqiloss | Quebec Modelled Business investment losses (243) |
| imqinet | Quebec net income |
| imqitot | Quebec total income |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |

txqitax Compute taxable income and individual credits (Quebec)

SUMMARY

The process of computing taxable income for Quebec provincial taxes parallels that of the federal method. The following deductions are calculated and subtracted from Net Income (imqinet) to derive a tentative value for Taxable Income (imqitax):

| | |
|-----------|---|
| imqpendn: | Pension Income Deduction |
| imqintdn: | Interest Income Deduction |
| imqstddn: | Combined Medical Expense Deduction, Charitable Donations and Gifts to Canada or a Province |
| imqdisex: | Disability Deduction |
| imqdedfn: | Calculate Deductions from Net Income |
| imqaxm: | Age Exemption |
| imqexm: | Basic Exemption |

The computation of Taxable Income is completed by the function txqhstr which calculates exemptions for dependents and performs the transfer of deductions between members of the family.

Unlike the algorithms for the calculation of Federal Taxable Income, this function contains no options for converting these deductions into tax credits.

Pension Income Deduction

Depending upon the filer's age and the type of income, pension and retirement income may be eligible for the Pension Income Deduction. Any portion of this deduction not required to reduce a filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Modeled Pension Income Deduction (imqpendn) is calculated as the lesser of:

- a) Eligible Pension Income (idipens), and
- b) the Maximum Pension Income Deduction (QYPDL)

The Modeled Pension Income Deduction (imqpendn) is added to Total Deductions from Net

Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet).

The function txqhstr may transfer some amount of the Pension Income Deduction to the spouse. In this event, adjustments are made to imqdedfn and imqinet but not to imqpendn.

The model assumes that the value of idipens represents pension income eligible for this deduction. No further checks are made to ensure that the pension is of the appropriate type for the age of the filer.

After the reform in 1988, the non-refundable tax credit for pension income (imqritc) was the minimum of the base credit (QYPDL) and the eligible pension income (idipens). Starting in 1996, the calculated deduction for pension income (imqritc) based on the credit (QYPDL) is now subject to turn-down income (QYPTD) and a reduction rate (QYPRR) for pension income (idipens) in excess. In 1996 the reduction is only 50% and 100% after and it is controlled by the phase in variable QYPPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqritc is set to zero.

Interest Income Deduction

Interest income and dividends from Canadian sources are eligible for the Interest Income Deduction. This deduction amounts to the lesser of a fixed amount and the eligible income. Any portion of the deduction not required to reduce the filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Interest and Dividend Income Deduction (imqintdn) is calculated as the lesser of:

- a) the Maximum Interest and Dividend Income Deduction (QYIDL), and
- b) the sum of Interest Income (idiint) and Dividends (imqidivt) minus Carrying Charges (idcarry).

The deduction is added to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet) to derive Taxable Income (imqitax).

Since the Interest and Dividend Income Deduction is transferable between spouses, the function txqhstr may adjust the values of imqdedfn and imqitax. The value of imqintdn is not adjusted to reflect a transfer to the spouse.

Medical Expense and Charitable Donations Deduction

The filer is allowed a deduction for certain medical expenses, charitable donations and gifts to Canada or a province. In 1984, eligible medical expenses were deductible if they exceeded 3% of Net Income. Deductible charitable donations were limited to 20% of Net Income.

Before 1997, the calculation of the medical exemption in txqitax was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997,

(with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

SPSM Implementation

The database contains variables representing the federal Medical Expense Deduction Allowed (immeda) and combined Eligible Charitable Donations and Gifts to Canada or a Province (imchara). Net Medical Expenses represent medical expenses in excess of 3% of Net Income. Eligible Charitable Donations represent charitable donations not exceeding QCHATNF percent of Net Income.

The Combined Medical Expense and Charitable Donations Deduction (imqstddn) is calculated by taking the higher of:

- a) the Standard Deduction (QSTD), which may be zero, and
- b) the sum of Net Medical Expenses Allowed (imqmeda), Eligible Charitable Donations and Gifts to Canada or a Province (imqchara).

The variable imqstddn is added to Total Deductions from Net Income (imqdedfn) which is subsequently used to reduce Taxable Income.

Disability Deduction

As in the case of the federal income tax system, Quebec allows a special deduction for blind persons or persons confined to a bed or a chair. Any unused portion of the Disability Deduction may be transferred to a spouse or supporting parent.

SPSM Implementation

The database contains a value of the Disability Deduction Allowed on behalf of the filer (iddisslf), spouse or dependents (iddisoth). If either of these values are non-zero, the Quebec Disability Deduction (imqdisex) takes on the value assigned to the parameter QMAXDX. imqdisex is added in to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income.

Since this deduction is potentially transferable, the function txqhstr checks the relative net incomes of the head and spouse and performs any necessary transfers. The values of imqdedfn and imqitax are adjusted to reflect these changes. The value of imqdisex is not updated if the Disability Deduction is transferred to a spouse.

The model does not transfer unused portions of the Disability Deduction from dependant to parent. This probably does not cause a large error since the value on the database already takes into account amounts transferred from the spouse or dependents. The transfer between head and spouse is repeated in txqhstr because the estimate of Net Income is more accurate at this stage than during the database creation process.

Calculate Deductions from Net Income

The variable imqdedfn stores the value of All Deductions from Net Income. It is calculated

as the sum of:

| | |
|-----------|---|
| imqstdn: | Combined Medical Expense and Charitable Donations Deduction |
| imqintdn: | Interest and Dividend Income Deduction |
| imqpendn: | Pension Income Deduction |
| imqdisex: | Disability Deduction |
| imuibr: | Unemployment Insurance Benefits Reimbursed |
| idclos: | Capital Losses from Other Years |
| idnclos: | Non-capital Losses from Other Years |

The variable imqdedfn is subtracted from Net Income (imqinet) and may be adjusted in the function txqhstr if deductions are transferred between spouses.

The model does not include the Exemption for Members of a Religious Order, the Exemption for Dependents Aged 21 and Over Suffering from a Physical or Mental Infirmary, Deduction for a Home Relocation Loan, the Sociétés de placements dans l'entreprise québécois Deduction, or the Capital Gains Deduction.

Basic Exemption

Each filer claims a Basic Exemption which is subtracted from Net Income. The Amount of the Basic Exemption for Quebec Provincial Income Taxes is increased occasionally.

SPSM Implementation

For all filers with income, the Quebec Basic Exemption (QBXM) is added to the variable imqexm which accumulates personal exemptions. imqexm is subsequently added to imqpex which accumulates all exemptions and is later subtracted from Net Income imqinet.

Age Exemption

All filers who were 65 years of age or older during the taxation year claim the Age Exemption. The value of the Age Exemption is increased occasionally. Any unused portion of the Age Exemption may be transferred to the spouse.

SPSM Implementation

The Modeled Quebec Age Exemption (imqaxm) is assigned the value of the parameter QAXM for all filers 65 or over (idage \geq 65) if they have income (imninc $>$ 0). This value is added to imqexm (All Personal Exemptions on behalf of filer) which is subsequently added to imqpex (All Personal Exemptions) and subtracted from Net Income imqinet. The function txqhstr may transfer the unused portion of the Age Exemption to the spouse and make corresponding adjustments to the value of imqinet but not to imqaxm.

Starting in 1996, the calculation of the age exemption tax credit is subject to turndown income (QAXTD) and a reduction rate (QAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QAXPI.

Medical exemption calculation

Before 1997, the calculation of the medical exemption was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997, the calculation of the medical exemption is transferred to txqhstr (with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. Beginning in 2000, there are two tax credit rates applied to gifts in Quebec. The activation flag, QGIFTHCR, is used to implement the calculation. Allowable gifts up to QGIFTL1 use the QNTCR. The higher credit rate QGFTCR is applied to allowable gifts over QGIFTL1. The total value of the tax credit is imqchatc.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| QAXM | Quebec age exemption/amount |
| QAXPI | Quebec age exemption reduction phase in |
| QAXRR | Quebec age exemption reduction rate |
| QAXTD | Quebec age exemption income turn down |
| QBXN | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCHATNF | Quebec charitable donations maximum % net income |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QGFTCR | Quebec credit rate for gifts over upper limit |
| QGIFTFLG | Quebec max to gifts to Federal/Province/Crown activation flag |
| QGIFTHCR | Quebec higher tax credit on large gifts activation flag |
| QGIFTL1 | Quebec minimum gift limit subject to higher credit rate |
| QGIFTOPT | Quebec gifts as tax credit |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSCFLAG | Quebec Health Services Fund Contribution calculation flag |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QMAXDX | Quebec maximum disability deduction/amount |

QMEDALL Quebec medical allowance maximum lower limit
 QMEDANF Quebec medical allowance lower limit net income fraction
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDOPT Quebec Medical Tax Credit option
 QNFSDED Quebec deduction of net federal supplements (SPA and GIS)
 from net income flag
 QNTRC Quebec nominal tax credit rate
 QREPNETFG Social program repayments reduce Quebec net income flag
 QSADED Quebec deduction of social assistance benefits from net
 income flag
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QYPDL Quebec deduction limit for pension income
 QYPPI Quebec deduction phase-in for pension income
 QYPRR Quebec deduction reduction rate for pension income
 QYPTD Quebec deduction turn down for pension income

INPUT VARIABLES:

hhnin Number of individuals in household
 idage Age
 idcagpex Capital gains exemptions (254)
 idcarry Carrying charges (221)
 idcfrh Relationship to census family head
 idcharit Charitable donations (340)
 idclos Allowable other years capital loss (253)
 iddalimo Alimony paid (220)
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 idemplo Employee home relocation loan dedn (248)
 idgifts Gifts to Canada/provinces/culture (342)
 ididiv Dividend income (actual)
 idiemp Wages & salaries
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idmedgro Medical expenses, gross (330)
 idnclos Allowable other years non-capital loss (252)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idspoflg Person has spouse
 idstkded Stock option deduction (249)
 imigis GIS benefits
 imioas OAS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 imninc No income flag
 imoasr OAS recovery
 imqalexp Quebec allowable employment expenses
 imqcapgt Quebec taxable capital gains
 imqcppse Quebec self-employ. QPP/PPP Cont. deduction
 imqiloss Quebec Modelled Business investment losses (243)
 imqinet Quebec net income
 imqitot Quebec total income
 imqsfflg Quebec simplified tax form flag 0=general 1=simplified
 imrepay Social Benefits Repayments
 imuibr UI benefit recovery

OUTPUT VARIABLES:

| | |
|----------|--|
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |
| imqchara | Quebec allowable charitable donations(calc) |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqdedfn | Quebec all deductions from net income |
| imqdistc | Quebec disability tax credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqitax | Quebec taxable income |
| imqmeda | Quebec medical expenses allowed |
| imqritc | Quebec retirement income tax credit |
| imqstkdd | Quebec modelled Stock option deduction (249) |

txque Compute provincial taxes for Quebec

SUMMARY

For residents of Quebec, the calculation of provincial taxes roughly approximates the process of calculating federal taxes. The SPSM divides this task among three functions which are described in another section of this document:

1. txqinet calculates total and net income tax
2. txqitax calculates a provisional value for taxable income subject to updating by txqhstr
3. txqhstr performs the calculation of personal exemptions for dependents and the allocation of deductions between head and spouse

The value of Taxable Income (imqitax) calculated by txqhstr is used to look up a value for Basic Provincial Tax (imbpt) in the tax table (QTX).

The Quebec Dividend Tax Credit (imqdtxc) is calculated as a proportion (QDTCR) of Taxable Dividends (imqidivt) and is subtracted from Basic Provincial Tax to derive Provincial Tax Payable (imtxp). Also subtracted is the Quebec Tax Reduction which is a proportion (QTRP) of Provincial Tax Payable (imtxp).

txsask Compute provincial taxes for Saskatchewan

SUMMARY

When STXFLG is off, Saskatchewan Basic Provincial Tax is a proportion (SPTF) of Basic Federal Tax (imbft). A flat surtax, calculated as a proportion (SFTAX) on Net Income (iminet) is added to Basic Tax.

The 2000 budget announced that Saskatchewan would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (STXFLG), a provincial tax table (SPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (SPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (SBXM) |
| impatxc | Age amount tax credit | (SAXM, SAXRR, SAXTD, SAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (SMXM, SMXMT, SEMXM, SEMXMT) |
| impcgtc | Caregiver tax credit | (SCGTC, SCGTCFLG, SCGTCTC, SCGTCTD, SCGTCTK) |
| impchrctc | Charitable donations | (SCHATL1, SCHATR1, SCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (SMAXDX) |
| impdtxc | Dividend tax credit | (SDTCR) |
| impedtxc | Education tax credit | (SEDXPM, SMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (SYPNDL) |
| imptutxc | Tuition Tax credit | (SMAXET) |
| impuictc | EI contributions tax credit | |
| imsctxc | Saskatchewan Non-refundable child tax credit | (SCNTC) |
| imssstxc | Saskatchewan senior supplement tax credit | (SSSTC) |

The option to apply a minimum tax is controlled using SAMTOPT.

Adjusted Saskatchewan Tax Payable (before a tax reduction is applied, is stored in the temporary variable a) is calculated as Basic Saskatchewan Tax (imbpt) plus a proportion (SSF) of Basic Saskatchewan Tax exceeding the Saskatchewan Surtax Level (SSCI).

Saskatchewan also implements a system of tax reductions for senior citizens and persons with dependent children. The Basic Tax Reduction (STRBR) is augmented by the Senior Citizen's Tax Reduction (STRSC) if the filer is age 65 or older. A tax reduction per child under 18 (STRPC) up to a maximum total for all children (STRCL) is also added. The number of children claimable for this tax reduction is taken from imnfach, the number of children eligible for Family Allowances.

The total potential tax credit is reduced by a proportion (STRRR) of the tax credit exceeding Adjusted Saskatchewan Tax Payable a to derive Reduced Saskatchewan Tax Payable imtxp.

Starting in 1992, a surtax (SDSF) for the reduction of the deficit is applied to the tax (imtxp). In 1995, an amount (SDSRA) was deducted from the surtax.

The Saskatchewan labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Saskatchewan provincial credit is modeled as SLVCRT times the gross amount up to SLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Saskatchewan Child Benefit and Saskatchewan Employment Supplement announced in the 1998 budget are modeled. When the SCBFLG is activated, families receive a benefit which depends on the number of children in the family (SCB1, SCB2, and SCB3). The benefit is reduced in two stages. Net family income greater than SCBTD1 and less than SCBTD2 is reduced at a rate SCBRR1 which depends on the number of children in the family. The benefit is further reduced at a rate of SCBRR2 for income over SCBTD2.

The Saskatchewan Employment Supplement is a monthly program. In the SPSD/M, the program is modeled in a yearly fashion. The maximum benefit is derived by multiplying a family's employment income in excess of SESCO (up to a maximum of SESMXIP) by a rate (SESR) which depends on the number of children in the family. The benefit is reduced for any family net income in excess of SESTD by a SESRR rate. The supplement started in mid-1998 and hence a phase-in rate SESPI was applied.

The estimate resulting from the SPSD/M may differ from the administrative totals. In modeling the program, employment income is assumed to be evenly distributed during the year. No maintenance income (e.g. child or spousal support) is added to employment income. The program is administered monthly with eligibility being determined depending on each month's income.

The Saskatchewan Sales Tax Credit announced in their 2000 Budget is now modelled. The Saskatchewan Sales Tax Credit is activated when SSTCFLAG is set to 1.

The Saskatchewan Sales Tax Credit was introduced in 2000 and became effective April 1, 2000 to offset the effect of sales taxes on lower income earners. SSTCPI represents the phase in rate for the program. The Saskatchewan Sales Tax Credit (imsstc) will consist of an adult component and a child component. This credit will be fully refundable and will be assigned to the spouse with the highest income.

The adult component of the Saskatchewan Sales Tax Credit will rise at a rate of SSTCBASPIR of individual net income up to a maximum (SSTCBAS). It will be reduced at a rate of SSTCRR as family net income increases above SSTCBASTD. An individual will also be eligible for SSTCSP in additional benefits for a dependent spouse or equivalent. This amount will be reduced at a rate of SSTCRR as family net income rises over SSTCSPTD.

The child component of the Saskatchewan Sales Tax Credit will provide an additional

SSTCKID per child. For two-parent families, the maximum child component will be SSTCKID + SSTCKID. For single parent families, the first child will be eligible for the adult benefit of SSTCSP and the maximum child component will be SSTCKID. The child component of the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC1KIDTD for families with one qualifying child. For families with more than one qualifying child, the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC2KIDTD.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| SAMTOPT | Sask. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| SAMTPCTF | Sask. amt rate as pct of additional fed tax due to minimum tax |
| SAMTPCTM | Sask. amt rate as pct of federal minimum tax amount |
| SAMTTX | Sask. amt rate as tax on adjusted income |
| SAXM | Sask. Age Amount |
| SAXPI | Sask. Age Amount phase in rate for 1994 and beyond |
| SAXRR | Sask. Age Amount credit reduction rate |
| SAXTD | Sask. Age Amount net income turndown |
| SBXM | Sask. Basic Personal Exemption/amount |
| SCB1 | Sask Child Benefit max for 1st child |
| SCB2 | Sask Child Benefit max for 2nd child |
| SCB3 | Sask Child Benefit max for 3rd and additional child |
| SCBFLG | Sask Child Benefit activation flag |
| SCBRR1 | Sask Child Benefit 1st reduction rate [number of kids] |
| SCBRR2 | Sask Child Benefit 2nd reduction rate [number of kids] |
| SCBTD1 | Sask Child Benefit 1st turndown |
| SCBTD2 | Sask Child Benefit 2nd turndown |
| SCGTC | Sask. Caregiver Tax Credit |
| SCGTCFLG | Sask. Caregiver Tax Credit activation flag |
| SCGTCTC | Sask. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| SCGTCTD | Sask. Caregiver Tax Credit Turn Down Income |
| SCGTCTK | Sask. Caregiver tax credit take-up rate by income level [employment income,rate] |
| SCHATL1 | Sask. Charitable Donations amount level 1 |
| SCHATR1 | Sask. Charitable Donations tax credit rate 1 |
| SCHATR2 | Sask. Charitable Donations tax credit rate 2 |
| SCNTC | Sask. non-refundable child tax credit amt per child |
| SDSF | Saskatchewan provincial deficit surtax fraction |
| SDSRA | Saskatchewan deficit surtax reduction rate |
| SDTCR | Sask. dividend tax credit rate |

| | |
|-----------------------------|---|
| SEDXPM | Sask. Education Amount per month |
| SEMXM | Sask. equivalent to married amount |
| SEMXT | Sask. equivalent to married turndown level |
| SESCI | Sask Employment Supplement cut in level |
| SESMIN | Sask Employment Supplement minimum benefit |
| SESMXIP | Sask Employment Supplement maximum benefit income point |
| SESPI | Sask Employment Supplement phase-in |
| SESR | Sask Employment Supplement benefit rate [number of kids] |
| SESRR | Sask Employment Supplement reduction rate |
| SESTD | Sask Employment Supplement turndown level |
| SESTK | Sask. Employment Supplement take up by number of kids |
| SESYPI | Sask Employment Supplementary benefit for under 13 phase-in |
| SESYR | Sask Employment Supplementary benefit for under 13 rate |
| [number of kids] | |
| SESYRR | Sask Employment Supplementary benefit for under 13 |
| reduction rate | |
| SFTAX | Saskatchewan provincial flat surtax rate on net income |
| SHEATFAM | Saskatchewan Home Heating Assistance Rebate for families |
| SHEATFLG | Saskatchewan Home Heating Assistance Rebate activation flag |
| SHEATSNG | Saskatchewan Home Heating Assistance Rebate for singles |
| SLVCMAX | Maximum Sask. labour-sponsored funds tax credit allowed |
| SLVCRT | Percent of Sask. labour-sponsored funds cost allowed as |
| credit | |
| SMAXDX | Sask. Maximum Disability deduction/amount |
| SMAXET | Sask. maximum on transfer of education and tuition amount |
| SMXM | Sask. married amount |
| SMXMT | Sask. married amount turndown level |
| SPNTR | Sask. provincial non-refundable tax credit rate |
| SPTC | Saskatchewan political contribution table [total |
| donations,donation allowed] | |
| SPTCBEN | Maximum Saskatchewan political tax credit allowed |
| SPTF | Saskatchewan provincial tax fraction |
| SPTX | Sask. tax table [taxable income,basic provincial tax] |
| SSCI | Saskatchewan surtax cut-in |
| SSF | Saskatchewan provincial high income surtax fraction |
| SSSTC | Sask. senior supplement tax credit |
| SSTC1KIDTD | Sask. sales tax credit child amount turndown if only 1 |
| child | |
| SSTC2KIDTD | Sask. sales tax credit child amount turndown if more than 1 |
| child | |
| SSTCBAS | Sask. sales tax credit base amount |
| SSTCBASPIR | Sask. sales tax credit base amount phase in rate |
| SSTCBASTD | Sask. sales tax credit base amount turndown |
| SSTCFLAG | Sask. sales tax credit activation flag |
| SSTCKID | Sask. sales tax credit child amount |
| SSTCPI | Sask. sales tax credit phase in |
| SSTCRR | Sask. sales tax credit reduction rate |
| SSTCSP | Sask. sales tax credit spousal amount |
| SSTCSPTD | Sask. sales tax credit spousal amount turndown |
| SSTR | Saskatchewan spousal & married equivalent tax reduction |
| STRBA | Saskatchewan tax reduction base amount |
| STRBR | Saskatchewan basic provincial tax reduction |
| STRCL | Saskatchewan child tax reduction limit |
| STRPC | Saskatchewan tax reduction per child |
| STRRR | Saskatchewan tax reduction reduction rate |
| STRSC | Saskatchewan tax reduction for senior citizens |
| STXFLG | Sask. tax on taxable income activation flag |

SYPNDL Sask. Pension Income Deduction Amount

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| imuic | UIC contributions |

| | |
|----------|---|
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| impptc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impттxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imscb | Saskatchewan Child Benefit |
| imsctxc | Saskatchewan Non-refundable child tax credit |
| imses | Saskatchewan Employment Supplement |
| imssstxc | Saskatchewan senior supplement tax credit |
| imsstc | Saskatchewan refundable sales tax credit |
| imtxp | Provincial income tax payable |

ui Compute UI benefits

SUMMARY

Unemployment Insurance (UI) and Employment Insurance (EI) benefits are calculated by a set of functions which mimic application of UI/EI regulations to individual employment and

claim histories. These histories are summaries of administrative data from a 1% sample of persons with some UI/EI claim activity . Benefits are first calculated on a claim basis. Adjustments are then made to allow for claims overlapping more than one calendar year. Finally, taxable benefits received by individuals within a calendar year are determined.

Program Description

Unemployment/Employment insurance is an income support program financed jointly by employees, employers and the federal government. It is intended to provide income maintenance during temporary interruptions in employment. As such, it is not a universal program. Among those excluded from coverage are persons who do not participate in the labour force, the self-employed (other than fishermen) and persons who have exhausted benefit entitlements.

SPSM Implementation

The SPSM implementation of the UI/EI program has distinct steps representing application of program regulations to a given claim. The function `ui` operates as a controller which calls the sub-functions which apply UI/EI regulations to each claim and each UI/EI claimant within a household and returns the benefits received by individuals for the calendar year. Claimants may have one or two claims overlapping the survey calendar year. Payments within the calendar year are determined assuming benefits are paid on consecutive weeks.

For SPSM purposes, the unemployment regions are urban size classes within each province. These are not the regions defined for administration of the UI/EI program. The use of proxy unemployment regions is required to ensure data confidentiality.

For purposes of determining entitlements, the claim histories include the initial claim type `ucbtyp` (i.e., Maternity, Sickness, Retirement, Fishing or Regular) and a type change flag (i.e., indicating that a Sickness claim, for example, was changed to a Regular claim within the Initial Phase). SPSM deems the type change to have taken place immediately after the claim is established and does not attempt to subdivide the Initial Phase into Special and Regular periods. Since type change takes place, the special benefits totals (e.g., Sickness benefits) can not be determined by eliminating the type (e.g., by setting eligibility requirements high) and calculating the reduction in benefits. A second claim type (`ucmtyp`) is also imputed. If there was more than one type of benefit received within a claim, `ucmtyp` represents the claim type which had the majority of weeks. By turning on `UIEIMTYPFLG`, `ucmtyp` is modelled instead of `ucbtyp`.

The UI/EI algorithm has no behavioral response capacity, so that, for example, no new claims can be created. However, there have been more people with claims imputed in the base year than was necessary. The means that the number of persons with claims can be modified using the `UITARGET` and `UIEITKP` parameters. Similarly, the duration of modeled claims does not exceed observed durations, except when the following parameters are used: `UIREGWKFCT`, `UITRNWKFCT`, `UIOTHWKFCT`, `UIEXTMATWKS`. Unless these parameters are modified, the assumption is that individuals would not increase their duration on claim, if their entitlements were increased. However, no restriction is placed on

durations within each phase. Consequently, the elimination of a phase need not reduce the overall duration of a claim.

There are several sub-functions contained in the *ui* function. The first called is *uicl*m which calculates benefits for a single claim. *uicl*m does this by first calling three sub-functions which test for eligibility requirements based on claim type, repeat claim status, and regional unemployment rates (*uiel*ent, *uiel*rep, *uiel*rge). *uicl*m next calls three sub-functions which determine the weeks of entitlement in the Initial, Labour Force Extended and Regional Extended Phases (*uiwk*bas, *uiwk*lfe and *uiwk*rge). The *ui* function then calls *uitr*nclm which calculates training and other benefits (excluding regular, fishing, sickness, maternity, and parental which are calculated in *uicl*m). If a second claim is required *uicl*m and *uitr*nclm are called again. Each function and sub-function are briefly described below.

ui

The *ui* function serves to pass information about each individual with a UI/EI claim in a household to *uicl*m. If an individual has more than one claim, modeled weeks of benefits in the qualifying period are computed for the first claim and passed to *uicl*m when the second claim is processed. UI/EI benefits for a calendar year are returned.

***uicl*m**

The sub-function *uicl*m processes distinct claims from the information passed to it by *ui*. In the event of a repeat claim, *ui* passes information about modeled claim activity in the qualifying period. Modeled changes to UI/EI regulations may produce important differences in first claim activity, thereby effectively changing the status of the second claim.

The *uicl*m function operates at a claim rather than an individual level. It calls *uiel*ent, *uiel*rep and *uiel*rge to establish eligibility. It then changes the type of eligible claims, where appropriate.

Once a claim is established, *uicl*m calls *uiwk*bas, *uiwk*lfe and *uiwk*rge to determine the weeks of entitlement in each of the Initial, Labour Force Extended and Regional Extended Phases, respectively. The claim is represented by four pointers which identify:

Pointer #1 - 1st week of benefits (following waiting period)

Pointer #2 - 1st week of Labour Force Extended benefits

Pointer #3 - 1st week of Regional Extended benefits

Pointer #4 - week after end of Regional Extended Benefits.

Weeks are identified by integers with the week of January 1 being zero. The differences between succeeding pointers will initially equal the entitlement on the appropriate phase. *uicl*m then calls a utility function *uisqz* which ensures that interval between #1 and #4 does not exceed the original claim (minus any training or other weeks) or the maximum allowable duration of a claim. A subsequent call to *uisqz* produces a second set of (windowed) pointers that do not include any weeks outside the calendar year.

The *uicl*m function then calculates the weekly benefits. Benefits are the product of phase weeks times the weekly benefit rate for each phase summed over phases. However, benefit

rates may be increased or decreased by the following modelled programs: minimum divisor rule (see UIEIDIVFLG), the intensity rule (see UIEIFIFLG), an enhanced rate should there be dependents (see UIENSTRO), and the family supplement (see UIEIFSFLG).

uielent

The uielent sub-function applies eligibility tests based on the minimum weeks or hours of insurable employment in the qualifying period required for each initial claim type. These are basic tests which may be superseded by special tests applied to repeaters, new entrants/re-entrants, and other regular claimants. The function sets a flag indicating eligibility status.

uielrep

The uielrep function performs special eligibility tests that apply to repeaters only. The required weeks of insurable employment depend on the regional unemployment rate and on weeks of benefits in the qualifying period. The function performs a two dimensional table lookup to determine whether eligibility is established. The function sets a flag indicating eligibility status.

uielrge

Claims that are initiated as regular claims are subject to variable entrance requirements that depend on the regional unemployment rate. The function uielrge performs the table lookup necessary for these tests. The function sets a flag indicating eligibility status.

uiwkbas

The function uiwkbas determines entitlements in the Initial Phase. For special benefit types (i.e., claims that remain maternity, fishing, sickness or parental), this is the total claim entitlement and is determined by a table lookup. For regular claims, entitlements, up to a maximum number of weeks, are determined in proportion to weeks or hours of insurable employment in the qualifying period up to a maximum number of weeks.

uiwklfe

The function uiwklfe determines entitlements in the Labour Force Extended Phase. As in the Initial Phase, entitlements are determined in proportion to weeks, above a minimum, of insurable employment in the qualifying period.

uiwkrge

The function uiwkrge determines entitlements in the Regional Force Extended Phase. Entitlements are determined by the regional unemployment rate.

uitrnclm

The function uitrnclm is called by the ui function after the uicl function. Therefore, regular, sickness, maternity, fishing, and parental benefits have already been assigned. The uitrnclm function assigns first other types of benefits, then training benefits. Other types of

benefits will include everything not included in regular, sickness, maternity, parental, fishing or training. The list of other benefits included will vary depending on the year of the program. But they may include such items as job creation benefits, work sharing benefits, and self-employed assistance.

Other benefits are calculated using the imputed weeks of other benefits (ucothwk) and a weekly benefit rate (ucothbr). These can be adjusted using UIOTHWKFCT and UIOTHBNFCT. Training benefits are calculated in a similar manner using uctrnwk, uctrnbr, UITRNWKFCT, and UITRNBNFCT. There are no eligibility tests for these types of benefits. New pointers, ubp5 and ubp6 are created to signify the end of these benefit phases.

Adjusting UI/EI

Some parameters were added to the model in order to mimic some historical changes to the UI/EI program which the model cannot do without changes to the database. The UITARGET and UIEITKP parameters allow the users to increase or decrease the number of UI/EI recipients. The following parameters: UIREGWKFCT, UITRNWKFCT, UIOTHWKFCT, UIEXTMATWKS allow the users to increase the number of weeks of benefits over and above the weeks claimed on the database. UITRNBNFCT and UIOTHWKFCT allow the benefit rate for training and other benefits to be increased.

1 - Qualifying for benefits is now based on hours of work instead of weeks of work

Since the SPSD does not contain total hours of work, these are derived using the weeks of work prior to claim (ucwwork) multiplied by a new variable: the average weekly hours of work (ucwchr) which was imputed from the Survey of Labour and Income Dynamics. For more information, see UIREGHRMIN, UIMATHRMIN, UISICHRMIN,.

As for fishing benefits, qualification is based on earnings in the past 31 weeks. These are derived using weeks of work prior to claim (ucwwork) and average weekly earnings (ucern). It is assumed that the weeks ucwwork occurred immediately prior to the start of the claim. See UIFSHERMIN.

2 -The Family Income Supplement was added

When UIEIFSFLG is set to 1, the Family supplement is calculated. The total amount of the family supplement paid on a claim is ubclmfs. The total amount of family supplement paid on a claim in the calendar year is ubcalfs.

The Family Supplement was introduced as part of the Employment Insurance system reform introduced in 1995. It increases the basic benefit of families with low income. It replaces the older program which gave an enhanced rate for individuals with low income (in the SPSD/M this older program was controlled by UIENSRATE, UIDEPOPT, UIENSRTCO).

There are two methods of calculating the Family Supplement. When UIEIFSOPT is set to 1, then family supplement is directly tied into the Canada Child Tax Benefit (imfcben). Families which are eligible for the Child Tax Benefit receive the weekly amount of the benefit in addition to their regular Employment Insurance. It is reduced at a rate (UIEIFSRR) over incomes greater than UIEIFSRL.

Some simplifications were made in order to implement this program in the SPSM. The calculation of the Canada Child Tax Benefit is done after the calculation of EI in the model since it requires net income. But it requires the previous year's net income which is estimated as PYINC times the current year's net income.

When the Family Supplement is activated, the tax/transfer driver (drv) is run through twice per eligible household. The first time, no one will get a family supplement since the child tax benefit is equal to zero. The value of the benefit is saved (in cceopt) and drv is called again. This time, the previously saved value for the child tax benefit is used to calculate the family supplement. The family supplement will be slightly inconsistent with the child tax benefit since the latter will be recalculated and may be slightly smaller than the one used for deriving the family supplement since family net income will increase due to the family supplement.

Another simplification in deriving the family supplement derives from the fact that the SPSM assumes that the Child Tax Benefit is given in one lump sum amount in July. Therefore in the case of the Family supplement, the rules governing the Child Tax Benefit may be a year off if the benefit is received in the first half of the year.

When UIEIFSOPT is set to 2, the family supplement is calculated independently of the child tax benefit. First the number of children under the age of 7 is calculated (imuiydep). By going through the drv twice, the family's net income (prior to the addition of the family supplement) is available and the previous year's income is derived by multiplying it by PYINC. The family supplement is then derived by looking up the base value (UIEIFS1 for families with 1 child, UIEIFS2 for families with 2 children, and UIEIFS3 for families with 3 or more children). A supplement for each child over and above the third is added (UIEIFSTOPUP) as is a supplement for each child under the age of 7 (UIEIFSYNG).

The Family supplement rules changed on July 1999. Since the methodology under UIEIFSOPT = 1 would be off by a year, it was decided to treat all of 1999 under the methodology introduced in July 1999 (UIEIFSOPT = 2).

Under both options, EI weekly benefits including the family supplement cannot exceed a proportion (UIEIMFSP) of the claimant's weekly earnings (ubern). Nor can EI benefits, including the family supplement exceed the base rate (UIEIRATE) times the maximum weekly earnings (UIERNMAX).

Also, under both options, when the UIEIFIFLG is turned on, people who receive the family supplement are exempted from the intensity rule.

3 - The Intensity Rule

For persons receiving regular or fishing EI benefits and who did not receive the Family Income Supplement, the intensity rule was applied. The benefit rate (UIEIRATE) depends on the number of weeks of EI collected in the past. See UIEIFIFLG, UIEIRATE, UIEIYRS, ubeiwbp, ucy1, ucy2, ucy3, ucy4, ucy5 for more details.

4 -The Minimum Divisor

In order to obtain their maximum benefits, EI claimants must work two weeks more than the minimum entrance requirements. The minimum divisor rule is controlled by UIEIDIVFLG and UIEIDIV.

5 -Minor Changes

There was a minor change in the method used to derive training weeks and training benefits.

The method of using the UI/EI regular benefit weeks adjustment factor UIREGWKFACT was adjusted.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| PYINC | Deflator to calculate previous year income |
| UIBASFLAG | Basic phase calculation flag (UI and EI) |
| UIBASOPT | UI reform option [1=normal, 2=Apr'89] (UI and EI) |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIDEPOPT | UI dependency option [1=normal, 2=Feb'94] (UI only) |
| UIEFFFLAG | Observed effective weekly benefit rate flag (UI and EI) |
| UIEIDIV | EI minimum divisor [uer][divisor] (EI only) |
| UIEIDIVFLG | EI minimum divisor flag (EI only) |
| UIEIFIFLG | EI intensity rule exemption for family supplement receivers (EI only) |
| UIEIFS1 | Max fam supplement 1 child (EI only) |
| UIEIFS2 | Max fam supplement 2 children (EI only) |
| UIEIFS3 | Max fam supplement 3+ children (EI only) |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIFSOPT | UI EI calculate family supplement option (EI only) |
| UIEIFSRL | UI EI family supplement reduction level (EI only) |
| UIEIFSRR | UI EI family supplement reduction rate (EI only) |
| UIEIFSTOPUP | Max fam supplement top up for more than 3 kids (EI only) |
| UIEIFSYNG | Max fam supplement top up for young children (EI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIMTYPFLG | Flag to model main benefit type (UI and EI) |
| UIEINEREFLG | Flag to check for hours for new entrants and re-entrants (EI only) |

| | |
|----------------------------|---|
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIRATE | Benefit rate under EI reform [Past Wks ben][Rate] (EI only) |
| UIEITKP | UI EI takeup rate [index] : index based on prov, sex, age, |
| weeks | |
| UIEIYRS | Number of years of previous EI benefits calculated (EI |
| only) | |
| UIENSRATE | Enhanced rate for basic phase (UI only) |
| UIENSRTCO | Enhanced rate cutoff (UI only) |
| UIENTFLAG | Basic entrance requirements flag (UI and EI) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIEWK | Entitlement (weeks) [wkwrk, uer] (UI and EI) |
| UIEXTMATWKS | Additional weeks for maternity - behavioural response (UI |
| and EI) | |
| UIFLAG | UI/EI Activation flag (UI and EI) |
| UIFSHERMIN | Min. earnings to qualify for fish. benefits [unempl. rate] |
| (EI only) | |
| UIFSHMINWK | Minimum weeks to qualify for fishing benefits (UI only) |
| UILFEFLAG | Labour force extended phase calculation flag (UI only) |
| UILFEMIN | Weeks worked in qualifying period [UILFEWKS index] (UI |
| only) | |
| UILFERATE | Benefit rate for labor force extended phase (UI only) |
| UILFEWKS | Weeks LFE entitlement [UILFEMIN](UI only) |
| UIMATHRMIN | Minimum hours to qualify for maternity benefits (EI only) |
| UIMATMINWK | Minimum weeks to qualify for maternity benefits (UI only) |
| UIMAXBASEWKS | Maximum number of weeks - regular (UI and EI) |
| UIMAXDUR | Maximum duration of a UI claim (UI and EI) |
| UIMAXFSHWKS | Maximum number of weeks - fishing (UI and EI) |
| UIMAXMATWKS | Maximum number of weeks - maternity (UI and EI) |
| UIMAXPARWKS | Maximum number of weeks - parental (UI and EI) |
| UIMAXSICWKS | Maximum number of weeks - sickness (UI and EI) |
| UINEREHRMIN | Minimum hours to qualify for new entrant or re-entrant (EI |
| only) | |
| UIOTHBNFCT | UI other benefits per week adjustment factor (EI and EI) |
| UIOTHWKFCT | UI other benefits weeks adjustment factor (UI and EI) |
| UIREGHRMIN | Min. hours to qualify for reg. benefits [unempl. rate] (EI |
| only) | |
| UIREGMINWK | Minimum weeks to qualify for regular benefits (UI only) |
| UIREGWKFCT | UI regular benefit weeks adjustment factor (UI and EI) |
| UIREPPREV | Weeks of insurable employment [weeks] (UI only) |
| UIREPUER | Regional unemployment rate [rates] (UI only) |
| UIREPWWKD | Repeater eligibility requirements [weeks x rates] (UI only) |
| UIRGEFLAG | Regional extended phase calculation flag (UI only) |
| UIRGEMIN | Unemployment rate for Regional Extended entitlement |
| [UIRGEWKS index] (UI only) | |
| UIRGERATE | Benefit rate for regional extended phase (UI only) |
| UIRGEWKS | Weeks Regional Extended entitlement [UIRGEMIN] (UI only) |
| UIRGNFLAG | Regional requirements flag (UI only) |
| UIRGNMIN | Regional unemployment rate (UI only) |
| UIRGNWKS | Weeks required for eligibility (UI only) |
| UIRPTFLAG | Repeater requirements flag (UI only) |
| UISICHRMIN | Minimum hours to qualify for sickness benefits (EI only) |
| UISICMINWK | Minimum weeks to qualify for sickness benefits (UI only) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| UITRBNFCT | UI training benefit per week adjustment factor (EI and EI) |
| UITRNWKFCT | UI training benefit weeks adjustment factor (UI and EI) |
| UIWAITWKS | Minimum waiting period all claims (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hdurb | Size of urban area |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| hhnfn | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinoth | Other money income (non-taxable) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idnfn | Person's nuclear family [pointer] |
| idninco | No income flag (SPSD variables) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| iduirank | Predicted ranked likelihood of getting UI |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imuidpfg | UI claimants has dependents flag |
| nfin | First person in nuclear family [pointer] |
| nfinch | First child in nuclear family [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnpers | Number of persons in nuclear family |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucgotpa | Received paternity benefits |
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucyl | Weeks on UI in first year before claim |

| | |
|------|---|
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

OUTPUT VARIABLES:

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imuibr | UI benefit recovery |
| imuidpfg | UI claimants has dependents flag |
| imuiydep | Number of dependents under 7 for family supplement (EI only) |
| ubcalfs | Family supplement paid in calendar year |
| ubcalpd | Benefits paid in calendar year |
| ubcalwk | Weeks on claim in calendar year |
| ubclmfs | Family supplement paid on claim |
| ubclmpd | Benefits paid on claim |
| ubclmwk | Weeks on claim |
| ubeiwbp | Weeks of past EI benefits |
| ubern | Modelled insurable weekly earnings |
| ubp1 | Week # of first payment |
| ubp1c | Week # of first payment (windowed) |
| ubp2 | Week # of start of second phase |
| ubp2c | Week # of start of second phase (windowed) |
| ubp3 | Week # of start of third phase |
| ubp3c | Week # of start of third phase (windowed) |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ubp5 | Week # of last other type of ui/ei payment |
| ubp5c | Week # of last other type of ui/ei payment (windowed) |
| ubp6 | Week # of last training payment |
| ubp6c | Week # of last training payment (windowed) |

vardef Define structure member as an SPSM variable

SUMMARY

The vardef function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.



SPSD/M 

Algorithm Guide

This guide is designed primarily to provide SPSPD/M users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black box and glass box users.

September 21, 2001



Canada

Introduction

The Algorithm Guide provides SPSD/M users with a description of the specific personal tax and cash transfer programs which are simulated and the specific way in which this is done. An attempt is also made to guide and caution the user, where necessary, as to the interpretation of the results. Also included in this guide are descriptions of processing and utility algorithms which have a significant effect on the results. The guide is intended for both black box and glass box users.

The guide is organized into three main sections. After the first section (this Introduction), there is a section describing the algorithms organized into logical groupings. This is followed by an alphabetically-arranged encyclopaedic section that lists all algorithms in the SPSM.

These modules are referred to as functions. Function names are printed in lower case (e.g. `txinet`, `txcalc`). Sub-functions are defined within the function that calls them and are also shown in lower case (e.g. `uicl`, `gissub`). Both regular and local variables are shown as usual in lowercase (immicons). These local variables may not be used for reporting purposes unless modifications are made in glass box mode.

These functions tend to have a one-to-one correspondence with actual social and tax programs. In some cases however, two functions are required for one social program (Eg. the child care expense deduction is calculated in one function and allocated to a particular family member in another), or many programs may be simulated in one function (e.g. federal and provincial family allowances are both calculated by one routine).

Subject Reference

1 Algorithm by Program

1.1 Introduction

This guide is designed primarily to provide SPSPD/M users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black-box and glass-box users.

1.2 Pre-simulation Functions

The functions in this group are executed prior to the simulation of taxes and transfers. The database is first adjusted to the users specifications, by `adj`. This adjusted database will form the basis of all base/variant combinations executed in a single program run. Parameter edit checks and the calculation of derived parameters are performed next in `mpc`. This is done based on `.apr` parameters and rules embodied in the function. Finally, calls to the tax/transfer algorithms are made for each requested base and/or variant simulation as controlled by the `drv` function.

1.2.1 Adjust Database

Three functions perform certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database.

| | |
|-----------------------|--|
| <code>fmspopen</code> | Routines to read SPSPD file (.spd) |
| <code>fmxopen</code> | Routines for reading FAMEX (.fxv) file |
| <code>adj</code> | Perform SPSPD database adjustment |

1.2.2 Calculate Derived Parameters

The `mpc` function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters.

| | |
|------------------|---|
| <code>mpc</code> | Calculate derived model parameters and do edits |
|------------------|---|

1.2.3 Tax/Transfer Calculator

Two functions are responsible for invoking the algorithms which calculate all taxes and transfers.

| | |
|-------------------|------------------------------|
| <code>call</code> | Call tax/transfer calculator |
| <code>drv</code> | Tax/transfer calculator |

1.3 Government Cash Transfers

1.3.1 Unemployment Insurance Benefits

Unemployment Insurance benefits are calculated by a set of functions which mimic application of UI regulations to individual employment and claim histories. These functions are contained within the ui function

ui Compute UI benefits

1.3.2 Family Allowances

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

famod Compute family allowance

1.3.3 Federal Child Tax Benefit/Credit

This function is used to calculate either the federal Child Tax Credit program or the federal child tax benefit. Both programs are intended to provide benefits to help low and middle income families meet the costs of raising children under the age of 18.

txctc Compute child tax credit

ccept zero CCE for young kids if optimal

1.3.4 Federal Sales Tax Credits

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse.

txfstc Compute federal sales tax credit

1.3.5 Elderly Programs

1.3.5.1 Old Age Security

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. The SPSM calculates OAS based on the age of the individual and, for immigrants, the years since immigration. The clawback of OAS is performed in the txitax function.

oas Compute OAS for elderly

1.3.5.2 Guaranteed Income Supplement/Spouses Allowance

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable

monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested.

gis Compute GIS/SPA for elderly

1.3.5.3 Provincial GIS Supplementation Programs

The gist function calculates benefits for seven provincial GIS supplementation programs in six provinces; Nova Scotia, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. All modelled provincial senior's programs within SPSM are in this function.

gist Compute Provincial GIS top-ups for elderly

1.3.6 Social Assistance Benefits

This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here.

samod Compute social assistance or guarantees

1.4 Federal Income and Payroll Taxes

1.4.1 Calculate Net Income

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Taxable Dividends
- Taxable Capital Gains
- Total Income
- CPP/QPP Contributions (Deduction or Tax Credit)
- UI Contributions (Deduction or Tax Credit)
- Tuition Fees (Deduction or Tax Credit)
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

txinet Compute net income

1.4.2 Calculate Taxable Income

The process of computing taxable income is divided into two separate routines. Exemptions, deductions and tax credits which are not dependent upon information from other members of the family (e.g., the Basic Personal Exemption or Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

txitax Compute taxable income and individual credits

txhstr Compute family-related deductions or credits

1.4.3 Child Care Expense Allowance

The txceea function calculates the value of the child care expense deduction. The calculation may be optionally converted to a tax credit basis rather than a deduction.

txceea Compute child care expense allowance

1.4.4 Calculate Federal Tax

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Basic Federal Tax (including credit transfers)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement

txcalc Calculate federal income tax

1.5 Calculate Provincial Taxes

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax to a parallel of the federal system in Quebec. Most provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

1.5.1 All Provinces except Quebec

| | |
|--------|---|
| txprov | Compute provincial taxes |
| txnfld | Compute provincial taxes for Newfoundland |
| txpei | Compute provincial taxes for P.E.I. |
| txns | Compute provincial taxes for Nova Scotia |
| txnb | Compute provincial taxes for New Brunswick |
| txont | Compute provincial taxes for Ontario |
| txman | Compute provincial taxes for Manitoba |
| txsask | Compute provincial taxes for Saskatchewan |
| txalta | Compute provincial taxes for Alberta |
| txbc | Compute provincial taxes for British Columbia |

1.5.2 Quebec

| | |
|---------|--|
| txque | Compute provincial taxes for Quebec |
| txqinet | Compute net income (Quebec) |
| txqccea | Compute child care expense allowance (Quebec) |
| txqitax | Compute taxable income and individual credits (Quebec) |
| txqhstr | Compute family-related deductions or credits (Quebec) |
| txqcalc | Calculate income tax (Quebec) |

1.6 Calculate and Assign Commodity Taxes

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures at the spending unit level of analysis in the following function..

| | |
|---------|--|
| ctmod | Compute commodity taxes for individuals and households |
| txhhexp | Compute and pro-rate household taxes, rent, etc. |

1.7 Aggregation Routines

Two aggregation functions are used to calculate several reporting variables as aggregates of other modeled variables. The functions calculate all dollar denominated reporting variables up to the level of consumable income. In addition taxable filer status is determined.

| | |
|-------|----------------------------------|
| memo1 | Compute memo items for reporting |
| memo2 | Compute consumable income, etc. |

1.8 Glass Box Stub Routines

There are two empty functions in both the standard and alternate drivers (drv) that are available to

allow completely new tax or benefit programs to be developed by glass box users.

| | |
|-----|--|
| dem | Compute new taxable demogrants |
| gai | Compute new refundable credits or guarantees |

1.9 Auxiliary Functions

There are a number of auxiliary functions which are used by the functions containing the tax/transfer algorithms. These functions perform routine tasks required in simulating the tax/transfer system such as table look-ups and benefit reduction functions. The description of these functions is of use to anyone attempting to fully understand or modify the C-language source code for the tax/transfer algorithms.

| | |
|----------|--|
| classu | Compute user-defined reporting variables |
| isneg | Is argument negative ? |
| isnneg | Is argument non-negative? |
| isnzro | Is argument non-zero? |
| iszero | Is argument zero? |
| lkup1 | Table look-up with interpolation/extrapolation |
| lkup2 | Table look-up without interpolation |
| maxn | Find the maximum of two numbers |
| minn | Find the minimum of two numbers |
| nneg | Change negative numbers to zero |
| pmaddent | Define and add a parameter |
| randrnd | Randomly round a floating point number to an integer |
| round | Round to nearest integer |
| strn | Retrieve string by string number |
| taxbak1 | One level tax-back function |
| taxbak2 | Two level tax-back function |
| vardef | Define structure member as an SPSM variable |

Alphabetic Reference

adj

Perform SPSD database adjustment

SUMMARY

The `adj` function performs certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database. The function may currently be used to adjust the amount of RRSP contributions claimed. A brief description of the database adjustment in general is also included.

SPSM Implementation

The SPSD is based on surveys and administrative data collected for the 1988 calendar year. Adjustment of this data may be required for several reasons. The user may wish to use the incomes to represent the incomes in a more recent year such as 1994. As such the user would supply estimates of growth rates for income by source and expenditures from 1988 to 1994. The user may also wish to make adjustments for simulation purposes in the 1988 year. For example, known under-reporting of alcohol expenditures may be treated by scaling each household's alcohol expenses or a deduction item could be scaled down to zero to represent a restriction of a certain tax measure. Finally, the user may wish to adjust the weights of individuals and households to reflect alternate demographic assumptions.

The scaling of money items is performed in two functions inaccessible to the glass box user. Prior to the calculation of any taxes or transfers each dollar denominated database variable is multiplied by a single corresponding database adjustment parameter. There are two key exceptions to this. Employment income, comprising about 70% of total income is given more rigorous treatment due to its relative importance in the overall tax/transfer system. Employment income may be adjusted by industry specific growth rates. CPP/QPP income may be adjusted by differential rates according to age groups which allows for the phasing in of that program. Users should refer to the *Parameter Guide* in this manual for further details on specific adjustment parameters.

The `adj` function is a means for glass box users to affect the adjustment of the database in ways not currently possible. The user may add their own adjustment routines to augment or even offset current means of adjustment. For example if the user wished to grow employment income by age and sex they would set the existing employment parameter to one and enter a new algorithm in this function. One such specific database adjustment provision is currently available in black box mode and is used in the analysis of RRSP contributions.

This adjustment (which will change the value of the `idrrsp` variable) is designed to allow the user to simulate the increase in RRSP contribution limits in a rough fashion. It allows the user to increase the RRSP contributions of individuals who are near to the current

contribution limits. The facility is activated by setting the RRSPIFLAG parameter to 1. Two cases are distinguished, those who are not covered by a employer-contributed pension plan, and those who are.

If individuals had RRSP contributions but had no RPP contributions, and their RRSP contributions fell between RRSPSMIN and RRSPSMAX inclusive, their RRSP contributions will be increased by RRSPSINC.

If individuals had RPP contributions, then, for those individuals whose total pension contributions (RRSP plus RPP) fell between RRSPEMIN and RRSPEMAX, their RRSP contributions will be increased by RRSPEINC.

Relation to Other SPSM Routines

The `adj` function is called before `drv` and as such is only executed once for every program run. This means that database adjustments will apply to both the base and variant scenarios. The function is called after the other database adjustment routines.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-----------|---|
| DNINCFLAG | Disable no income flag for calculation |
| PROVMAP | Provincial remapping [prov] |
| RRSPEINC | Increment to rrsp if conditions & rpp>0 |
| RRSPEMAX | Maximum (rpp+rrsp) for increment if rpp>0 |
| RRSPEMIN | Minimum (rpp+rrsp) for increment if rpp>0 |
| RRSPIFLAG | RRSP increment activation flag |
| RRSPSINC | Increment to rrsp if conditions & rpp=0 |
| RRSPSMAX | Maximum (rrsp) for increment if rpp=0 |
| RRSPSMIN | Minimum (rrsp) for increment if rpp=0 |

INPUT VARIABLES:

| | |
|-------|---|
| hhnin | Number of individuals in household |
| idrpp | Registered pension plan contributions (207) |

OUTPUT VARIABLES:

| | |
|---------|---------------------------------|
| hdprov | Province |
| idninco | No income flag (SPSD variables) |
| idrrsp | RRSP calculated amount (208) |

SUMMARY

Stub function for use by glass box users who wish to modify database variables either before and/or after tax/transfer calculation. This function calls the standard driver -- drv.c.

SUMMARY

The ccept function controls multiple calls to the tax transfer calculator drv.

Program Description

There are three instances in which the entire calculation of the tax/transfer system for household is necessary. The ccept function controls such recalculations. Each case is discussed under separate headings below:

Pre-calculation of the child tax benefit.

The calculation of Employment Insurance depends in part upon an individual's Child Tax Benefit entitlement. However, Employment Insurance is calculated prior to the Child Tax Benefit. ccept is used to calculate a preliminary value for the child tax benefit which can then be used in the calculation of Employment Insurance. The final value for a family's child tax benefit may differ from the preliminary estimate used for this calculation of Employment Insurance.

Optimization of the Child Tax Credit/Child Tax Benefit

Beginning in 1988 the rules for calculating the child tax credit/child tax benefit and the child care expense credit were altered to ensure that middle income families could not receive the full benefits from both programs. In practice this is done by reducing maximum child tax credit benefits by 25% of claimed child care expenses. The resulting situation is that below a certain income level it is advantageous not to claim any child care expenses incurred. The ccept function can locate this level and thus maximize the combined benefits from the child care expense credit and the child tax credit/child tax benefit.

SPSM Implementation

ccept performs the re-calculations and optimizations in a specific sequence. The pre-calculation of the federal Child Tax Benefit for purposes of correctly calculating Employment Insurance is performed first. Next the optimization of the child care expense deduction and the federal Child Tax Benefit is performed. The SPSM implementation of each

type of optimization are described separately below:

Pre-calculation of the child tax benefit.

The first time drv is called Employment Insurance is calculated with a zero value for the federal Child Tax Benefit. This will result in no EI family supplement benefits being assigned. The first time ccept is called by drv, it first determines if a family is eligible for both EI and the Child Tax Benefit. If so, that household has its entire tax/transfer entitlements/liabilities re-calculated using the value for the federal child tax benefit calculated in the first pass.

Note that there is a circularity between the two programs in that the federal Child Tax Benefit is based, in part, on Unemployment Insurance benefits to the extent that they are included in the definition of net income which is used to clawback the child benefits.

Optimization of the Child Tax Credit/Child Tax Benefit

The default calculation first performed in txceca makes use of any child care expenses associated with the children in the family. In the ccept function cases subject to optimization are first identified as families having children aged 0-6 with associated child care expenses.

The complexities of the tax reform situation in Canada make it difficult to know how to optimize many of this type of case. Consequently, once these families have been identified, the entire tax/transfer system is recalculated, setting child care expenses for young children to zero. The value of consumable income for both runs is then compared. If the family benefits from this change, the scenario with no child care expenses is kept. Otherwise, the previous scenario is restored by again re-running the entire tax transfer system.

The algorithm is controlled by the parameter CCEZOPT, which is described in the [Parameter Guide](#).

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UITARGET | UI/EI target for the number of cases (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| hdageeld | Age of eldest in household |
| hdnkids | Number of children in household |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idninc | No income flag (SPSD variables) |
| iduirank | Predicted ranked likelihood of getting UI |
| imcce | Child care expenses claimed on behalf of child |
| immicons | Consumable income |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|---------|--|
| imcceni | Consumable income with CCE not zeroed |
| imccez | Is CCE zeroed? |
| imccezi | Consumable income with CCE zeroed |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |

classu Compute user-defined reporting variables

SUMMARY

The classu function is a stub routine which allows the glass-box user to compute and assign values to new or re-defined variables. Variables first must be defined appropriately in vsdu.c and vsu.h. Since this function is normally called by both the standard and alternate model drivers, assignments made in classu will be effective in both cases.

Users should note that classu should only be used when the user is unable to create the desired classification with the User Defined Variable Facility. Please see the [*User's Guide*](#) for more information on this alternative facility.

Note that classu is called at the end of drv so that variables defined in classu are not available for use in other tax/transfer algorithms. See the [*Programmer's Guide*](#) for more information.

ctmod Compute commodity taxes for individuals and households

SUMMARY

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to

observed family expenditures at the spending unit level of analysis. The resulting federal government taxes span 48 consumer expenditure (CE) categories while provincial government taxes have both CE category and provincial dimensions. Commodity taxes are also estimated for other levels of analysis such as economic families and individuals.

Program Description

The federal government has a variety of taxes which are levied on goods used in production and for final demand consumption. Some of the major federal tax types are: custom import duties, alcohol and tobacco excise taxes and excise duties, manufacturers sales tax, gasoline excise tax, air transportation tax, and energy use taxes. The provincial governments also levy taxes but with more of an emphasis on consumer goods. Major taxes include liquor commission mark-ups, gasoline taxes, tobacco taxes, and retail sales taxes.

An important characteristic of this tax system is the cascading effect. Tax cascading occurs when a tax rate is applied to the value of a commodity inclusive of another tax type. For example, when an individual makes a long distance call a federal telecommunications tax of 10% is applied to the price of the call. Provincial governments then levy their retail sales tax rates to the value of the call inclusive of the federal tax.

SPSM Implementation

Input/Output Estimation of Tax Rates

Tax costs associated with domestic production are passed to the domestic consumers is the fundamental I/O modeling assumption. For example, alcohol producers require raw materials such as grains, water, energy source etc. If these inputs are produced themselves in other industries, then their selling price may include a manufacturer's tax component. Through Input/Output (I/O) techniques we are able to associate the implicit tax share of the production process to the correct final demand good.

The macroeconomic I/O system is used to construct effective tax rates by tax type, final demand good, and by province. This enables the calculation of the tax burden implicit in each household's reported final demand expenditures.

The federal tax rates have been grouped into six tax types: custom import duties; excise duties; manufacturer's sales tax; excise taxes; other energy taxes; and federal sales tax. The federal sales tax type that has been included for user simulations is set to zero by default. The array of provincial tax rates has also been reduced to six tax types: profits on liquor commissions; liquor gallonage tax; gasoline tax; amusement tax; tobacco tax; retail sales tax.

The above rates are defined as the ratio of a particular tax to the expenditure net of all commodity taxes for a given good in a given province. Therefore, an additional input parameter rate is applied to the FAMEX observations to net out the commodity taxes implicit in the base year.

For a more complete description of the I/O methodology, calculation procedures, tax type composition, etc. see *Commodity Tax Model User's Guide*.

Notes Regarding Expenditure Adjustments

Prior to the execution of the ctmod function, two modifications of the FAMEX data have been performed by the SPSM.

The first is made necessary because of the way SNA and FAMEX treat the expenditures on motor vehicles as net expenditures. If the trade-in exceeds the value of the purchase, or a household sells a vehicle outright, then the expenditure category will contain a negative value. In this case the SPSM treats the net expenditure as an income item (net sale of durables) and it is incorporated into the income calculation. The expenditure category is then set to zero. This procedure is conducted in the two consumer expenditure categories where net sales can occur: New & used automobiles; Recreation, sporting goods, and camping equipment. This modification is not accessible to the user.

The second data modification involves correcting for under-coverage of some FAMEX expenditure components. For example, sales of alcohol and tobacco are monitored very carefully by government agencies and their data indicate roughly twice as much consumption of these two goods as reported on the FAMEX. Two other FAMEX categories report substantially lower consumption than other information sources would indicate. They are semi-durables and expenditures for restaurants & hotels. The GFFMX parameter in the .APR file enables the adjustment of raw FAMEX values to the levels of other sources. We provide users with factors to inflate expenditures to known 1984 levels.

Estimation of commodity taxes

The ctmod function initially calls the ctfx sub-function to calculate the taxes based on the expenditure patterns of FAMEX spending units. The ctmod function then computes the taxes for other levels of analysis such as individuals or economic families.

The FAMEX expenditure categories must be stripped of their original tax component before the commodity tax calculation can be performed. This is accomplished in the ctfx sub-function by applying the I/O computed CTTXRM parameter (database adjustment parameter) to the expenditure observations.

The effective commodity tax rates are then multiplied by the net expenditures to produce commodity tax levels for each spending unit. If the CTDFLAG is set to 0 then total federal level taxes by commodity and provincial level taxes by commodity and province are calculated. If CTDFLAG is set to 1 then the six detailed federal taxes and seven provincial taxes are generated. Provincial taxes applied are defined in the following input parameters:

- CTPAMU Provincial amusement tax
- CTPGAS Provincial gasoline tax
- CTPICT Provincial commodity taxes on industry
- CTPLGL Provincial liquor gallonage tax
- CTPPLQ Provincial profits on liquor commissions
- CTPRST Provincial retail sales tax
- CTPTOB Provincial tobacco tax

The model ensures that both options will produce identical results in the aggregate.

Commodity taxes are then allocated to individuals in the FAMEX spending unit via personal income shares in the ctmof function. The income of the household's head is derived by adding three variables from the FAMEX income concept not surveyed elsewhere to his/her SPSD income concept variables. These variables are: savings; other money receipts; and net sales of durables. The shares reflect the income distribution after this modification.

The CTOPT parameter controls which income concept is used in the simulation. If the parameter is set to 1 then the FAMEX income concept is used. This measure of income is not linked to other SPSD variables in any way. Therefore, if the user wishes to examine the implications to commodity tax outflows based upon changes in SPSD income variables (i.e. OAS, GIS, income tax changes) then this option should never be specified. Its use should be restricted to pure FAMEX analyses.

If CTOPT is set to 2 then the SPSD income concept is used. This income measure has been corrected for an income bias inherent in Survey of Consumer Finance (SCF) data using Department of Revenue Green Book tax data. This income adjustment is described in detail in the *Database Creation Guide*. The result is a substantial increase in household income for observations in the extreme upper tail.

The FAMEX data suffers from the same under-coverage as the SCF so the reported spending unit expenditure can be out of synch with the Green Book adjusted income. For example, the largest total expenditure observation is around \$150,000 while a large tax adjusted household income exceeds \$5,000,000.

Setting the CTOPT parameter to 2 scales the commodity tax calculated conditioned on FAMEX spending unit income by the ratio of the SPSD "shared" income concept to an equivalent FAMEX "shared" income concept. In this way tax outlays bear closer relation to the SPSD income levels. However, this leads to some outlay distortions for the extremely wealthy which are described in the Interpretation Section.

Interpretation

There are some other discrepancies between the system of national accounts (SNA) definition of consumer expenditure and that of FAMEX. Generally, SNA includes the entire personal sector whose components are households, self-employed professionals, and universities. FAMEX tracks only households and, therefore, tax levels by commodity are generally lower. For a detailed description of these differences see the *Commodity Tax Model User's Guide*

In the aggregate, differences between income SPSM income concept (CTOPT=2) and the FAMEX income concept (CTOPT=1) are almost negligible. Using 1984 base case parameters the FAMEX option produced a \$20.997 billion tax burden on Canadian families while the scaled option generated \$21.048 billion. These compare favorably with the SNA estimate of \$22.5 billion. However, the differences for the highest income households in great. The top three households show differences of over \$200,000. This implies some caution when interpreting commodity tax values for high income observations.

Relation to Other SPSM Routines

The ctmod function calls the ctfx sub-function in order to calculate spending unit commodity taxes. The ctmod function itself is called by the drv function. The ctmod function makes use of parameters derived in the mpc function. The mpc function also ensures that the ctmod function is not executed if the FAMEX data vector is not being read (i.e. if FXVFLAG=0). The calculation of commodity taxes is highly dependent on the parameters applied to the database expenditure items during the database adjustment phase of the simulator.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTDFLAG | Commodity tax detailed calculation flag |
| CTFCID | Federal custom import duties [com] |
| CTFEXD | Federal excise duties [com] |
| CTFEXT | Federal excise taxes [com] |
| CTFGST | Federal GST [com] |
| CTFLAG | Commodity tax activation flag |
| CTFMFG | Federal manufacturer's sales [com] |
| CTFOEN | Federal other energy taxes [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTLPROP | Local property taxes |
| CTNES | Expenditures NES |
| CTOPT | Commodity tax calculation method [1=FAMEX,2=SPSM] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| CTPTOT | Provincial total retail tax equivalent |
| CTSAVE | All positive savings |

INPUT VARIABLES:

| | |
|----------|--|
| ctnexp | Household expenditure net of taxes |
| ctothmon | Household money from other sources |
| cttxfc | Federal commodity taxes (total) |
| cttxpc | Provincial commodity taxes (total) |
| fxfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |

| | |
|----------|------------------------------------|
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hhnin | Number of individuals in household |
| idhhrh | Relationship to head of household |
| immdisp | Disposable income |

OUTPUT VARIABLES:

| | |
|----------|--|
| ctfcid | Federal custom import duties |
| ctfexd | Federal excise duties |
| ctfext | Federal excise taxes |
| ctfgst | Federal GST |
| ctfmfg | Federal manufacturer's sales tax |
| ctfoen | Federal other energy taxes |
| ctishrh | Shared income concept (FAMEX) |
| ctlprop | Local property taxes on owned dwellings |
| ctnes | Household expenditure not elsewhere specified |
| ctnexp | Household expenditure net of taxes |
| ctnexp_ | Household expenditure net of taxes [array] |
| ctnsna | Household expenditure net of taxes -SNA adjusted |
| ctnsna_ | Household expenditure net of taxes [array] -SNA adjusted |
| ctothmon | Household money from other sources |
| ctpamu | Provincial amusement tax |
| ctpgas | Provincial gasoline tax |
| ctplgl | Provincial liquor gallonage taxes |
| ctpplq | Provincial profits on liquor commissions |
| ctprov | Province for COMTAX calculations |
| ctprst | Provincial retail sales tax |
| ctptob | Provincial tobacco tax |
| ctsave | Household savings |
| ctseqhv | FAMEX record sequence number |
| cttxfc | Federal commodity taxes (total) |
| cttxfc_ | Federal commodity taxes [array] |
| cttxpc | Provincial commodity taxes (total) |
| cttxpc_ | Provincial commodity taxes [array] |
| imishri | Shared income concept (FAMEX & SPSD) |
| imninc | No income flag |
| imtxfc | Federal commodity taxes |
| imtxpc | Provincial commodity taxes |

dem Compute new taxable demogrants

SUMMARY

This is a stub function for use by glass box users who wish to incorporate a new program which interacts with the tax system (i.e. taxable benefits).

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|--------------------------|
| imiotg | Other taxable demogrants |
|--------|--------------------------|

| | |
|------------|-------------------------|
| drv | Tax/transfer calculator |
|------------|-------------------------|

SUMMARY

The calculation of taxes and cash transfers for any base or variant run is controlled by a function whose only task is to call all other individual tax/transfer algorithm functions. The sequence of calls is critical to the simulation due to the informational requirements of the tax/transfer functions. For example net income must be known before gis can be calculated. The following list gives the functions called by drv in the order in which they are called.

| Function | Description |
|----------|---|
| ui | Compute UI benefits |
| famod | Compute family allowance |
| oas | Compute OAS for elderly |
| dem | Stub routine for new pre-tax system programs |
| txinet | Compute net income (including payroll taxes) |
| gis | Compute GIS/SPA for elderly |
| senben | Compute senior benefit |
| gist | Compute Provincial GIS top-ups for elderly(GAINS-A, SIP, etc) |
| samod | Compute social assistance or guarantees |
| txitax | Compute taxable income |
| txhstr | Apply tax transfers between head and spouse |
| txcalc | Calculate federal income tax |
| txctc | Compute child tax credit |
| txprov | Compute provincial taxes and credits |
| txfstc | Compute federal sales tax credit |
| gai | Stub routine for new post-tax system programs |
| memo1 | Compute memo items for reporting |
| ctmod | Compute commodity taxes |
| memo2 | Compute consumable income, etc. |

ccept
Classu

Zero CCE for young children if optimal
Stub routine to compute user defined reporting variables

The calling order of the component functions of drv reflects the logical precedence between them.

- The first functions, ui, famod and oas, simulate programs whose benefits are determined by factors other than income and as such are called first.
- dem is a stub routine for glass box applications that require calculations to occur before entering the tax system routines.
- txinet calculates net income prior to certain transfers.
- gis calculates transfers to the elderly.
- senben calculates senior benefits.
- gist, txctc, and txfstc calculate income tested transfer programs.
- samod calculates social assistance or guaranteed income transfers.
- Federal and provincial taxes are calculated next in the next six functions with the tx prefix (txitax, txhstr, txcalc, txprov, txctc, and txfstc).
- gai is another stub routine that is intended for use by glass box users who wish to simulate options requiring information on all personal income taxes and cash transfers. For example users may use this function to simulate an income supplementation program.
- The memol and memo2 functions create aggregate variables for reporting.
- In the ctmod function, sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures.
- ccept optimizes income by maximizing the child care expense credit and the child tax credit.
- classu is a stub routine which allows the glass box user to compute and assign values to new or re-defined variables.

The functions called by drv call other functions and sub-functions in order to complete their calculations. The following page contains a complete list of the names of functions and sub-functions along with a short description in the order in which they are called by drv. Please refer to the specific function in this guide for a more detailed description. Sub-functions (in italic) can be found listed under the function which calls them. Thus for a complete understanding of the calculation of net income one would have to consult both the txinet and txceca functions.

As mentioned earlier, function names are printed in lower case, bold, courier font (E.g. txinet, txcalc) and correspond to a single C language source code file (E.g. txinet.c, txcalc.c). Sub-functions are defined within the function (file) that calls them and are shown in lower case, courier font, italic (e.g. uisqz, gissub). All multiple calls to the same sub-function have been shown here. All functions directly called by drv begin in the first column below, other function calls are indented.

In ccept all the functions are called a second time by drv to find if a family benefit of setting CCE to zero, if it is the case the result is kept, otherwise drv call again all the functions to reset the original values.

| | | |
|----|----------------------|---------------------|
| ui | | Compute UI benefits |
| | <i>uicl</i> <i>m</i> | Simulate a UI claim |

| | | |
|--------|-----------------|---|
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| | <i>uicl</i> | Simulate a UI claim |
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| famod | | Compute family allowance |
| oas | | Compute OAS for elderly |
| dem | | Stub routine for new pre-tax system programs |
| txinet | | Compute net income |
| | <i>txccea</i> | Compute child care expense allowance |
| gis | | Compute GIS/SPA for elderly |
| | <i>gissub</i> | Compute income used to tax back GIS/SPA |
| senben | | Compute senior benefit |
| | <i>sbsub</i> | Compute income used to tax back Seniors Benefit |
| gist | | Compute Provincial GIS top-ups for elderly |
| | <i>txhhexp</i> | Compute and pro-rate household taxes, rent, etc. |
| samod | | Compute social assistance or guarantees |
| txitax | | Compute taxable income |
| txhstr | | Apply tax transfers between head and spouse |
| txcalc | | Calculate federal income tax |
| txprov | | Compute provincial taxes |
| | <i>txnfld</i> | Compute Newfoundland provincial taxes |
| | <i>txpei</i> | Compute PEI provincial taxes |
| | <i>txns</i> | Compute Nova Scotia provincial taxes |
| | <i>txnb</i> | Compute New Brunswick provincial taxes |
| | <i>txque</i> | Compute Quebec provincial taxes |

| | | | |
|--------|--------------|--------------|--|
| | | txqinet | Compute net income (Quebec) |
| | | txqccea | Compute child care expense allowance (Quebec) |
| | | txqitax | Compute taxable income (Quebec) |
| | | txqhstr | Apply tax transfers between head and spouse (Quebec) |
| | | txqcalc | Calculate Income Tax (Quebec) |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txont | | Compute Ontario provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txman | | Compute Manitoba provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txsask | | Compute Saskatchewan provincial taxes |
| | txalta | | Compute Alberta provincial taxes |
| | txbc | | Compute BC provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| txctc | | | Compute child tax credit |
| txfstc | | | Compute federal sales tax credit |
| gai | | | Stub routine for new post-tax system programs |
| memo1 | | | Compute memo items for reporting |
| ctmod | | | Compute commodity taxes |
| | <i>ctfx</i> | | Compute commodity taxes for FAMEX spending unit |
| | | <i>ctfxd</i> | Compute commodity taxes for FAMEX spending unit (detailed) |
| | | <i>ctfxs</i> | Compute commodity taxes for FAMEX spending unit (simple) |
| memo2 | | | Compute consumable income, etc. |
| cceopt | <i>pass2</i> | | Zero CCE for young kids if optimal recalculate UI with child benefits in place |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| classu | | | Compute User Defined Reporting Variables |

SUMMARY

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

Following 1997 reform, starting in 1998 in the model, the Quebec family allowance, the Quebec new born allocation and the Quebec availability allowance are now calculated only if QFATCOPT is set to 1, otherwise the Quebec Family Allowance Tax Credit is calculated in txqcalc.

Program Description

The federal Family Allowances program was designed to provide taxable benefits to help meet the costs of raising children under the age of 18 who are resident in Canada and are maintained by their parent(s) or guardian. At least one parent or guardian must be either a Canadian citizen or a permanent resident, visitor or holder of a Minister's Permit under the Immigration Act and have been legally admitted into Canada. The parent(s) or guardian must make application for benefits and their income must be subject to Canadian income tax. Benefits cease to be payable with regard to self-supporting children (i.e. children who begin to earn a taxable income).

Family allowance benefits are generally paid at a uniform rate across Canada. However, provinces may, within certain limits, vary the amount of Family Allowances that the federal government pays to their residents according to the age and/or number of children in a family. Alberta and Quebec are the only provinces that vary the rate. Alberta varies payment based on the age of the child while Quebec varies payment based on the number of children in the family and then adds a supplement based on the age of the child.

The province of Quebec maintains a separate but linked program under the Quebec Family Allowances Act which provides for benefits to the parent or guardian of an unmarried child under the age of 18 who is not a ward of the province. The applicant must have resided in Quebec for at least one month or be paying Quebec income tax. In 1984 benefits payable were not subject to Quebec income tax, however benefits paid with respect to children aged 16 and 17 were subject to federal tax. Persons in receipt of federal family allowances automatically receive the provincial benefits without application. This program also has a supplement for handicapped children; however, this is not modeled in the SPSM.

The Quebec Newborn Allowance was implemented in 1988 and is modeled in famod from that year. Benefits are paid per child and rise from \$500.00 for each of the first two children to \$3000.00 for each subsequent child.

An option permit the user to randomly increase the rank of first and second child in order to

reflect the rank distribution of child observed by the RRQ. The program end in October 1997 and is replaced by a Child tax allocation not modeled yet.

SPSM Implementation

The famod function calculates federal and provincial family allowances based on the age of children and number of children in a family. Residency requirements are deemed to have been met in all cases as is the requirement of non self-sufficiency. The function always allocates family allowances as income of the mother unless one is not present in the nuclear family. This temporary allocation is subsequently assigned to the spouse having the higher net income in txinet and txqinet. The function outputs values for federal(imffa) and provincial(impfa) family allowances as well as the value of taxable family allowances(imtfa) for use in other functions. The function loops through each nuclear family in a household.

The function first calculates federal and provincial family allowances for residents of Quebec. Counts of numbers of children by age group are calculated and used to index into two look-up tables for federal and provincial programs as well as to scale the federal age supplement. The values are then aggregated into two local variables, taxable family allowances and federal family allowances. Taxable family allowances are equal to the sum of federal benefits for each child (as determined by that child's rank in the family) plus the federal supplement for each child aged 12-17 plus the portion of Quebec family allowances paid with respect to children aged 16 and 17.

The calculation of Quebec allowances in famod includes the Quebec availability allowance from 1988 forward. It is paid as a supplement to the Quebec family allowances and is represented by the variable imqaafa. Quebec allowances also include the calculation of the Quebec Newborn Allowance, represented by the variable imqnbfa. This benefit is calculated on the following schedule for 1988:

| Child Number | Birth | Age 1 | Age 2 | Total |
|---------------------|--------------|--------------|--------------|--------------|
| 1 | 500 | 0 | | 500 |
| 2 | 500 | 0 | | 500 |
| 3+ | 375/Quarter | 375/Quarter | | 3,000 |

Interpretation

Results obtained from the SPSM with respect to family allowance benefits differ from Health and Welfare Canada administrative data. Overall the SPSM reports 96.7% of the 1984 calendar year average health and welfare total dollars and 97.3% of children for whom benefits are received.

The SPSM has few children in part due to the non-coverage of Yukon, N.W.T., and native reservations, all of which have younger than average populations and larger than average family sizes (approximately 1.5% of children). A second source of underestimation is the special allowances for foster children and children in welfare agencies. The SPSM does not include these children or their benefits which account for .7% of total family allowances. Further, the SPSM does not take into account payments made outside Canada, although the effect of these on the total is insignificant (less than .1%).

The family allowance program requires parents of 'self-supporting' children to notify Health and Welfare Canada and have the benefits with respect to these children suspended. There are about 52,000 of such children aged 16 and 17 on the SPSD with respect to whom benefits are allocated. It is unknown how many of the parents of these children actually report their situation to Health and Welfare Canada. Lastly, no residency check is imposed on the parents and this will have an insignificant effect. It is assumed that the number of children turning age 18 during the calendar year is balanced by the number of new births. That is, full year family allowance benefits paid with respect to children born during 1984 will be overestimates to the same degree that an underestimate arises for benefits not given to 18 year olds who were 17 during calendar 1984.

Relation to Other SPSM Routines

The famod function is called by drv. The function outputs two variables that are used in txinet for deciding which parent will claim the family allowances for tax purposes: taxable family allowances(nftfa) and number of family allowance children(nfnfach).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AFAC1 | Alberta FA benefit per child aged 0 - 6 |
| AFAC2 | Alberta FA benefit per child aged 7 - 11 |
| AFAC3 | Alberta FA benefit per child aged 12- 15 |
| AFAC4 | Alberta FA benefit per child aged 16- 17 |
| FAFLAG | Family allowance flag |
| PFACFLAG | Use provincial configuration flag |
| QAAFA | Quebec availability allowance (supplement) [parity,\$] |
| QAAFAFLAG | Availability Allowance: Supplement to Quebec FA |
| QFAIFLAG | Quebec inclusion of federal family allowance in income flag |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFFSL | Federal family allowance: Quebec Configuration[parity,\$] |
| QFPSL | Quebec provincial family allowance [parity,\$] |
| QFS | Federal supplement per child 12-17 in Quebec configuration |
| QNBFA | Quebec newborn family allowance [parity,age] |
| QNBFAFLAG | Quebec newborn family allowance flag |
| QNBPOFLAG | Quebec newborn family allowance phase out flag |
| QNBPOPYR | Quebec newborn family allowance phase-out year proportion |
| QNBPOYR | Quebec newborn family allowance phase out year |
| QNRFLAG | Quebec newborn family random increase of child rank |
| STDFA | Standard federal family allowance per child |
| TARGETYEAR | Year of analysis |
| INPUT VARIABLES: | |
| hdprov | Province |
| hhnnf | Number of nuclear families in household |

| | |
|----------|---|
| idage | Age |
| idrand | Random numbers [array] |
| idsex | Sex |
| nfinch | First child in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|---------|---|
| imffa | Federal portion of family allowances |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| impfa | Provincial family allowance |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqnbfa | Quebec newborn Allowance |
| imqtfa | Quebec taxable family allowances |
| imtfa | Taxable family allowances |
| nfineld | Eldest person in nuclear family [pointer] |

fmfxopen Routines for reading FAMEX (.fxv) file

SUMMARY

The purpose of this maintenance function is to load the FAMEX variables and to grow them by the corresponding database adjustment parameter.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|---------------|--|
| CTCFALC | FAMEX reporting error adjustment: Alcohol [prov] |
| CTCFGAS | FAMEX reporting error adjustment: Gasoline [prov] |
| CTCFTOB | FAMEX reporting error adjustment: Tobacco [prov] |
| CTTXRM | Base year commodity tax removal factor [com x prov] |
| GFCQP | Adjustment Factor: CPP/QPP contributions |
| GFFABD | Adjustment Factor: Account balancing difference |
| GFFMX | Adjustment Factor: consumer expenditure categories |
| [commodity] | |
| GFFOMR | Adjustment Factor: Other money receipts |
| GFGVPEN | Adjustment Factor: Government pension plan contributions |
| GFINTAX | Adjustment Factor: Income taxes |
| GFIPAC | Adjustment Factor: Life insurance premiums and annuity |
| contributions | |
| GFNCAL | Adjustment Factor: Net change in assets and liabilities |
| GFNES | Adjustment Factor: Not elsewhere stated |

| | |
|------------|---|
| GFPRTAX | Adjustment Factor: Property tax |
| GFPVPEN | Adjustment Factor: Private pension plan contributions |
| GFRECOM | Adjustment Factor: Real estate commissions |
| GFRFEES | Adjustment Factor: Registration and license fees |
| GFRRSPT | Adjustment Factor: Total RRSP contributions (FAMEX) |
| GFTPTAX | Adjustment Factor: Transfer of property taxes |
| GFUIC | Adjustment Factor: UI contributions |
| KEEPNEGEXP | Retain negative expenditures in FAMEX |
| DBVERSION | Version of the database (x100) |
| INPFXXV | Name of FAMEX vector file (in) [string] |
| INPSPD | Name of SPSD file (in) [string] |

INPUT VARIABLES:

| | |
|----------|--|
| fhbfver | SPSD/M binary format version (x100) |
| fhdbver | SPSD/M database/year version (x100) |
| fhfiltyp | File type (extension) [string] |
| fhnum | Number of numbers in the file |
| frclohhv | Cloning factor for FAMEX exp. vector |
| frcpp | Cpp - qpp contributions |
| frfabd | Account balancing difference |
| frfomr | Other money receipts |
| frgvpen | Gvt pension plan contributions |
| frintax | Income taxes |
| frio | Expenditure on the 40 I/O categories [array] |
| fripac | Life ins prems and annuity contributions |
| frncal | Net change in assets and liabilities |
| frnes | Not elsewhere stated |
| frprtax | Property tax |
| frpvpen | Private pension plan contributions |
| frrecom | Real estate commissions |
| frxfees | Registration and license fees |
| frrgvlot | Ratio of spending on government lotteries |
| frrrspt | Total RRSP contributions (FAMEX) |
| frtptax | Transfer of Property taxes |
| fruic | UI contributions |
| hdprov | Province |

OUTPUT VARIABLES:

| | |
|----------|---|
| fhhash | Hashed code of header information |
| fxclohhv | FAMEX cloning factor |
| fxcpp | Cpp - qpp contributions |
| xfabd | Account balancing difference |
| xfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxintax | Income taxes |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxncal | Net change in assets and liabilities |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxrgvlot | Ratio of spending on government lotteries |
| fxrrspt | Total RRSP contributions (FAMEX) |

| | |
|----------|---|
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtpax | Transfer of Property taxes |
| fxuic | UI contributions |
| hdfrstfx | First household in FAMEX group flag |
| hdlastfx | Last household in FAMEX group flag |
| hdwgtfx | Sum of household weight for FAMEX group |

fmspopen Routines to read SPSD file (.spd)

SUMMARY

The purpose of this maintenance function is to load the SPSD variables and to grow them by the corresponding database adjustment parameter. In addition the method of conversion for converted variables is applied. The logic for differential growth of CPP is also applied in this function. The actual code in this function is proprietary and is not released with the SPSD/M product.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|-----------|--|
| GFADDED | Growth Factor: Additional deductions from net income (256) |
| GFALEXP | Growth Factor: Other allowable employment expenses (229) |
| GFCAPGEX | Growth Factor: Capital gains exemptions (254) |
| GFCARRY | Growth Factor: Carrying charges (221) |
| GFC CET | Growth Factor: Child care expenses associated with child |
| GFC CETT | Growth Factor: Child care expenses (Limit A, Form T778) |
| GFCGLESS | Growth Factor: TCG Less Cap Gains Ded on Cap Prop Gifts |
| GFCCHARIT | Growth Factor: Charitable donations (340) |
| GFCLOSS | Growth Factor: Allowable other years capital loss (253) |
| GFCPP65 | Growth Factor: CPP for age 65 |
| GFCPP66 | Growth Factor: CPP for age 66 |
| GFCPP67 | Growth Factor: CPP for age 67 |
| GFCPP68 | Growth Factor: CPP for age 68 |
| GFCPP69 | Growth Factor: CPP for age 69 |
| GFCPP70 | Growth Factor: CPP for age 70 |
| GFCPP71 | Growth Factor: CPP for age 71 |
| GFCPP72 | Growth Factor: CPP for age 72 |
| GFCPP73 | Growth Factor: CPP for age 73 |
| GFCPP74 | Growth Factor: CPP for age 74 |
| GFCPP75 | Growth Factor: CPP for age 75 |
| GFCPPG75 | Growth Factor: CPP for age > 75 |
| GFCPPL65 | Growth Factor: CPP for age < 65 |

| | |
|------------------|---|
| GFDALIMO | Growth Factor: Alimony paid (220) |
| GFDISOTH | Growth Factor: Disability amount for dependants (318) |
| GFDISSLF | Growth Factor: Disability amount for self (316) |
| GFDUES | Growth Factor: Union and professional dues (212) |
| GFEMPLO | Growth Factor: Employee home relocation loan dedn (248) |
| GFEXPLOR | Growth Factor: Exploration and development expenses (224) |
| GFFDSFT | Growth Factor: Foreign tax credit applied to surtax (511) |
| GFFORAVG | Growth Factor: Forward averaging amount withdrawal (237) |
| GFFORINC | Growth Factor: Net foreign income (508) |
| GFFORTX | Growth Factor: Foreign tax paid (507) |
| GFGIFTS | Growth Factor: Gifts to Canada/provinces/culture (342) |
| GFGSTREB | Growth Factor: GST rebate (457) |
| GFHOMSTU | Growth Factor: College residence/resident homeowner |
| assistance (558) | |
| GFIALIMO | Growth Factor: Alimony Income |
| GFICAPG | Growth Factor: Capital gains (actual) (127 * 1.5) |
| GFIDIV | Growth Factor: Dividend income (actual) (120 / 1.5) |
| GFIEMP | Growth Factor: Employment income [province,sex] |
| GFIINT | Growth Factor: Interest income (121) |
| GFILOSS | Growth Factor: Business investment losses (217) |
| GFINOGV | Growth Factor: Other government income (non-taxable) |
| GFINOTH | Growth Factor: Other money income (non-taxable) |
| GFIOINV | Growth Factor: Other investment income with net rental |
| GFIPENS | Growth Factor: Pension income (115) |
| GFISA | Growth Factor: Social assistance income |
| GFISEFM | Growth Factor: Self-employed income - farming |
| GFISENF | Growth Factor: Self-employed income - non-farming |
| GFITC | Growth Factor: Federal investment tax credits (412) |
| GFITOGV | Growth Factor: Other government income (taxable) |
| GFITOTH | Growth Factor: Other non-government income (taxable) |
| GFITRRSP | Growth Factor: Taxable RRSP withdrawals |
| GFIVETP | Growth Factor: Veterans Pensions |
| GFWORKC | Growth Factor: Worker's compensation |
| GFLABTXG | Growth Factor: Labour funds tax credit (414) |
| GFMEDGRO | Growth Factor: Medical expenses, gross (330) |
| GFMINCAR | Growth Factor: Minimum tax carryover (504) |
| GFMOVEXP | Growth Factor: Imputed moving expenses (219) |
| GFMSCHPD | Growth Factor: Manitoba school taxes paid |
| GFNCLOS | Growth Factor: Allowable other years non-capital loss (252) |
| GFNORTH | Growth Factor: Northern deductions (255) |
| GFOTHDED | Growth Factor: Other deductions from total income (232) |
| GFOTHPE | Growth Factor: Other dependant exemptions (305) |
| GFPARTLO | Growth Factor: Limited partnership losses (251) |
| GFPOLCON | Growth Factor: Federal political contributions (409) |
| GFPROPTX | Growth Factor: Net property taxes paid (556) |
| GFPRVFTC | Growth Factor: Provincial foreign tax credit (Form T2036) |
| GFPRVPOL | Growth Factor: Provincial political contributions (565) |
| GFRENTPD | Growth Factor: Total rental payments (555) |
| GFRPP | Growth Factor: Registered pension plan contributions (207) |
| GFRRSP | Growth Factor: RRSP contributions (208) |
| GFSAURED | Growth Factor: Predicted benefits from Social Assistance |
| GFSCFCQP | Growth Factor: SCF CPP |
| GFSCFCTC | Growth Factor: Child tax credit |
| GFSCFFTC | Growth Factor: Federal tax credit |
| GFSCFINT | Growth Factor: SCF interest income |
| GFSCFOAS | Growth Factor: Old age security |
| GFSCFPTC | Growth Factor: SCF provincial tax credits |

GFSCFSA Growth Factor: SCF social assistance
 GFSCFUIB Growth Factor: Unemployment insurance benefits
 GFSTKDED Growth Factor: Stock option deduction (249)
 GFTUITN Growth Factor: Tuition fees (320)
 GFUIPRED Growth Factor: Predicted benefits from UI
 IEMPADJ Adjustment Factor: Employment income [employment income
 breaks,province]
 IEMPBRK Adjustment Factor: Income breaks for income
 adjustment[employment income breaks]
 IMPCQPOPT Imputation method, CQP [1=none 2=rank]
 IMPINTOPT Imputation method, Interest [1=none 2=imputed]
 IMPSAOPT Imputation method, SA [1=none 2=rank]
 IMPUIBOPT Imputation method, UI [1=none 2=rank]
 PURR Ratio current:base unemployment rate [prov]
 UIBASEYRMAX Maximum insurable earnings for base year
 UITARGYRMAX Maximum insurable earnings for target year
 FXVFLAG Read FAMEX expenditure vector file
 INSPSD Name of SPSD file (in) [string]
 WGTFLAG Read weight file

INPUT VARIABLES:

fhbfver SPSD/M binary format version (x100)
 fhdbver SPSD/M database/year version (x100)
 fhfiltyp File type (extension) [string]
 fhnhh Number of households in the file
 hrclohh Number of SCF clones
 hrevmv Expenditure vector matching variable
 hrprov Province
 hrtenur Tenure
 hrurb Size of urban area
 idage Age
 idccqp Converted CPP/CQP benefit
 idcintim Converted interest income (imputed)
 idcsa Converted social assistance
 idsex Sex
 irage Age
 irccqp Converted CPP/CQP
 ircfpub SCF CF publication flag
 ircfrh Relation to census family head
 ircfseq Census family sub-sequence number
 ircintim Converted interest income (imputed)
 ircluflg Common law union flag
 ircsa Converted social assistance
 ircuib Converted UI benefit
 iredlev Educational level
 irefpub SCF EF publication flag
 irefrh Relation to economic family head
 irefseq Economic family sub-sequence number
 irestat Educational status
 irhhrh Relation to household head
 irieflag Institutionalized elderly flag
 irimmi Years since immigrant arrival
 irind Industry
 irinseq Individual sub-sequence number
 irlfst Labour force status
 irlyfp Full or part-time last year
 irlystr Stretches of unemployment last year

| | |
|------------|-------------------------------------|
| irlyun | Weeks unemployed last year |
| irlyww | Weeks worked last year |
| irmarst | Marital status |
| irnonlf | Main activity for non-lf persons |
| irocc | Occupation |
| irrklyun | Raking foundation: weeks worked |
| irrklyww | Raking foundation: weeks unemployed |
| irscfflg | SCF high-income preservation flag |
| irschtp | School type |
| irsex | Sex |
| irsynthi | Synthetic high income person |
| m0val | Money item value |
| m1val | Money item value |
| m2val | Money item value |
| m3val | Money item value |
| urbtyp | Claim type |
| urdivwk | New EI Variable |
| ureff | Base year effective weekly benefit |
| urern | Base year insurable weekly earnings |
| urexhas | Exhaustee flag |
| urgotpa | |
| urhrwk | New EI Variable |
| urmtyp | Claim type |
| urnere | New EI Variable |
| urothbr | New EI Variable |
| urothwk | New EI Variable |
| urrpeat | Repeat claim flag |
| urstart | Week claim established |
| urtpcng | Type change flag |
| urtrnbr | Training benefit weekly rate |
| urtrnwk | Weeks of training benefits |
| uruer | Local unemployment rate (x10) |
| urweeks | Claim weeks of benefits |
| urwork | Weeks of work prior to claim |
| ury1 | |
| ury2 | |
| ury3 | |
| ury4 | |
| ury5 | |
| wrwgt | Household weight (float) |
| CANCELFLAG | Cancellation request flag |
| DBVERSION | Version of the database (x100) |
| WGTTOT | Sum of weights on tax file |

OUTPUT VARIABLES:

| | |
|---------|---|
| fhash | Hashed code of header information |
| hdclohh | Number of SCF clones |
| hdevmv | Expenditure Vector Matching Variable |
| hdnpers | Number of persons in household |
| hdprov | Province |
| hdseqhh | Household sequence number |
| hdtenur | Tenure |
| hdurb | Size of urban area |
| hdwgthh | Household weight |
| hhnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idalexp | Other allowable employment expenses (229) |
| idcapgex | Capital gains exemptions (254) |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idccqp | Converted CPP/CQP benefit |
| idcfpub | SCF CF publication flag |
| idcfrh | Relationship to census family head |
| idcfseq | Census family sub-sequence number |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idcintim | Converted interest income (imputed) |
| idcross | Allowable other years capital loss (253) |
| idcluflg | Common-Law union flag |
| idcsa | Converted social assistance |
| idcuib | Converted UI benefit |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idedlev | Educational level |
| ideducm | Eligible months of education allowance |
| idefpub | SCF EF publication flag |
| idefrh | Relationship to economic family head |
| idefseq | Economic family sub-sequence number |
| idemplo | Employee home relocation loan dedn (248) |
| idestat | Educational status |
| idexplor | Exploration and development expenses (224) |
| idext | Extra numbers [array] |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idgstreb | GST rebate (457) |
| idhhrh | Relationship to head of household |
| idhomstu | College res/resdnt homeowner assist (558) |
| idialimo | Alimony income received |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idimmi | Years since immigration |
| idind | Industry |
| idinogv | Other government income (non-taxable) |
| idinoth | Other money income (non-taxable) |
| idinseq | Individual sub-sequence number |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisa | Social assistance income |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| iditogv | Other government income (taxable) |

| | |
|-----------|--|
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idivetp | Veterans pensions and allowances |
| idiworkc | Workers compensation benefits |
| idlabtxg | Gross Labour funds bought (413) |
| idlfst | Labour force status |
| idlyfp | Last year full/Part time |
| idlystr | Last year stretches unemployed |
| idlyun | Weeks unemployed |
| idlyww | Weeks worked |
| idmarst | Marital status |
| idmedgro | Medical expenses, gross (330) |
| idmincar | Minimum tax carryover (504) |
| idmovexp | Imputed moving expenses (219) |
| idmschpd | Manitoba school taxes paid |
| idnage | Age |
| idnclos | Allowable other years non-capital loss (252) |
| idninco | No income flag (SPSD variables) |
| idnonlf | Major non-LF activity |
| idnorth | Northern deductions (255) |
| idocc | Occupation |
| idothded | Other deductions from total income (232) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idproptx | Net property taxes paid (556) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrentpd | Total rental payments (555) |
| idrkllyun | Raking foundation: weeks unemployed |
| idrkllyww | Raking foundation: weeks worked |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| idscfcqp | CPP/QPP income (SCF) |
| idscfctc | Child tax credit |
| idscfflg | SCF high-income preservation flag |
| idscfftc | Federal tax credit |
| idscfint | Interest income (SCF) |
| idscfoas | Old age security |
| idscfptc | Provincial tax credits as reported on SCF |
| idscfsa | Social assistance income (SCF) |
| idscfuib | Unemployment insurance benefits |
| idschtp | School type |
| idsex | Sex |
| idstkded | Stock option deduction (249) |
| idsynthi | Synthetic high income person |
| idtuitn | Tuition fees (320) |
| iduipred | Predicted amount of UI received |
| iduirank | Predicted ranked likelihood of getting UI |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucexhas | Exhaustee flag |
| ucgotpa | Received paternity benefits |

| | |
|---------|--|
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucuero | Local unemployment rate (x10)-original value |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucy1 | Weeks on UI in first year before claim |
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

gai Compute new refundable credits or guarantees

SUMMARY

This is a stub function for use by glass-box users who wish to incorporate a new program that does not affect current programs in the tax system (i.e. a new refundable tax credit). It is called by drv after all taxes have been calculated.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hnnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|------------------------|
| imiosa | Other SA or guarantees |
|--------|------------------------|

SUMMARY

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested. The SPSM gis function is based on the age of the individual and the years since immigration as well as family net income and family type. The function can calculate GIS, SPA, Extended SPA, and Widowed SPA benefits. The functions contain one sub-function, gissub, which calculates the income on which GIS/SPA benefits are tested.

The GIS/SPA benefits are zeroed out if the Seniors Benefit is turned on. When activated, the Seniors Benefit takes precedence over OAS/GIS. Persons age 60 or over in May 1996 may elect to receive OAS/GIS rather than the seniors benefits if their benefits are higher.

Program Description

The Guaranteed Income Supplement is a monthly, non-taxable, income tested benefit paid to residents of Canada who are in receipt of a basic Old Age Security pension. Recipients must re-apply annually. The Guaranteed Income Supplement is not payable outside of Canada for periods of longer than six months. Income testing is based on net income as defined for income tax purposes with the exception of Old Age Security benefits. In the case of a married couple, including common-law, the combined income of the pensioner and his or her spouse is taken into account. Where the individual or couple have an income above a specified amount, the Guaranteed Income Supplement is reduced at a rate of either \$1 for every \$2 of income, or \$1 for every \$4 of income, dependent upon the individuals' marital status and the benefit status of their spouses (if present).

The Guaranteed Income Supplement was established in 1966 to provide monthly benefits to OAS pensioners born on or before December 31, 1910, whose income is below a specified amount. For 1967, the monthly benefit was \$40 and set at 40 percent of the OAS pension thereafter. The Guaranteed Income Supplement has been changed on various occasions, the most important of which were as follows: 1970, which extended GIS to all OAS beneficiaries who met the income criterion; 1972, provided for annual indexation of GIS based on the CPI; 1973, changed indexation to quarterly from annual; 1977, provided the payment of GIS to partial OAS recipients; 1984, provided an increase in maximum GIS benefits to recipients of partial OAS pensions in the amount of the difference between full and partial OAS benefits.

The Spouse's Allowance is a monthly benefit designed to recognize the difficult circumstances faced by those couples living on the pension of only one spouse, and by many widowed persons. The Allowance is payable to the 60 to 64 year old spouse of an Old Age Security pensioner as well as to any low-income widow or widower age 60 to 64, providing the potential recipient has been a resident of Canada for at least 10 years after reaching age 18. This benefit is income-tested based upon the combined income of both the beneficiary

and his/her spouse and must be re-applied for annually. Benefits are not considered as income for income tax purposes and are not payable outside Canada for periods of more than six months.

The Spouse's Allowance came into effect October 1, 1975 and provided for the payment of benefits to persons aged 60 to 64 inclusive who are married to and living with an OAS pensioner. The amount was set at a sum equal to the monthly OAS pension plus the maximum monthly GIS at the married rate. Significant changes to the Spouse's Allowance were made in 1977 with the provision for partial Spouse's Allowance using the same criterion as for OAS; 1979, the extension of the Spouse's Allowance to include surviving spouses of deceased Old Age Security pensioners; 1985, with the provision for Spouse's Allowance to be paid to all widows/widowers age 60 to 64 regardless of deceased spouse's prior pension status.

The GIS, and SPA programs have been designed with the overall income of elderly Canadians in mind and ensure that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. Because the programs are interrelated, a better understanding is facilitated by discussing them together across the five different family types listed below and discussed in turn. These categories define the basic structure of the SPSM implementation of these programs. In these descriptions pensioner is understood to mean a recipient of either full or partial OAS benefits.

| GIS/SPA Type | Family Status |
|---|---|
| 1. Single Pensioner: | Unattached Individual, OAS Pensioner |
| 2. Widowed Pensioner: | Unattached Individual, Age 60-64, Widowed |
| 3. Married 2 Pensioner: | Married Couple, Both OAS pensioners |
| 4. Married pensioner with SPA spouse: | Married Couple, OAS Pensioner with SPA recipient |
| 5. Married pensioner with non-pensioner spouse: | Married couple, 1 OAS pensioner, spouse ineligible for OAS or SPA |

Single Pensioner

If an individual is receiving a full Old Age Security Pension he or she may be eligible for the federal Guaranteed Income Supplement (GIS). GIS is an income tested benefit payable to OAS beneficiaries with little or no income beyond to the basic OAS benefit. In the case where a beneficiary of a full OAS pension has no additional income or income of up to a maximum of \$24 per year, his/her GIS benefit will be the maximum. For every two dollars of income in excess of \$24 annually, the GIS benefit is reduced by one dollar until the benefit is reduced to zero.

In the case where the beneficiary is eligible for only partial OAS benefits, but has little or no other income (again, to a maximum of \$24 per year), supplementary GIS is available. Supplementary GIS makes up the difference between the partial OAS benefit that the beneficiary is receiving and full OAS benefits. Thus, a beneficiary with 20 years of residence in Canada would receive 30/40 of a full OAS pension and supplementary GIS benefits up to an amount equivalent to 10/40 of a full OAS pension. This ensures that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. In addition to the partial OAS pension and the supplementary GIS benefits, an individual may also receive the regular GIS benefit. Both the regular and the supplementary GIS benefits are income tested and reduced at a rate of one dollar for every two dollars of income in excess of \$24 per year.

Widowed pensioner

The Spouse's Allowance is an income-tested benefit payable to individuals who are between 60 and 65 years of age and are spouses of Old Age Security beneficiaries. In order to qualify for this benefit, the applicant must meet the same residence requirements set out for the basic Old Age Security Pension. The guarantee for the benefit is equivalent to the sum of the full basic Old Age Security Pension plus the Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of the beneficiary's monthly income or the couple's combined monthly income until the OAS-equivalent is reduced to zero. At that point the GIS portion reduces at the rate of \$1 for every \$4 of combined income until benefits are reduced to zero.

If an individual receiving Spouse's Allowance becomes a widow or widower, they are then eligible for an Extended Spouse's Allowance until they reach the age of 65 at which time they will become eligible for a basic Old Age Security Pension and the Guaranteed Income Supplement. The amount of the Extended Spouse's Allowance is somewhat higher than the regular Spouse's Allowance to account for the fact that the beneficiary is now in a single income family.

In addition to the regular and Extended Spouse's Allowances, benefits exist for widows and widowers between 60 and 65 years of age whose spouse died prior to becoming a pensioner. The Widowed Spouse's Allowance pays benefits at the same rate as the Extended Spouse's Allowance. Both the Extended and Widowed Spouse's Allowances are reduced by \$3 for every \$4 of monthly income until the OAS-equivalent portion is reduced to zero and then by \$1 for every additional \$2 of monthly income until the GIS-equivalent portion is reduced to

zero.

The Spouse's Allowance is not considered as income for income tax purposes but may, however, affect taxes indirectly via the spousal exemption amount.

Married Couple, Both Pensioners

GIS eligibility for couples is first based upon receipt of OAS. If the applicant is not eligible for OAS, then he or she is not eligible for GIS. Once eligibility for GIS has been established, then the rate of recovery or rate at which GIS is reduced because of additional income, must be established. For two pensioner couples, where both are OAS beneficiaries, GIS is reduced by one dollar for every four dollars of the couple's combined monthly income in excess of \$48 per year. In 1984, the maximum regular GIS payable to a married beneficiary was less than that payable to a single beneficiary. As in the case of a single beneficiary receiving only partial OAS benefits, a supplementary GIS benefit is available which makes up the difference between partial and full OAS benefits.

Married Pensioner with SPA Spouse

GIS is payable to the pensioner at the same rate as is paid to an individual in married couple where both spouses are pensioners. The amount of SPA benefit is equivalent to the combination of the full basic Old Age Security Pension and Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of combined monthly income (75%) until the OAS-equivalent is reduced to zero. At that point both the remaining portion of the Spouse's Allowance, and the pensioner's Guaranteed Income Supplement are each reduced by \$1 for every additional \$4 (50%) of the couple's combined monthly income.

The benefits payable to a pensioner with a given income could vary depending on whether the couple had applied for SPA; the benefit being higher for single pensioner couples. To ensure benefits are equal in these cases the SPA couple's benefits begin to be reduced at the effective rate of 25%, \$1 for each \$4 of family income after the crossover point. This is done by holding the pensioner's benefits fixed from the crossover point until the SPA benefits are reduced to zero; then the pensioners benefits continue to be reduced at the same married rate (see following figure).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

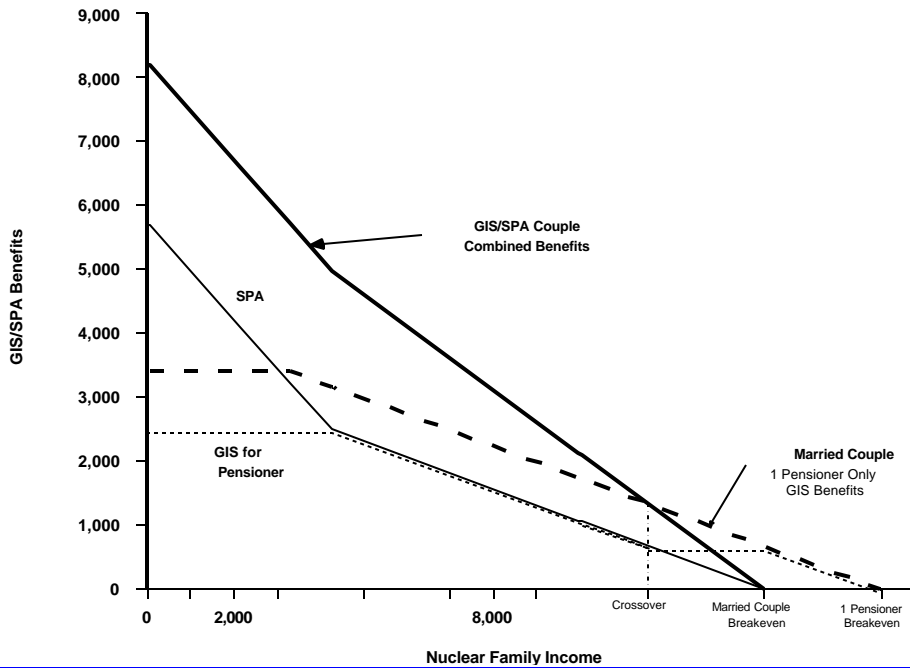


Figure 2 GIS/SPA Benefits for Married Pensioner with Non-Pensioner Spouse

Married Pensioner with Non-Pensioner Spouse

In the case of a pensioner whose spouse is under 60 years of age or is a recent immigrant, and therefore not eligible for OAS, GIS or SPA, the pensioner receives GIS at the higher single rate and benefits are reduced \$1 for every \$4 of the couple's combined monthly income with the first reduction being made only when their combined monthly income exceeds an amount equivalent to basic OAS plus \$4 per month. (see figure above)

SPSM Implementation

The gis function determines benefits based on the age of the individual, the years since immigration as reported at the time of the SCF survey in April 1985, combined family income, and family type. The function makes use of the imoasres, imoaspar variables created in the oas function to determine residential eligibility.

The function initially performs some screenings and pointer assignments for efficiency, and then makes a call to the gissub function to determine the previous years income, which will be used when calculating GIS/SPA benefits. This sub-function adds together all the components of total income listed below and multiplies them by a deflator PYINC to estimate the value of the previous year's income.

| | |
|----------------------|--|
| Net Income = PYINC * | Deflator To Simulate Previous Years Income |
| imicapgt | Taxable Capital Gains |
| + imidivt | Dividends Received |
| + idiint | Investment Income |

| | |
|-----------|--------------------------------------|
| + idiemp | Employment Income |
| + idisenf | Non-Farm Self Employment Income |
| + idisefm | Farm Self Employment Income |
| + idioinv | Other Investment Income |
| + iditoh | Other Income |
| + idicqp | CPP/QPP Benefits |
| + idipens | Private Pension Income |
| + iditogv | Other Taxable Government Transfers |
| + imiuib | Unemployment Insurance Benefits |
| - imalexp | Other allowable Employment Expenses |
| - imcqpc | CPP/QPP Contributions |
| - imuic | Unemployment Insurance Contributions |

Benefits are then calculated in each of the five groups discussed above. Every individual is assigned a value for the variables imoldtyp and ingistyp which define the type of pensioner couple and are used in the gist function.

The GIS supplement for the OAS shortfall for immigrants is calculated conditional on the setting of GISOASFLAG in all cases except the SPA recipient in a married couple. This should be set to one in years 1984 and later. No adjustment is made to account for the first quarter in 1984 for which no shortfall adjustment was made.

Take-up rates for GIS and SPA benefits are optionally applied depending on the value of the GISTURFLAG parameter. The rates are applied to individuals and to one spouse of a married couple. The algorithm assumes that the take-up rate look-up table margins are all dollar denominated GIS or SPA benefit levels.

Relation to Other SPSM Routines

GIS and SPA depends on the input parameters for basic GIS/SPA benefits and various variables calculated in the oas function. The function also makes use of parameters derived in the mpc function. The mpc function also ensures that GIS is not calculated without OAS being calculated first. The calculation of OAS and other modeled variables occurs prior to and effects the calculation of GIS and related GIS 'top-up' programs in the gist function. The gist function is called after txprov (calculation of provincial income taxes) by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-------|-----------------------------------|
| BESPA | Basic GIS portion of extended SPA |
| BGISM | Basic GIS - married |

| | |
|----------------|---|
| BGISS | Basic GIS - single |
| BOAS | Basic OAS |
| ESPAT | Extended SPA take-up rate by benefit level [benefit,rate] |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISCT | GIS take-up rate: pensioner couple by benefit level |
| [benefit,rate] | |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISOASFLAG | 1984 GIS top-up to OAS residence shortfall flag |
| GISOT | GIS take-up rate: one pensioner couple by benefit level |
| [benefit,rate] | |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| GISRRS | Basic GIS reduction rate: single pensioners |
| GISST | GIS take-up rate: single pensioner by benefit level |
| [benefit,rate] | |
| GISTURFLAG | GIS take-up flag: apply 5 take-up tables |
| PYINC | Deflator to calculate previous year income |
| SPAOSRR | OAS portion of SPA taxback rate |
| SPARL | SPA reduction point: one married/ widowed |
| SPAT | SPA take-up rate by benefit level [benefit,rate] |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |

INPUT VARIABLES:

| | |
|----------|--|
| hhnfnf | Number of nuclear families in household |
| idage | Age |
| idicqp | CPP/QPP income (114) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmarst | Marital status |
| idrand | Random numbers [array] |
| imalexp | Allowable employment expenses |
| imcqpcc | CPP/QPP contributions |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imioas | OAS benefits |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |
| imuic | UIC contributions |
| nfageeld | Age of eldest in nuclear family |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imigis | GIS benefits |

| | |
|----------|--------------------------------|
| imispa | Spouse's allowance |
| imninc | No income flag |
| imoldtyp | Type of GIS/SPA nuclear family |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |

gist Compute Provincial GIS top-ups for elderly

SUMMARY

The gist function calculates benefits for eight provincial GIS supplementation programs in eight provinces; Newfoundland, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. The function requires that both OAS and GIS be calculated first. All provincial senior's programs within SPSM are in this function. Please note that the provincial programs here are not exhaustive, but all major benefits are covered.

Program Description

Eight provinces provide cash benefits to pensioners in receipt of federal OAS, GIS, and in some cases, SPA benefits. The eight programs differ in terms of the level of benefits payable, eligibility requirements, etc. Each program listed below is modeled and documented independently.

| | |
|------------------|--|
| Newfoundland | Low-income Seniors Benefit |
| Nova Scotia | Special Social Assistance |
| New Brunswick | Low-income Seniors Benefit |
| Ontario | Guaranteed Annual Income System (GAINS-A) |
| Ontario | Sales Tax Grant Program |
| Ontario | Property Tax Grant Program |
| Manitoba | Supplement for Pensioners (55+) |
| Saskatchewan | Income Plan (SIP) |
| Alberta | Assured Income Plan AAIP |
| Alberta | Alberta Seniors Benefit |
| Alberta | Widow's Pension |
| British Columbia | GAIN for Seniors Supplement (Guaranteed Available Income for Need) |

Newfoundland Low-Income Seniors Benefit

A benefit is given to seniors (aged 65 and over) with annual family income less than NFSBTD. The maximum benefit NFSBBAS is reduced by NFSBRR for each dollar of family income over NFSBTD.

Nova Scotia Special Social Assistance

Up to 1991, all residents of the province of Nova Scotia who are in receipt of GIS in March

of a given year were eligible for Special Social Assistance. Application for benefits had to be made each year. SPA recipients were not eligible. One lump-sum payment was made yearly in one of four amounts scaled to the proportional GIS of the recipient as follows:

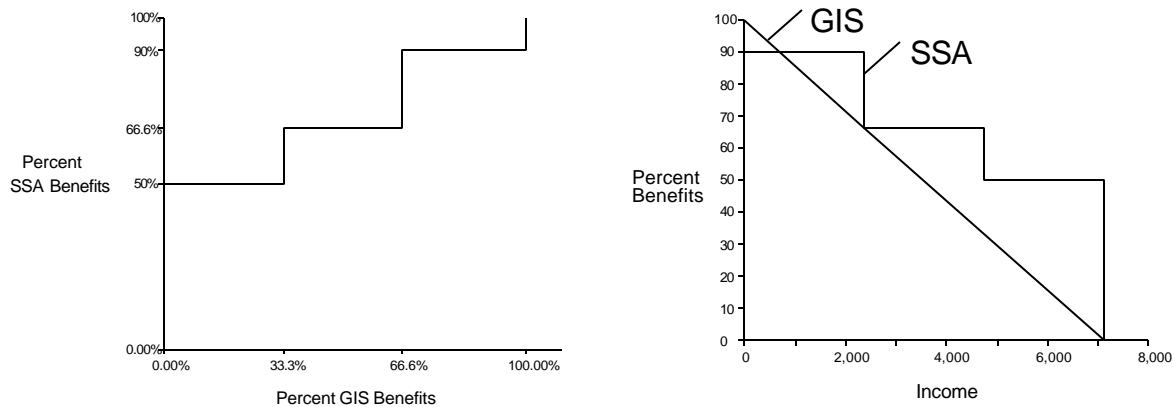


Figure 3. Nova Scotia Special Social Assistance

So, for example, a pensioner receiving maximum GIS benefits would have received maximum SSA benefits and a pensioner receiving 80% of maximum GIS benefits would have received 90% of maximum SSA benefits.

New Brunswick Low-Income Seniors Benefit

A benefit is given to seniors who receive GIS. If both spouses received GIS, the benefit is given to the spouse with the lower net income.

Ontario Guaranteed Annual Income System (GAINS-A)

GAINS-A provides a monthly benefit to Ontario residents in receipt of GIS who meet certain income and residence requirements. A person must have lived in Ontario for the year prior to applying for GAINS-A or for at least 20 years after turning 18 years of age. GIS recipients need not apply since their eligibility is reviewed automatically. SPA recipients are not eligible. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

Ontario Sales Tax Grant Program

The sales tax grant has been a flat \$50 per person over age 65 from 1984 to 1989. The maximum value of the sales tax grant is stored in the ONTSTG parameter. The variable impstg is used to store individual sales tax grants calculated by the model.

Ontario Property Tax Grant Program

The property tax grant is payable to seniors who are head of their household. The amount of the grant varies by tenure and actual costs. For years 1984 to 1989 renters receive 20% of their rental costs up to a maximum of \$500. Homeowners receive the maximum benefit. The fraction of rental costs allowed is contained in the ONTFPTG parameter while the

maximum benefit is stored in the parameter ONTPPTG. Calculated benefits are stored in the variable impptg.

Calculated benefits for both the sales tax grants and the property tax grants are also added to the variable imigist.

Manitoba Supplement for Pensioners (MSP, 55+)

The MSP provides quarterly benefits to Manitoba residents who are in receipt of certain levels of GIS and SPA benefits, including extended and widowed SPA recipients. MSP also provides benefits to persons aged 55 and over who are not in receipt of OAS benefits but whose income falls in a specified range and is derived at least 50% from pension sources. Eligibility is renewed automatically for GIS and SPA recipients, but non-GIS/SPA pensioners 55 years of age and over must apply.

In the case of GIS/SPA recipients there are two levels of benefits, single and married. An SPA recipient is treated as a single pensioner. Benefits are reduced at the same rate as GIS based on family income. Non GIS/SPA pensioners are treated in exactly the same manner except for couples benefits are reduced based on individual annual income.

Saskatchewan Income Plan

SIP provides monthly benefits to Saskatchewan residents in receipt of GIS and whose incomes don't exceed specified levels. SPA recipients are not eligible for SIP benefits. There are two levels of benefits, single and married. There are three different reduction rates. Unattached Individuals and Married Couples where both are GIS pensioners SIP benefits are reduced by \$1 for each \$1 reduction in GIS. For a pensioner whose spouse is not eligible for OAS/GIS/SPA the benefit is reduced by \$3 for each \$1 reduction in GIS benefits. The pensioner spouse of an SPA recipient has their benefit reduced by \$1 for each \$3 reduction in their spouse's SPA. There are monthly minimum benefits at both single and married levels.

Alberta Assured Income Plan

AAIP benefits are payable monthly to all Alberta residents who are in receipt of GIS benefits or who became eligible for the extended SPA prior to May 1983. Regular SPA recipients are ineligible. Since May 1983 all extended SPA recipients are referred to the Alberta Widow's pension. Application is not required. There is one individual benefit which is reduced by 50¢ for each \$1 reduction in GIS benefits to a minimum of \$10 monthly.

Alberta Seniors Benefit

Starting in 1994, the AAIP was replaced by the Alberta Seniors Benefit. When ALTASOPT is set to 2, the Alberta Seniors Benefit is calculated. Seniors are split into six categories:

- single seniors who rent their home,
- single seniors who own their home,
- seniors married to non-seniors who rent their home,
- seniors married to non-seniors who own their home,
- two senior couples who rent their home,

and two senior couples who own their home

When ASBSSOPT is set to 2, seniors married to non-seniors are treated in the same manner as two senior couples. Benefits and reduction rates vary by these categories (ASBBASIC, ASBRENT, ASBSS, ASBNSS, ASBRR). Maximum benefits are phased out using non-deductible income which is defined as last year's total income (imitot) minus OAS benefits (imioas), registered pension plan contributions (idrpp), RRSP contributions (idrrsp), and ASBEMP times idiemp.

For persons who do not qualify for OAS because of residency requirements, a proportion of the total benefit is assigned depending on marital status and household tenure (ASBNOAS). For these persons, BOAS is deducted from their non-deductible income. When ASBSSOPT is set to 1, a two senior couple in which one of the seniors does not meet the OAS eligibility requirement is treated as 1 senior couple.

Alberta Widowed Pension

The Alberta Widow's pension provides monthly benefits to widows and widowers aged 55 to 64 years who reside in Alberta. Yearly Application must be made. Maximum benefits are reduced by \$1 for each \$1 of previous year's non-exempt annual income. Extended SPA recipients may apply however their SPA benefits are included in their income when calculating entitlement.

British Columbia GAIN for Seniors Supplement

GAIN provides a monthly benefit to British Columbia residents in receipt of GIS or SPA who meet certain income and residence requirements. GIS/SPA recipients need not apply since their eligibility is reviewed automatically. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

SPSM Implementation

The user is invited to read the source code in order to examine the implementation of these programs. A subsequent update will include a written description of the implementation of these programs.

Interpretation

In general the problems of coverage, including take-up, discussed in the interpretation of OAS and GIS are also present here. Specifically there are no tests made for residential eligibility applied on Ontario GAINS-A. Currently double counting occurs for the benefits for Manitoba residents under the age of 65. This is because the calculated income is reported in one variable (imigist) and reported income from the survey is reported in another (imisa). There are plans to fix the problem; however, the dollar amounts are small in any case.

Relation to Other SPSM Routines

Provincial GIS supplement programs depend on various program specific input parameters as

well as variables calculated in the oas and gis functions. The mpc function ensures that provincial GIS supplements are not calculated without GIS being calculated first. The calculation of OAS and GIS occurs prior to and effects the calculation GIS 'top-up' programs in the gist function. The gist function is called after gis by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALTAMIN | Alberta GIS supplement minimum annual benefit |
| ALTASC | Alberta GIS supplement maximum annual benefit |
| ALTASOPT | Alberta seniors option [1=GIST,2=new seniors benefit 1994] |
| ALTAWP | Alberta widow's pension maximum annual benefit |
| ASBBASIC | Alberta seniors benefit annual basic benefit |
| ASBEMP | Alberta seniors benefit employment inclusion rate |
| ASBNOAS | Alberta seniors benefit reduction if no OAS [senior type] |
| ASBNSS | Alberta seniors benefit non-senior spouse supplement |
| ASBRENT | Alberta seniors benefit renter supplement |
| ASBRR | Alberta seniors benefit reduction rate [senior type] |
| ASBSS | Alberta seniors benefit senior spouse supplement |
| ASBSSOPT | Alberta seniors benefit 1 senior couple option [1=model separately,2=model as senior couples] |
| BCC | British Columbia GIS supplement: married pensioners |
| BCS | British Columbia GIS supplement: single pensioners |
| BOAS | Basic OAS |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISTFLAG | Provincial GIS top-up flag |
| MANC | Manitoba GIS supplement: married pensioners |
| MANCNPF | Manitoba GIS supplement reduction point: married |
| MANS | Manitoba GIS supplement: single pensioners |
| MANSNPF | Manitoba GIS supplement reduction point: single |
| NBSB | New Brunswick Low-Income Seniors' Benefit |
| NBSBSPA | N.B. Low-Income Seniors' Benefit - SPA eligibility |
| NFSBBAS | NFLD Low-Income Seniors' Benefit base amount |
| NFSBRR | NFLD Low-Income Seniors' Benefit reduction rate |
| NFSBTD | NFLD Low-Income Seniors' Benefit turndown |
| NS13 | Nova Scotia GIS supplement for 1/3 GIS |
| NS23 | Nova Scotia GIS supplement for 2/3 GIS |
| NSLT13 | Nova Scotia GIS supplement for less than 1/3 GIS |
| NSMAX | Nova Scotia maximum GIS supplement level |
| ONTC | Ontario GIS supplement: married pensioners |
| ONTFPTG | Ontario property tax grant (fraction of rent) |
| ONTPTG | Ontario property tax grant for seniors |
| ONTS | Ontario GIS supplement: single pensioners |
| ONTSTG | Ontario sales tax grant for seniors |
| PYINC | Deflator to calculate previous year income |
| SASKC | Saskatchewan GIS supplement: married pensioners |
| SASKMINC | Saskatchewan GIS supplement minimum benefits: married |

| | |
|------------|--|
| SASKMINS | Saskatchewan GIS supplement minimum benefits: single |
| SASKRR1 | Saskatchewan GIS supplement reduction rate: regular |
| SASKRR2 | Saskatchewan GIS supplement reduction rate: 1 GIS |
| SASKRR3 | Saskatchewan GIS supplement reduction rate: SPA |
| SASKS | Saskatchewan GIS supplement: single pensioners |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|--|
| hdageeld | Age of eldest in household |
| hdprov | Province |
| hdtenur | Tenure |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawls |
| idmarst | Marital status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imalexp | Allowable employment expenses |
| imcqqpc | CPP/QPP contributions |
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imicapgt | Capital gains (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoasres | Partial OAS fraction |
| imrentpd | Imputed rent paid |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|---------|---|
| imiasb | Alberta seniors benefit |
| imigist | GIS provincial top-up |
| imninc | No income flag |
| impptg | Provincial property tax grant for seniors |
| impstg | Provincial sales tax grant for seniors |

isneg Is argument negative ?

SUMMARY

```
int isneg(var);
```

```
NUMBER var
```

The `isneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a negative value. If the argument is zero or positive, a value of zero is returned. Note that, unlike a function, the `isneg` macro cannot take an expression as an argument. The expression `isneg(var)` is functionally equivalent to an expression of the form `(var < 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnneg Is argument non-negative?

SUMMARY

```
int isnneg(var);
```

```
NUMBER var;
```

The `isnneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-negative value. If the argument is negative, a value of zero is returned. Note that, unlike a function, the `isnneg` macro cannot take an expression as an argument. The expression `isnneg(var)` is functionally equivalent to an expression of the form `(var > 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnzero Is argument non-zero?

SUMMARY

```
int isnzero(var);
```

```
NUMBER var;
```

The `isnzero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-zero value. If the argument is zero, a value of zero is returned. Note that, unlike a function, the `isnzero` macro cannot take an expression as an argument.

The expression `iszero(var)` is functionally equivalent to an expression of the form `(var != 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

iszero Is argument zero?

SUMMARY

```
int iszero(var);
```

```
NUMBER var;
```

The `iszero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains the value zero. If the argument is non-zero, a value of zero is returned. Note that, unlike a function, the `iszero` macro cannot take an expression as an argument. The expression `iszero(var)` is functionally equivalent to an expression of the form `(var == 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

lkup1 Table look-up with interpolation/extrapolation

SUMMARY

```
NUMBER lkup1(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The `lkup1` function is used to perform table look-ups with interpolation. Expressed another way, `lkup1` evaluates continuous piecewise linear functions.

The first argument (`tbl`) is the address of an SPSM look-up table, which is an $n \times 3$ array of floating point numbers. The first two columns of `tbl` contain the (X,Y) pairs that define the piece-wise linear function. The third column of `tbl` contains the slope of the segment that starts at the (X,Y) pair. SPSM look-up tables are defined in parameter input files, and come in two varieties, as perceived by the user. One variety allows the user to specify the (X,Y) pairs, and computes the slopes automatically. The other variety allows the user to specify all the X values, the first Y value, and the slopes, and computes the remaining Y values automatically. In both cases the internal representation of the lookup table is identical and is the same as that expected by the `lkup1` function.

The second argument of `lkup1` is an integer giving the number of rows in `tbl`. Generally this value is another member of the same parameter structure in which the `tbl` is defined.

The third argument of lkup1 is the X value whose corresponding Y value is to be determined. lkup1 returns the corresponding Y value.

lkup2 Table look-up without interpolation

SUMMARY

```
NUMBER lkup2(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The lkup2 function is used to perform table look-ups without interpolation. Expressed another way, lkup2 evaluates step functions.

The first argument (tbl) is the address of an SPSM look-up table, which is an n x 3 array of floating point numbers. The first two columns of tbl contain the (X,Y) pairs that define the left-most point of each step in the step function. The third column of tbl contains the slope of the segment that starts at the (X,Y) pair, but the lkup2 function only makes use of the (X,Y) pairs in the look-up table. The slopes, though always present in look-up tables, are not used.

The second argument of lkup2 is an integer giving the number of rows in tbl. Generally this value is another member of the same parameter structure in which the tbl is defined.

The third argument of lkup2 is the X value whose corresponding Y value is to be determined. lkup2 returns the corresponding Y value.

maxn Find the maximum of two numbers

SUMMARY

```
NUMBER maxn(x, y);
```

```
NUMBER x;  
NUMBER y;
```

The maxn function returns the value of the larger of its two input arguments.

memo1 Compute memo items for reporting

SUMMARY

The memo1 function is used to calculate several reporting variables as aggregates of other

modeled variables. The function calculates all dollar denominated reporting variables up to the level of disposable income. In addition taxable filer status is determined.

SPSM Implementation

The `memo1` function operates at the individual level of analysis and skips individuals with no income. The algorithm first assigns filer status as relevant/non-relevant and taxable/non-taxable based on taxes paid and credits received. The function then calculates several reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|---|
| <code>imiemp =</code> | <code>idiemp;</code> |
| <code>imiself =</code> | <code>idisenf + idisefm;</code> |
| <code>imfoth =</code> | <code>iditogv + idinogv;</code> |
| <code>impoth =</code> | <code>ZERO;</code> |
| <code>imicqp =</code> | <code>idicqp;</code> |
| <code>immemp =</code> | <code>idiemp + idisenf + idisefm;</code> |
| <code>imminv =</code> | <code>idiint + ididiv + idicapg + idioinv;</code> |
| <code>immoth =</code> | <code>idipens + iditoth + idinoth;</code> |
| <code>immmkt =</code> | <code>immemp + imminv + immoth;</code> |
| <code>imftran =</code> | <code>imffa + imioas + imiotg + imigis + imispa + imctc + imfcben + imicqp + imfoth + imiuib + imfstc + imqtar + imfsa + imiosa + imfortc;</code> |
| <code>imctcben =</code> | <code>imctc + imfcben;</code> |
| <code>imfothtr =</code> | <code>imfoth + imfortc;</code> |
| <code>imfnewpg =</code> | <code>imiotg + imiosa;</code> |
| <code>imigispa =</code> | <code>imigis + imispa;</code> |
| <code>impfp =</code> | <code>impfa + imqaafa + imqnbfa + imiafetc + imnbcben + imibcfb + imoccea + imqfatc + imscb + imses + imnscb + imibceib;</code> |
| <code>imptran =</code> | <code>impfp + imigist + imptc + impfa + importc + iminsda;</code> |
| <code>immtran =</code> | <code>imptran + imftran;</code> |
| <code>immtot =</code> | <code>immmkt + immtran;</code> |
| <code>imftax =</code> | <code>imuic + imcqppc + imrepay + imtxf;</code> |
| <code>imptax =</code> | <code>imtxp;</code> |
| <code>immtax =</code> | <code>imftax + imptax;</code> |
| <code>immdisp =</code> | <code>immtot - immtax;</code> |
| <code>immicons =</code> | <code>immdisp; (initial assignment, may be re-assigned in memo2)</code> |

Relation to Other SPSM Routines

The `memo1` function is called by `drv` immediately after the income tax and cash transfer algorithms have executed. It is called just before the execution of the commodity tax model (`ctmod`) which makes use of some of the aggregated output variables. The `memo2` function follows `ctmod` to add information to the reporting variables calculated in the `memo1` function.

CROSS REFERENCE

| Function | Description |
|-----------------------|---|
| INPUT VARIABLES: | |
| <code>hhnin</code> | Number of individuals in household |
| <code>idialimo</code> | Alimony income received |
| <code>idicapg</code> | Capital gains (actual) |
| <code>idicqp</code> | CPP/QPP income (114) |
| <code>ididiv</code> | Dividend income (actual) |
| <code>idiemp</code> | Wages & salaries |
| <code>idiint</code> | Interest income (121) |
| <code>idinogv</code> | Other government income (non-taxable) |
| <code>idinoth</code> | Other money income (non-taxable) |
| <code>idioinv</code> | Other investment income with net rental |
| <code>idipens</code> | Pension income (115) |
| <code>idisefm</code> | Self-employed income - farming |
| <code>idisenf</code> | Self-employed income - non-farming |
| <code>iditogv</code> | Other government income (taxable) |
| <code>iditoth</code> | Other non-government income (taxable) |
| <code>idivetp</code> | Veterans pensions and allowances |
| <code>idiworkc</code> | Workers compensation benefits |
| <code>imbft</code> | Basic federal tax |
| <code>imcqqpc</code> | CPP/QPP contributions |
| <code>imctc</code> | Child tax credit |
| <code>imfcben</code> | Total Federal Child Benefits |
| <code>imffa</code> | Federal portion of family allowances |
| <code>imfortc</code> | Federal other refundable tax credits |
| <code>imfsa</code> | Federal social assistance |
| <code>imfstc</code> | Federal sales tax credit |
| <code>imheatrl</code> | Federal relief for heating expenses |
| <code>imiafetc</code> | Alberta Family Employment Tax Credit Benefits |
| <code>imibceib</code> | B.C. Earned Income Benefit |
| <code>imibcfb</code> | B.C. Family Bonus |
| <code>imigis</code> | GIS benefits |
| <code>imigist</code> | GIS provincial top-up |
| <code>iminet</code> | Net income |
| <code>iminsda</code> | NS Direct Assistance Program |
| <code>imioas</code> | OAS benefits |
| <code>imiosa</code> | Other SA or guarantees |
| <code>imiotg</code> | Other taxable demogrants |
| <code>imispa</code> | Spouse's allowance |

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imnbcben | Total NB child tax Benefits |
| imnccb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnscb | Nova Scotia Child Benefit |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| impfa | Provincial family allowance |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| importc | Other refundable provincial tax credits |
| impsa | Provincial social assistance |
| imptc | Refundable provincial tax credits |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqnbfa | Quebec newborn Allowance |
| imqtar | Quebec tax abatement (refundable) |
| imrepay | Social Benefits Repayments |
| imscb | Saskatchewan Child Benefit |
| imses | Saskatchewan Employment Supplement |
| imtxf | Federal income tax payable |
| imtxp | Provincial income tax payable |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|---|
| imctcben | Federal child tax credit and child benefits |
| imfiler | Taxable filer status |
| imfnewpg | Federal new programs |
| imfoth | Federal other government income |
| imfothtr | Federal other trans income and ref. credits |
| imftax | Federal taxes |
| imftran | Federal transfer income |
| imicqp | CPP/QPP payable |
| imiemp | Wages and salaries |
| imigispa | GIS and spouse's allowance |
| imiself | Total self-employment income |
| immdisp | Disposable income |
| immemp | All employment income |
| immicons | Consumable income |
| imminv | Investment income |
| immmkt | Market income |
| immoth | Other income |
| immtax | All taxes |
| immtot | Total income |
| immtran | All transfer income |
| impalltc | All refundable provincial tax credits |
| impfp | Provincial family programs |
| impoth | Provincial other government income |
| imptax | Provincial taxes |
| imptran | Provincial transfer income |

SUMMARY

The `memo2` function is used to calculate several reporting variables as aggregates of other modeled variables. The function calculates all dollar denominated reporting variables up to the level of consumable income.

SPSM Implementation

The `memo2` function operates at the individual level of analysis and skips individuals with no income. Aspects of the function are not executed if the commodity tax model has not been run (`CTMOD=0`). The function first adjusts several reporting variables calculated in `memo1` as follows.

| Reporting Variable | Formula |
|-------------------------|--|
| <code>imftax =</code> | <code>imftax + imtxfc</code> |
| <code>imptax =</code> | <code>imptax + imtxpc</code> |
| <code>immtax =</code> | <code>immtax + imtxfc + imtxpc</code> |
| <code>immicons =</code> | <code>immdisp - imtxfc - imtxpc</code> |

The function next calculates additional reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|--------------------------------------|
| <code>imnettr =</code> | <code>immtran - immtax</code> |
| <code>imothrep =</code> | <code>imrepay - imuibr</code> |
| <code>imqta =</code> | <code>imqtaa + imqtar</code> |
| <code>imfedbal =</code> | <code>imftax - imftran</code> |
| <code>imprvbal =</code> | <code>imptax - imptran</code> |
| <code>impovinc =</code> | <code>immtot - imctc - imfstc</code> |

Relation to Other SPSM Routines

The `memo2` function is called by `drv` immediately after the commodity tax algorithms (`ctmod`) have executed. The function adds information to the reporting variables calculated in the `memo1` function.

Please refer to the [Variable Guide](#) for detailed descriptions of the variables listed above.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

CTFLAG Commodity tax activation flag

INPUT VARIABLES:

hhnin Number of individuals in household
imftran Federal transfer income
immdisp Disposable income
immtot Total income
immtran All transfer income
imninc No income flag
imptran Provincial transfer income
imqtaa Quebec tax abatement (applied)
imqtar Quebec tax abatement (refundable)
imrepay Social Benefits Repayments
imtxfc Federal commodity taxes
imtxpc Provincial commodity taxes
imuibr UI benefit recovery

OUTPUT VARIABLES:

efin First person in economic family [pointer]
idef Person's economic family [pointer]
imfedbal Federal taxes less transfers
imftax Federal taxes
immicons Consumable income
immtax All taxes
imnettr Net transfers to person
imothrep Other federal repayments
impovinc Income for low income measurement
imprvbal Provincial taxes less transfers
imptax Provincial taxes
imqta Quebec tax abatement (total)

minn Find the minimum of two numbers

SUMMARY

NUMBER minn(x,y);

NUMBER x;

NUMBER y;

The minn function returns the value of the smaller of its two input arguments.

mpc Calculate derived model parameters and do edits

SUMMARY

The mpc function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters. The function currently calculates derived parameters for

use in the commodity tax (`ctmod`) function, the Guaranteed Income Supplement (`gis`) function, and the head/spouse transfer (`txhstr`) function. Performing the calculations in `mpc` increases the efficiency of the program by avoiding multiple calculations for every household. Edit checks are performed for aspects of the commodity tax model and the old age income system. Please refer to the appropriate section in the [Algorithm Guide](#) for details of the specific social and tax programs.

SPSM Implementation

Calculation of Derived Parameters

Two derived parameters for use in the `ctmod` are calculated: a total federal government effective commodity tax rate (CTFTOT) and a total provincial government effective rate (CTPTOT). The federal rate is calculated by adding together the six detailed federal rates produced by the Input/Output model: CTFCID, CTFEXT, CTFMFG, CTFEXT, CTFOEN, and CTFGST. The aggregate provincial rate is calculated in the identical fashion, summing up the 6 provincial rates: CTPRST, CTPLGL, CTPPLQ, CTPTOB, CTPGAS, and CTPAMU.

These parameters are used to ensure equivalent results between the detailed and non-detailed commodity tax model options. When the detailed option is turned off (i.e. the `CTDFLAG` parameter is set to zero), commodity tax revenues are produced by multiplying the two aggregate rates by the total expenditure of each household. This requires a fraction of the operations for each household when compared to the detailed method.

A single derived parameter, `UIBRA`, is calculated for use in the `txitax` function. This parameter contains the individual's UIC repayment base amount and is derived from two further parameters: `UIBAF`, the UI benefit recovery base amount factor, and `UIERNMAX`, the dollar value of maximum insurable earnings. Please refer to section in this manual for further information on the `txitax` function.

Three derived parameters are calculated for use in the `gis` function. The income breakeven points for GIS/SPA couples and married 1 pensioner couples are calculated here as `GISBE1` and `GISBE2` respectively. The breakeven points represent the level of family income at which combined GIS/SPA benefits are reduced to zero based on combined family income. They in turn are used to calculate an income crossover point (`SPAXO`) for the two types of pensioner couples (see following Chart).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

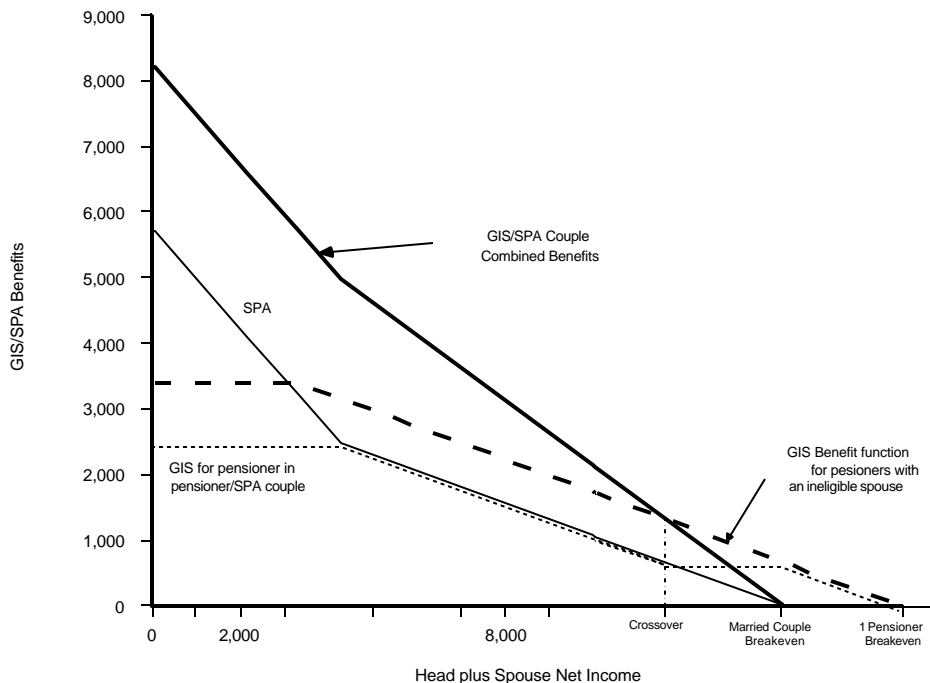


Figure 1 GIS/SPA Benefits for One OAS Pensioner Couples

GISBE1 represents the level of family income at which the GIS benefits of a pensioner married to a non pensioner have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "1 Pensioner Breakeven". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{GISBE1} = \text{BGISS}/\text{GISRRM} + \text{BOAS} + \text{GISRLS}$$

GISBE2 represents the level of family income at which the combined GIS and SPA benefits of a pensioner married to a SPA recipient have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "Married Couple Breakeven".

$$\text{GISBE2} = (\text{BGISM} * 2) / (\text{GISRRM} * 2) + \text{BOAS} / \text{SPA OASRR} + \text{GISRLM}$$

SPAXO represents the level of family income at which the dollar benefits for GIS to a single pensioner married to a non-pensioner spouse exactly equal the combined GIS/SPA dollar benefits payable to a GIS/SPA married couple. On the figure above this is the point on the X axis labelled "Crossover". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{SPAXO} = 2 * \text{GISBE2} - \text{GISBE1}$$

Please refer to the Guaranteed Income Supplement Section of this guide for further details on the use of these derived parameters.

For all of the parameters described above users may refer to the [Parameter Guide](#) for further information.

Edit Checks

Three parameter edit checks are currently implemented in the `mpc` function.

- A check is made to ensure that the tax credit rate parameter `FNTCR` is non-zero. If zero, an error message is issued but processing continues.
- A similar check is made to ensure that the tax credit rate is non-zero. Error handling is also the same as above.
- If the `CTFLAG` parameter is set to 1 (thereby specifying that commodity taxes will be calculated) and the `FXVFLAG` parameter is set to 0 (indicating no FAMEX expenditure data is to be read) then an error message will result and `CTFLAG` will be reset to 0 and no commodity taxes will be calculated.
- If the OAS algorithm is switched off (`OASFLAG=0`) and the GIS algorithm is switched on (`GISFLAG=1`) GIS benefits will be incorrectly calculated as they depend on variables calculated in the `oas` function. If this condition is met an error message will result and `GISFLAG` will be set to 0 and consequently no GIS benefits will be calculated.
- If the GIS algorithm is switched off (`GISFLAG=0`) and the provincial GIS supplement algorithm is switched on (`GISTFLAG=1`) provincial GIS supplement benefits will be incorrectly calculated as they depend on variables calculated in the `gis` function. If this condition is met an error message will result and `GISTFLAG` will be set to 0 and consequently no provincial GIS supplement benefits will be calculated.

Relation to Other SPSM Routines

The `mpc` function is called before `drv` and as such is only executed once for every program run. The function currently calculates parameters and performs edits which can effect a number of functions directly; the `ctmod` function, the `gis` function, the `gist` function, the `txitax` function, and the head/spouse transfer `txhstr` function.

CROSS REFERENCE

| Function | Description |
|----------------------|------------------------------------|
| INPUT PARAMETERS: | |
| <code>FXVFLAG</code> | Read FAMEX expenditure vector file |
| <code>BGISM</code> | Basic GIS - married |
| <code>BGISS</code> | Basic GIS - single |
| <code>BOAS</code> | Basic OAS |
| <code>CTFCID</code> | Federal custom import duties [com] |
| <code>CTFEXD</code> | Federal excise duties [com] |
| <code>CTFEXT</code> | Federal excise taxes [com] |
| <code>CTFGST</code> | Federal GST [com] |
| <code>CTFMFG</code> | Federal manufacturer's sales [com] |

| | |
|-----------|---|
| CTFOEN | Federal other energy taxes [com] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| OASFLAG | Old age security flag |
| QNTCR | Quebec nominal tax credit rate |
| SPAOSRR | OAS portion of SPA taxback rate |
| UIBAF | UI benefit recovery base amount factor (UI and EI) |
| UIBAFNR | UI EI benefit recovery base amount factor for non-repeaters |
| (EI only) | |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIERNMAX | Maximum insurable earnings (UI and EI) |

OUTPUT PARAMETERS:

| | |
|----------|--|
| CTFLAG | Commodity tax activation flag |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| GISBE1 | Breakeven for GIS one pensioner couple |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISTFLAG | Provincial GIS top-up flag |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |

nneg Change negative numbers to zero

SUMMARY

NUMBER nneg(arg);

NUMBER arg;

The nneg function returns either zero or the value of arg, whichever is larger. In other words, nneg changes negative values to zero, leaving positive values unchanged.

SUMMARY

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. Benefits are either full or partial depending on a person's history of residency in Canada. The program is not income tested. The SPSM oas function is based on the age of the individual and, for immigrants, the years since immigration as reported at the time of the SCF survey in April 1985.

The Seniors Benefit program was added to the model based on the description provided with the 1996 Federal Budget. The Seniors Benefit will replace the OAS/GIS benefits in 2001. It will be a tax-free; income tested benefit which will be determined on the basis of the incomes from both spouses. The maximum benefits will be \$120 more than the maximum OAS/GIS for 2001. These rates are fully indexed for inflation.

People aged 60 or over on December 31, 1995 will be able to choose to move to the Seniors Benefit or keep the existing OAS/GIS payments. The SPA program remains in place but is enriched by \$120.

Program Description

As amended in 1957 and 1965 the OAS program provides full benefits to persons born in Canada or those having immigrated to Canada more than 10 years before their 65th birthday with no provisions for partial benefits. In June 1977 the program was modified to provide partial benefits to immigrants having resided in Canada for between 10 to 39 years at the time of their 65th birthday. These individuals are eligible for benefits in proportion to the number of years in Canada at age 65 divided by 40. Note that years of eligibility do not increase after the year of the beneficiary's 65th birthday. Thus an immigrant of twenty years at his/her 65th birthday would be eligible for 20/40 or 50% of full OAS benefits. Persons having immigrated to Canada less than ten years prior to their 65th birthday were ineligible for OAS until 1987. In that year the OAS program was modified to allow for immigrants from certain countries having reciprocal arrangements with Canada to use years of residency in the country of emigration to count towards meeting the minimum 10 years residency requirement. However, in these cases it is only the years of residence in Canada which are used to determine the rate of partial benefits.

SPSM Implementation

The oas function determines benefits based on the age of the individual and the years since immigration as reported at the time of the SCF survey in April 1985. Because OAS provides an individually determined benefit the simulation operates at the level of a household assigning benefits to all eligible individuals. The model first adjusts years since immigration in two ways:

1. It determines the years since immigration at the time of the potential beneficiary's 65th

birthday. This is done by subtracting the difference between the individual's age and 65 years from the reported years since immigration. [immi = immi - (idage-65)]

2. It adjusts the immigration status of persons who were eligible for Full OAS under the original program specifications but would qualify for only partial benefits since 1977. This is done by setting the years since immigration to 40 for persons having 10 or more years since immigration at the time of their 65th birthday if that birthday was in 1977 or earlier. [immi =40 if(immi >=10 and TARGETYEAR- idage <= 12)]

Notice that the years since immigration for any given individual after adjustment number 1 will remain the same regardless of the year for which the simulation is being run. For example an immigrant of 38 years, age 73, would have an adjusted years since immigration of 30 years, (immi = (38-(73-65)=30). Because of adjustment 2 above that individual would receive full OAS benefits in simulations run for 1984 but would receive 75% partial benefits in simulations run for 1988. In other words, a pensioner who is 73 years old in 1984 would have been 65 years old in 1976; the year before partial benefits were introduced. However a 73 year old in 1988 would have been age 65 in 1980; after partial benefits were introduced.

The model next determines if full eligibility requirements have been met for benefits and if so the full year equivalent of maximum OAS benefits are assigned (see BOAS in the *Parameter Guide*). Next, persons ineligible for OAS are screened out. Lastly, the model assigns partial benefits to persons with an adjusted years since immigration of between 10 and 39 years.

With the new Senior Benefit program, first, the seniors benefit (senben.c) is calculated. Then ccept calls drv again, and the benefit is zeroed out and OAS/GIS is calculated instead. For persons who lost under this change, drv is called a third time with the seniors benefit package.

Interpretation

The results of the model are not directly comparable with and thus will not match administrative OAS expenditure figures. The discrepancy arises due to administrative irregularities as well as survey data deficiencies.

There are five major sources of underestimation by the oas function. The benefits of persons having received benefits during 1984, yet who had died before the date of the survey, will not be accounted for in the SPSD/M. The survey coverage excludes native Canadians on reservations as well as persons living in the Yukon and North West Territories; thus the OAS benefits of these persons are excluded from SPSM totals. Published figures include payments to persons not residing in Canada as well as retroactive lump-sum payments for late applicants. A further provision not accounted for in this algorithm is the use of years of residence in another country to meet minimum residency requirements. This will not affect the model results if run in years before 1988. The effect is small in any case.

Due to the discrepancy between reported age on the SCF and actual age in 1984 overestimation of aggregate OAS benefits for persons aged 65 and 66 arises. For example 25% of those reporting their age as 65 in March of 1985, and thus receiving full OAS

Benefits in SPSM, would actually have been born between January and March 1985 (assuming births are distributed approximately evenly by month). As such they would have actually received no OAS. Furthermore, the other 75% of the 65 year olds and 17% of 66 year olds would have actually received OAS for only part of 1984. Currently, the SPSM makes no stochastic adjustments for such cases.

Relation to Other SPSM Routines

OAS depends on the input parameters for basic OAS benefits and years since immigration. The calculation of OAS and other modeled variables occurs prior to and affects the calculation of net income and related GIS and GIS 'top-up' programs. The modeled benefits are reported in net income, elderly income, disposable income, transfer income, total income, consumable income. The oas function is called before txinet (calculation of individual net income) by drv.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|------------|-----------------------|
| BOAS | Basic OAS |
| OASFLAG | Old age security flag |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| hdageeld | Age of eldest in household |
| hdseqhh | Household sequence number |
| hhnin | Number of individuals in household |
| idage | Age |
| idimmi | Years since immigration |

OUTPUT VARIABLES:

| | |
|----------|----------------------------|
| imioas | OAS benefits |
| imninc | No income flag |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |

| | |
|-----------------|----------------------------|
| pmaddent | Define and add a parameter |
|-----------------|----------------------------|

SUMMARY

The pmaddent function is used to define a new parameter to the SPSM parameter manipulation facilities. Please see the [Programmer's Guide](#) for more information.

randrnd Randomly round a floating point number to an integer

SUMMARY

The `randrnd()` function can be used to round fractional quantities to integer values in such a way that the sum of the values will remain (virtually) unchanged. Conventional rounding techniques do not have this property. For example, say that we have a set of 1000 numbers, each of which has the value 0.1. The sum of this set of numbers is 100.0. If we round each member of this set to the nearest integer, the sum of values would become 0.0. If we rounded randomly up or down, the sum would be 500. Neither of these rounding processes preserve the original sum. What we wish to do is to round 100 of the values up to 1.0 and 900 of the numbers down to 0.0. The `randrnd()` function simplifies this process.

The first argument to `randrnd()` is the value which is to be integerized, while the second is a uniformly distributed random number between 0.0 and 1.0 used to perform the rounding. The second argument is normally one of the built-in random number streams created by the SPSM Random Number Facility (see the [Users' Guide](#) for more details on this facility). The result of `randrnd()` is an unbiased, randomly rounded integerized value. In the following example, the variable `intval` has the value 2.0 for 30% of the time and 3.0 for 70% of the time.

```
intval = randrnd(2.7, idrand0);
```

The `randrnd()` function can be used to simplify operations such as the production of alternate weight files. For a specific example, see the description of the `bldwgt.exe` utility found in the *SPSM Tools Users Manual*.

The `vardef` function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.

round Round to nearest integer

SUMMARY

```
NUMBER round(arg);
```

```
NUMBER arg;
```

The `round` function converts its argument to the nearest whole number.

SUMMARY

Social assistance payments are not currently calculated by the SPSM. Data requirements are too great for a detailed micro-simulation. For example, the database contains no information on the holding or recent sale of liquid or fixed assets. This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here. It is also intended as a function in which algorithms for social assistance or other guarantees can be developed by glass box users.

Program Description

There are a number of federal, provincial and municipal programs which provide some form of social assistance payments to various target groups. The SPSM simulates six GIS supplementation programs (see the description of the gist function) which are classified with the other social assistance programs by the SCF. In fact the SCF records benefits received from over 30 provincial and municipal social assistance programs under one title of which six are simulated by the SPSM. This algorithm is designed to ensure no double counting of provincial GIS supplement program benefits occurs between simulated social assistance (imisa) and the provincial GIS supplement programs (imigist).

SPSM Implementation

If the function is deactivated with SAFLAG, no social assistance benefits are reported for any individual. If the function is turned on the database values of reported Social Assistance payments is used as the reported value of social assistance for all persons under the age of 65. For persons aged 65 and over there are three possible means of calculating social assistance which are controlled by the SAELDOPT parameter. These options are as follows.

- Social assistance is set to zero for all persons aged 65 and over.
- For individuals over age 64 who received simulated Provincial GIS supplementation benefits Social Assistance benefits are set to zero. If no Provincial GIS supplement is assigned to an individual over age 64, the simulated social assistance reported by the SPSM is the same as the reported value on the database.
- For all individuals over the age of 64 the value of simulated social assistance is set to the positive difference between reported and simulated social assistance.

In addition to performing the calculations for Social Assistance, samod computes the splitting of payments between the Federal and Provincial governments. This splitting corresponds to the federal/provincial cost sharing agreements in the Canada Assistance Plan.

The payment splitting is controlled by the parameter SAFS which is the federal proportional share of SA benefits. This parameter is available to be changed in black box mode and will determine the value of the variable imfsa which represents the value of the federal share. The provincial share of SA benefits is calculated as the difference between total SA benefits and the calculated federal amount and is represented by the variable impsa.

Relation to Other SPSM Routines

The samod function is called by drv after the calculation of provincial GIS supplements in gist.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|--|
| SAELDOPT | SA for elderly calculation method [1=~SA,2=GIST->~SA,3=diff] |
| SAFLAG | Social assistance flag |
| SAFS | Federal share of social assistance [prov] |
| SAPFLAG | Social assistance predicted value flag |
| SATARGET | Social assistance target for predicted SA |
| SFAOUT | Proportion of social assistance to eliminate |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hhncf | Number of census families in household |
| idage | Age |
| idisa | Social assistance income |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| imigist | GIS provincial top-up |

OUTPUT VARIABLES:

| | |
|--------|--|
| imfsa | Federal social assistance |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |
| impsa | Provincial social assistance |

SUMMARY

The strn function is used by the SPSM to print prompts and error messages in a language-independent way. The argument to the function identifies which string is to be retrieved. strn retrieves the string from a language-specific database of strings into an internally-maintained buffer and returns a pointer to the retrieved string. This function is not intended to be used by the SPSM user, and is documented here for reference purposes only.

taxbk1

One level tax-back function

SUMMARY

```
NUMBER taxbk1(inc, exmpt, lvl1, rr1);

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level of benefit                       */
NUMBER rr1;          /* reduction rate for tax-back           */
```

The taxbk1 function is used to reduce a benefit at a fixed rate based on income in excess of a specified exemption level. If the benefit (*lvl1) is reduced to zero, taxbk1 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the income in excess of the break-even income for the benefit.

taxbk2

Two level tax-back function

SUMMARY

```
NUMBER taxbk2(inc, exmpt, lvl1, rr1, lvl2, rr2)

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back     */
NUMBER *lvl1;        /* level (#1) of benefit                */
NUMBER rr1;          /* reduction rate (#1) for tax-back     */
NUMBER *lvl2;        /* level (#2) of benefit                */
NUMBER rr2;          /* reduction rate (#2) for tax-back     */
```

The taxbk2 function is used to reduce a two-tiered benefit at a fixed rates based on income in excess of a specified exemption level. The first tier benefit (*lvl1) is first reduced at rate rr1 based on income (inc) in excess of the specified threshold (exmpt). If the first tier benefit is reduced to zero, the second tier of benefit (*lvl2) is reduced at rate rr2 based on remaining income. If the second tier benefit (*lvl2) is reduced to zero, taxbk2 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the

income in excess of the break-even income for the benefit.

SUMMARY

Program Description

Calculation of the Alberta taxes.

When ATXFLG is off, Basic Alberta Tax (imbpt) is a proportion (APTF) of Basic Federal Tax (imbft). A tax reduction is calculated as a basic amount (ATRBC) minus a proportion (ATRF) of Basic Alberta Tax (imbpt). Alberta Tax Payable (imtxp) is calculated as Basic Alberta Tax (imbpt) minus the tax reductions.

The 2000 budget stated that Alberta would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (ATXFLG), a provincial tax table (APTXX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (APNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (ABXM) |
| impatxc | Age amount tax credit | (AAXM, AAXRR, AAXTD, AAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (AMXM, AMXMT, AEMXM, AEMXMT) |
| impcgtc | Caregiver tax credit | (ACGTC, ACGTCFLG, ACGTCTC, ACGTCTD, ACGTCTK) |
| impchrtc | Charitable donations | (ACHATL1, ACHATR1, ACHATR2) |
| impcppte | CPP/QPP contribution | |
| impdistc | Disability tax credit | (AMAXDX) |
| impdtxc | Dividend tax credit | (ADTCR) |
| impedtxc | Education tax credit | (AEDXPM, AMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (AYPNDL) |
| imptutxc | Tuition Tax credit | (AMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using AAMTOPT.

Calculation of the Alberta Family Employment Tax Credit.

When the parameter AFETCFLAG is set to 1, the value of imiafetc variable is calculated as a percentage (AFETCBR) of nuclear family employment income above a threshold (AFETCCI) to a maximum dollar level which is calculated as AFETCBPC times the number of eligible children (nfnkids) up to a maximum number of children of AFETCNC. The maximum benefit is reduced by a percentage (AFETCRR) of nuclear family net income in excess of the threshold AFETCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AAMTOPT | Alta alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| AAMTPCTF | Alta amt rate as pct of additional fed tax due to minimum tax |
| AAMTPCTM | Alta amt rate as pct of federal minimum tax amount |
| AAMTTX | Alta amt rate as tax on adjusted income |
| AAXM | Alta Age Amount |
| AAXPI | Alta Age Amount phase in rate for 1994 and beyond |
| AAXRR | Alta Age Amount credit reduction rate |
| AAXTD | Alta Age Amount net income turndown |
| ABXM | Alta Basic Personal Exemption/amount |
| ACGTC | Alta Caregiver Tax Credit |
| ACGTCFLG | Alta Caregiver Tax Credit activation flag |
| ACGTCTC | Alta Caregiver tax credit take-up rate by age of elderly [age,rate] |
| ACGTCTD | Alta Caregiver Tax Credit Turn Down Income |
| ACGTCTK | Alta Caregiver tax credit take-up rate by income level [employment income,rate] |
| ACHATL1 | Alta Charitable Donations amount level 1 |
| ACHATR1 | Alta Charitable Donations tax credit rate 1 |
| ACHATR2 | Alta Charitable Donations tax credit rate 2 |
| ADTCR | Alta dividend tax credit rate |
| AEDXPM | Alta Education Amount per month |
| AEMXM | Alta equivalent to married amount |
| AEMXMT | Alta equivalent to married turndown level |
| AFETCBPC | Alberta Family Employment Tax Credit Benefit Per Child |
| AFETCBR | Alberta Family Employment Tax Credit Benefit Rate |
| AFETCCI | Alberta Family Employment Tax Credit Benefit Cut-in Level |
| AFETCFLG | Alberta Family Employment Tax Credit Activation Flag |
| AFETCNC | Alberta Family Employment Tax Credit Maximum Number of Children |
| AFETCRR | Alberta Family Employment Tax Credit Reduction Rate |
| AFETCTD | Alberta Family Employment Tax Credit Turndown Level |
| AFTAX | Alberta flat surtax rate on taxable income |
| AHEATFLG | Alberta Energy Tax Refund activation flag |
| AHEATREB | Alberta Energy Tax Refund amount |

| | |
|---------|--|
| AMAXDX | Alta Maximum Disability deduction/amount |
| AMAXET | Alta maximum on transfer of education and tuition amount |
| AMXM | Alta married amount |
| AMXMT | Alta married amount turndown level |
| APNTCR | Alta provincial non-refundable tax credit rate |
| APTC | Alberta political contribution table [total donations, donation allowed] |
| APTCBEN | Maximum Alberta political tax credit allowed |
| APTF | Alberta provincial tax fraction |
| APTX | Alta tax table [taxable income, basic provincial tax] |
| ASCI | Alberta surtax cut-in |
| ASF | Alberta surtax fraction |
| ATRBC | Alberta tax reduction basic claim |
| ATRF | Alberta tax reduction fraction |
| ATXFLG | Alta tax on taxable income activation flag |
| AYPNDL | Alta Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |

| | |
|-----------|--|
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| imiafetc | Alberta Family Employment Tax Credit Benefits |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txbc Compute provincial taxes for British Columbia

SUMMARY

When CTXFLG is turned off, the Basic British Columbia Tax (imbpt) is a proportion (CPTF)

of Basic Federal Tax (imbft). British Columbia Tax Payable (imtxp) is the Basic Tax plus the BC Surtax plus the BC Health Care Maintenance Surtax.

The BC Surtax is a proportion (CSF) of Basic BC Tax (imbpt) exceeding the surtax level (CSCI).

The 2000 budget announced that British Columbia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (CTXFLG), a provincial tax table (CPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (CPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (CBXM) |
| impatxc | Age amount tax credit | (CAXM, CAXRR, CAXTD, CAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (CMXM, CMXMT, CEMXM, CEMXMT) |
| impcgtc | Caregiver tax credit | (CCGTC, CCGTCFLG, CCGTCTC, CCGTCTD, CCGTCTK) |
| impchrtc | Charitable donations | (CCHATL1, CCHATR1, CCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (CMAXDX) |
| impdtxc | Dividend tax credit | (CDTCR) |
| impedtxc | Education tax credit | (CEDXPM, CMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (CYPNDL) |
| imptutxc | Tuition Tax credit | (CMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using CAMTOPT.

The British Columbia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The BC provincial credit is modelled as CLVCRT times the gross amount up to CLVCMAX. The credit cannot be more than provincial taxes (imtxp).

B.C. Family Bonus

Total benefits received under the British Columbia Family Bonus program commencing in July 1996.

When the parameter BCFBFLAG is set to one the value of this variable is calculated as BCFBBAS times the number of children in the nuclear family (nfnkids) reduced by a proportion of head plus spouse net income (iminet + imisa) above the turndown of BCFBTD. This proportion for families with one child is BCFBRRS and for multiple child families is BCFBRR. The value calculated in this manner is multiplied times the parameter BCFBPI.

B.C. Family Bonus benefits (imibcfb) are assigned to the mother if present, or if not to the head of the nuclear family.

The calculation of the B.C. Family Bonus was changed to include the level of the National Child Supplement beginning in 1998. The flag BCFBIFS was added to turn on or off the inclusion of the National Child Supplement in the calculation of the B.C. Family Bonus.

The British Columbia Earned Income Benefit which was also introduced in 1998, was added to the code. When BCEIBFLG is assigned a value of 1, the calculation of the British Columbia Earned Income Benefit is activated, depending on the presence of children in the family. For families with lower incomes, the benefit starts to be phased in at BCEIBPI, and reaches its maximum at incomes of BCBEMX. The slope of the phase in is therefore calculated as the maximum working income supplement a family can receive divided by (BCBEMX – BCEIBPI).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BCBEIS1 | B.C. Earned Income Benefit for first child |
| BCBEIS2 | B.C. Earned Income Benefit for second child |
| BCBEIS3 | B.C. Earned Income Benefit for each additional child |
| BCBEITD | B.C. Earned Income Benefit Turndown |
| BCBEMX | B.C. Earned Income Benefit Income Reduction |
| BCBERR1 | B.C. EIB reduction rate for families with 1 child |
| BCBERR2 | B.C. EIB reduction rate for families with 2 children |
| BCBERR3 | B.C. EIB reduction rate for families with 3+ children |
| BCEIBFLG | Activate B.C. Earned Income Benefit Program |
| BCEIBPI | B.C. Earned Income Benefit Income Phase In |
| BCFBBAS | B.C. Family Bonus amount per child |
| BCFBFLAG | Activate B.C. Family Bonus Program |
| BCFBIFS | Activate B.C. Family Bonus to include Federal NCS |
| BCFBNCS1 | B.C. Family Bonus National Child Supplement for first child |
| BCFBNCS2 | B.C. Family Bonus National Child Supplement for second child |
| BCFBNCS3 | B.C. Family Bonus National Child Supplement for each additional child |

| | |
|-------------------------------------|---|
| BCFBNCSSRR1 child | B.C. Family Bonus NCS reduction rate for families with 1 child |
| BCFBNCSSRR2 children | B.C. Family Bonus NCS reduction rate for families with 2 children |
| BCFBNCSSRR3 children | B.C. Family Bonus NCS reduction rate for families with 3+ children |
| BCFBNCSTD | B.C. Family Bonus National Child Supplement Turndown |
| BCFBPI | B.C. Family Bonus phase-in |
| BCFBRR | B.C. Family Bonus multiple child reduction rate |
| BCFBRRS | B.C. Family Bonus single child reduction rate |
| BCFBTD | B.C. Family Bonus Turndown |
| CAMTOPT adj inc, 4=% min amt) | B.C. alternative minimum tax option (1=none, 2=% fed, 3=fed) |
| CAMTPCTF tax | B.C. amt rate as pct of additional fed tax due to minimum tax |
| CAMTPCTM | B.C. amt rate as pct of federal minimum tax amount |
| CAMTTX | B.C. amt rate as tax on adjusted income |
| CAXM | B.C. Age Amount |
| CAXPI | B.C. Age Amount phase in rate for 1994 and beyond |
| CAXRR | B.C. Age Amount credit reduction rate |
| CAXTD | B.C. Age Amount net income turndown |
| CBXM | B.C. Basic Personal Exemption/amount |
| CCGTC | B.C. Caregiver Tax Credit |
| CCGTCFLG | B.C. Caregiver Tax Credit activation flag |
| CCGTCTC [age,rate] | B.C. Caregiver tax credit take-up rate by age of elderly |
| CCGTCTD | B.C. Caregiver Tax Credit Turn Down Income |
| CCGTCTK [employment income,rate] | B.C. Caregiver tax credit take-up rate by income level |
| CCHATL1 | B.C. Charitable Donations amount level 1 |
| CCHATR1 | B.C. Charitable Donations tax credit rate 1 |
| CCHATR2 | B.C. Charitable Donations tax credit rate 2 |
| CDTCR | B.C. dividend tax credit rate |
| CEDXPM | B.C. Education Amount per month |
| CEMXM | B.C. equivalent to married amount |
| CEMXMT | B.C. equivalent to married turndown level |
| CHEATFAM | British Columbia Refundable Energy Credit for families |
| CHEATFLG | British Columbia Refundable Energy Credit activation flag |
| CHEATSNG | British Columbia Refundable Energy Credit for singles |
| CLVCMAX | Maximum B.C. labour-sponsored funds tax credit allowed |
| CLVCRT credit | Percent of B.C. labour-sponsored funds cost allowed as credit |
| CMAXDX | B.C. Maximum Disability deduction/amount |
| CMAXET | B.C. maximum on transfer of education and tuition amount |
| CMXM | B.C. married amount |
| CMXMT | B.C. married amount turndown level |
| CPNTRC | B.C. provincial non-refundable tax credit rate |
| CPTCBEN | Maximum B.C. political tax credit allowed |
| CPTCT allowed] | B.C. political contribution table [total donations, donation allowed] |
| CPTF | British Columbia provincial tax fraction |
| CPTX | B.C. tax table [taxable income,basic provincial tax] |
| CRFLAG | British Columbia rental reduction flag |
| CRTRB | British Columbia renter tax reduction basic credit |
| CRTRD dependants | British Columbia renter tax reduction credit for other dependants |

| | |
|----------|---|
| CRTRP | British Columbia renter tax reduction proportion of rent allowed |
| CRTRPN | British Columbia renter tax reduction proportion of net income |
| CRTRS | British Columbia renter tax reduction credit for spouse |
| CRTRT | B.C. renter tax reduction base amount turndown [dependants, amount] |
| CSCI | British Columbia surtax first cut-in level |
| CSCI2 | British Columbia surtax second cut-in level |
| CSDC | British Columbia provincial surtax dependant credit |
| CSF | British Columbia surtax first level rate |
| CSF2 | British Columbia surtax second level rate |
| CSTC | British Columbia stc amount |
| CSTCFLAG | British Columbia sales tax credit flag |
| CSTCR | British Columbia stc reduction rate |
| CSTHINC | British Columbia family head income threshold (stc) |
| CSTKINC | British Columbia kid income threshold top-up (stc) |
| CSTSINC | British Columbia spousal income threshold top-up (stc) |
| CTCINC | CTC family income scaling factor |
| CTXFLG | B.C. tax on taxable income activation flag |
| CYPNDL | B.C. Pension Income Deduction Amount |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |

| | |
|----------|---|
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchclm | Number of dependent children claimed |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imibceib | B.C. Earned Income Benefit |
| imibcfb | B.C. Family Bonus |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |

| | |
|----------|--|
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txcalc Calculate federal income tax

SUMMARY

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Federal Labour Sponsored Venture Capital Tax credit
- Basic Federal Tax (including tax credits transfers from dependants or spouse)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement
- Federal refundable medical expense supplement
- Caregiver Tax Credit

Federal Dividend Tax Credit

If the filer declared dividends from taxable Canadian corporations, he or she is eligible to claim the Dividend Tax Credit which amounts to a fixed proportion of taxable dividends. This credit is non-refundable, i.e., it may be used to reduce Basic Federal Tax, but an unused portion is not refunded.

SPSM Implementation

The Federal Dividend Tax Credit (imfdtxc) is calculated as a proportion (FDTCR) of Net Taxable Dividends (imidivt). The amount is added to Total Non-transferable Tax Credits (imtaxcr) which is applied to reduce Basic Federal Tax (imbft).

Federal Dividend Tax Credit

The Labour-sponsored venture capital funds tax credit is modeled from the imputed gross amount purchased (idlbtxg). The credit (imlbtxc) is equal to FLVCRT times the gross

amount (idlabt_{xg}) up to a maximum (FLVCMAX). The rate is provincially based.

Basic Federal Tax

Basic Federal Tax is defined as Federal Tax Payable on Taxable Income minus certain tax credits.

SPSM Implementation

Basic Federal Tax (imbft) is calculated the same way whether or not the tax credits proposed by the White Paper are applied. First, Federal Tax Payable on Taxable Income (imfedtax) is calculated using the interpolating lookup function lkup1 to determine taxes payable on Taxable Income (imitax) from the table FTX.

Dependants are treated separately from the head and spouse since the rules applying to the transfer of deductions from dependant to parent differ from those applying to the transfer of deductions from the spouse.

Transfers from Dependant to Parent

In calculating the dependant's Basic Federal Tax, the following nontransferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Age Tax Credit (imatxc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Federal Dividend Tax Credit (imfdtxc)
- Medical Expense Tax Credit (immedatc)
- Pension Income Tax Credit (impentxc)
- UI Contributions Tax Credit (imuictc)

A dependant may transfer an unused portion of certain tax credits to a supporting parent. Since a limit may be imposed on the amount of the combined Education Tax Credit and Tuition Tax Credit, these are treated separately from the Disability Tax Credit.

If a dependant requires all transferable tax credits to further reduce Basic Federal Tax, i.e., Basic Federal Tax (imbft) exceeds Total Transferable Tax Credits, then the tax credits are subtracted from imbft and no transfer occurs.

If the dependant's Total Transferable Tax Credits (txcrt) exceeds Basic Federal Tax, imbft is reduced to zero and the amount potentially transferable to a supporting parent is calculated as the amount of Disability Tax Credit (imdisatc) not required to reduce Basic Federal Tax plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imttxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

The total amount of tax credits transferable from all dependants is accumulated in the variable ctxcrt which is subsequently used to reduce Basic Federal Tax for the parent with the higher Net Income (iminet).

These algorithms do not allow the partitioning of the dependant's tax credits between both supporting parents and, therefore, in some cases, the total taxes paid by the family may not be minimized.

Transfers From Spouse

In calculating the Basic Federal Tax of the head and spouse, the following non-transferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Tax Credit for Dependant Children (imctxc)
- Federal Dividend Tax Credit (imfdtxc)
- Married Tax Credit (immartxc)
- Medical Expense Tax Credit (immedatc)
- UI Contributions Tax Credit (imuictc)

An unused portion of certain transferable tax credits may be transferred from the spouse. The transferable tax credits are:

- Age Tax Credit (imatxc)
- Disability Tax Credit (imdisatc)
- Pension Income Tax Credit (impentxc)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)

Since a limit may be imposed on the amount of the combined Education and Tuition Tax Credits, these are treated separately from the others.

If the filer requires all Transferable Tax Credits (txcrt) to reduce Basic Federal Tax (i.e., imbft exceeds txcrt) then the tax credits are subtracted from Basic Federal Tax and no transfer occurs.

If the filer's Transferable Tax Credits (txcrt) exceed Basic Federal Tax, then imbft is reduced to zero and the remainder of the Potentially Transferable Tax Credits (ttxcrt) is calculated as the sum of:

- Disability Tax Credit (imdisatc)
- Age Tax Credit (imatxc)
- Pension Income Tax Credit (impentxc)

which is not required to reduce Basic Federal Tax to zero plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imtxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

Although this value is calculated for both head and spouse, the one with the higher Net Income (iminet) actually receives the transfer. The amount transferred from the spouse is stored in the variable imstxcrt. The amount transferred from all dependants is stored in imctxcrt.

Federal Surtax

In 1985 a Federal Surtax was introduced as an additional tax based on Basic Federal Tax payable.

SPSM Implementation

The model allows for two surtax levels and two surtax rates. The total Federal Surtax (imfsur) is calculated as:

- a proportion (FSURR1) of Basic Federal Tax exceeding Surtax Level 1 (FSURL1), plus
- a proportion (FSURR2) of Basic Federal Tax exceeding Surtax Level 2 (FSURL2), minus
- the amount of the additional Federal Foreign Tax Credit from 1986 forward (represented by variable (idfdsft)).

The result is then added to Federal Taxes (imftax) (minus certain federal tax credits) to derive Federal Taxes Payable (imtxf).

Federal Surtax Reduction

The Federal Surtax reduction (imfsurtr) announced in the 1998 federal budget is calculated. The maximum value that the reduction may reach is FSURTRMX. The reduction is reduced by a proportion (FSURTRRR) of basic federal tax (imbft) which exceeds a certain level (FSURTRRL). This reduction is then subtracted from the federal surtax (imfsur).

Federal Taxes Payable

Federal Taxes Payable (imtxf) is defined as Federal Tax (imftax) plus the Federal Surtax (see above) minus the following tax credits:

- Federal Other Tax Credits
- Federal Political Contribution Tax Credit (imfptc), and

Alternate Minimum Tax

In 1986, a minimum tax on individuals was introduced with the intention of increasing the tax liability of those high income individuals who use the tax incentives provided by the current law to structure their affairs so as to pay little or no tax.

The Alternative Minimum Tax requires the calculation of an adjusted taxable income disallowing certain deductions, a list of which follows, which are added back to taxable income.

- Pension Income Deduction
- Interest and Dividend Income Deduction
- Disability Deduction Transferred from Dependant
- Education Deduction Transferred from Dependant
- Deductions Transferred from Spouse
- Employee Home Relocation Loan Deduction
- Stock Option and Shares Deduction
- Contribution to Deferred Income Plans (RPP and RRSP contributions)
- non-taxable portion of capital gains
- capital cost allowance on MURBS and Canadian Films

The grossed-up portion of taxable dividends and Allowable Business Investment Loss are subtracted from taxable income.

The minimum tax is then calculated as a proportion of this adjusted taxable income exceeding the exemption level.

SPSM Implementation

If the Minimum Tax Rate (AMTTX) is not set to zero, the minimum tax algorithms are executed.

The first step recalculates an adjusted taxable income for minimum tax purposes (imamtinc) by adding the following items to imitax:

- RPP Contributions (idrpp) when AMTRPFLG is set to 1
- RRSP Contributions (idrrsp) when AMTRPFLG is set to 1
- Other Deductions from Total Income (idothded, representing Capital Cost Allowances)
- the non-taxable portion of Capital Gains (idicapg * (AMTINCRT - CAPGIR))
- exploration and development expenses (idexplor)
- employee home relocation loan deduction (idemplo)
- stock option and shares deduction when AMTSTK is set to 1
- limited partnership losses (idpartlo)
- allowable other years non-capital losses (idnclos)

The taxable portion of dividends (imidivt) times AMTDIV, net non-deductible capital losses, the allowable portion of business investment losses (imiloss) times the applicable rates defined as $((AMTINCRT - CAPGIR)/CAPGIR)$ and the basic exemption (AMTEX) are subtracted from this value.

The Basic Minimum Tax (ambft) is calculated as a proportion (AMTTX) of Adjusted Taxable Income (imamtinc).

The second step in this process adjusts the Basic Minimum Tax (ambft) to account for allowable tax credits. This requires subtracting the following tax credits from Basic Minimum Tax:

- Basic Tax Credit (imbtc)
- Spouse or Equivalent Tax Credit (immartxc)
- Age Tax Credit (imatxc)
- Tax Credit for Dependant Children (imctxcs)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)
- Medical Expense Tax Credit (immedatc)
- Charitable Donations Tax Credit (imchartc)
- Disability Tax Credit (imdisatc) for self
- Other Dependent Tax Credit (imothpe)
- CPP/QPP Contribution Tax Credit (imcppctc)
- UI Contribution Tax Credit (imuictc)
- Basic Personal Amount Supplement (imbts)
- Caregiver Tax Credit (imcgtc)

If the value of the Basic Minimum Tax (ambft) exceeds Basic Federal Tax (imbft), Federal Tax Payable (imtxf) is recalculated as Basic Minimum Tax (ambft) plus any federal surtaxes on ambft. The federal surtax is calculated in the same manner as on Basic Federal Tax, previously described.

The database does not contain sufficient detail to accurately represent some of the deductions specified in the regulations concerning the calculation of the Minimum Tax. The Disability Deduction and Education Deduction transferred from dependants are not differentiable from those deductions claimed on behalf of the filer. The variable idothded (Other Deduction's from Total Income) includes Capital Cost Allowances on MURBS and Canadian Films but it also contains amounts for moving expenses and alimony payments. It is difficult to estimate the impact of these inaccuracies except to say that they are likely small compared to the large amounts of income and other deductions for the high income persons for whom the Minimum Tax is intended.

Quebec Tax Abatement

The Quebec Tax Abatement is a refundable credit on federal taxes provided to Quebec residents in lieu of direct cost-sharing by the federal government under the federal-provincial fiscal arrangements. It reduces the federal income tax payable by Quebec residents and may provide a refund. The abatement amounts to 16.5% of Basic Federal Tax.

SPSM Implementation

If the filer resides in Quebec, the full Quebec Tax Abatement (qta) is calculated as a proportion (QTAP) of Basic Federal Tax (imbft). This is divided into two portions for

accounting purposes:

- imqtaa is the Quebec Tax Abatement Applied to reduce federal taxes
- imqtar is the Quebec Tax Abatement Refunded

If the Quebec Tax abatement exceeds the Federal Tax payable then a refund is made for the balance of the abatement (imqtar) and the amount of Federal tax payable is reduced by the amount of the abatement. Users may wish to note that this abatement refund was an interesting side effect of the Federal Tax reduction in effect prior to 1986 (see notes in this section).

Federal Refundable Medical Expense Supplement

SPSM Implementation

The refundable medical expense supplement (immedref) was added to imfortc. The program is only available to persons aged 18 and over who have earnings over MEDREMIN and who had allowable medical expenses (immeda). The maximum supplement is calculated as the minimum of MEDRRATE times the allowable medical expenses and MEDRMAX. The benefit is reduced by MEDRRR times the family income over the turndown which is the sum of the basic exemption (BXM), the married exemption (MXM) and the maximum disability amount (MAXDX).

Caregiver Tax Credit

The calculation of the Caregiver Tax Credit (imcgtc) is activated by the flag CGTCFLG. The credit reduces federal taxes and started in 1998. The base level of the credit is CGTC. A take-up rate CGTCTC based on age of the potential parent assigns individuals with idefrh =3 as a parent according to SCF 1994 data. Users have access to a take-up rate CGTCTK based on employment income to select the appropriate number of beneficiaries.

The benefit, imcgtc, is reduced for each dollar of net income, iminet, in excess of CGTCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AMTDIV | Alternative minimum tax: percentage of taxable dividends |
| AMTEX | Alternate minimum tax: exemption level |
| AMTFORTX | Alternative minimum tax: Foreign Income Tax Rate |
| AMTINCRT | Alternative minimum tax: Inclusion Rate |
| AMTNEGTI | Alternative minimum tax: Allow Negative Taxable Income Flag |
| AMTPRVDF | Alternative minimum tax: prov. tax difference |
| definition[prov] | |
| AMTRPFLG | RRSP/RPP included in Alternate minimum tax (1=included) |
| AMTSTK | Alternative minimum tax: Stock Option Proportion |

| | |
|------------|---|
| AMTTX | Alternate minimum tax rate |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CGTC | Caregiver Tax Credit |
| CGTCFLG | Caregiver Tax Credit activation flag |
| CGTCTC | Caregiver tax credit take-up rate by age of elderly [age,rate] |
| CGTCTD | Caregiver Tax Credit Turn Down Income |
| CGTCTK | Caregiver tax credit take-up rate by income level [employment income,rate] |
| FDTCR | Federal dividend tax credit rate |
| FLVCMAX | Maximum labour-sponsored funds tax credit allowed |
| FLVCRT | Percent of labour-sponsored funds cost allowed as credit [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| FPTC | Federal political contribution table [total donations,donation allowed] |
| FPTCBEN | Maximum federal political tax credit allowed |
| FSURL1 | Federal surtax level 1 |
| FSURL2 | Federal surtax level 2 |
| FSURR1 | Federal surtax rate 1 |
| FSURR2 | Federal surtax rate 2 |
| FSURTRMX | Maximum federal surtax reduction |
| FSURTRRL | Federal surtax reduction reduction level |
| FSURTRRR | Federal surtax reduction reduction rate |
| FTX | Federal tax table [taxable income,basic federal tax] |
| GSTREBFLAG | Database variable(gstreb) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MAXET | Maximum on transfer of education and tuition amount |
| MEDREMIN | Minimum earnings for refundable medical expense supplement |
| MEDRMAX | Maximum expenses allowed for medical expense supplement |
| MEDRRATE | Proportion of expenses allowed for medical expense supplement |
| MEDRRR | Reduction rate for the medical expense supplement |
| MXM | Married exemption/amount |
| QTAP | Quebec tax abatement proportion of basic federal tax |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |

| | |
|----------|--|
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgstreb | GST rebate (457) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnclos | Allowable other years non-capital loss (252) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imbtcs | Basic personal tax credit supplement |
| imcapgx | Modelled capital gains deduction (254) |
| imchartc | Charitable donations tax credit |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imctxcs | Dependent children tax credits |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |
| imtutxc | Tuition tax credit |
| imuic | UIC contributions |
| imuictc | UIC contributions tax credit |

OUTPUT VARIABLES:

| | |
|----------|---|
| imamtdf | Difference due to minimum tax |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |

| | |
|----------|---|
| imatxcrt | Total tax credits applied |
| imbft | Basic federal tax |
| imcgtc | Caregiver Tax Credit Level |
| imcgtcp | Dependant caregiver tax credit amount |
| imctxcrt | Tax credits transferred from children |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imfdtxc | Federal dividend tax credit |
| imfedtax | Federal tax before tax credits |
| imfortc | Federal other refundable tax credits |
| imfortxc | Federal foreign tax credit (509) |
| imfptc | Federal Political Contribution Tax Credit |
| imfsur | Federal surtax |
| imfsurtr | Federal surtax reduction |
| imlabtxc | Federal labour-sponsored funds tax credit |
| immedref | Refundable medical expense supplement (452) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imoftca | Other federal tax credits applied (416) |
| imqtaa | Quebec tax abatement (applied) |
| imqtar | Quebec tax abatement (refundable) |
| imstxcrt | Tax credits transferred from spouse |
| imtaxcr | Total tax credits |
| imttxcrt | Total tax credits transferred |
| imtxf | Federal income tax payable |

txccea Compute child care expense allowance

SUMMARY

The txccea function calculates the value of the child care expense deduction.

Description of tax measure

Child care expenses are amounts paid for child care services to allow the parent or "supporting person" to:

- a) earn income from employment or self-employment, (this does not include a period of unemployment) or
- b) take an occupational training course for which the person received an adult training allowance, or
- c) carry on research or similar work for which the person received a grant.
- d) go to school full-time

A filer is eligible to claim child care expenses if:

- a) there is no other supporting person
- b) there is a supporting person with a higher net income (excluding child care expenses) than the filer
- c) there is a supporting person with a net income lower than the filer but
 - i. the filer and supporting person were separated for at least 3 months, or

- ii. the supporting person was in full-time attendance at a designated educational institution, or
- iii. the supporting person was infirm or in prison for at least 2 weeks.

A combination of limitations is applied to the amount claimable:

1. Two-thirds of earned income, and
2. a fixed amount per eligible child up to a fixed maximum is applied if the net income of the filer is less than that of a supporting person (conditions (a) and (b) above).

Under condition (c) above, i.e., the income of the supporting person is lower than that of the filer, the following additional limitation applies:

3. fixed weekly amount per child up to a maximum, multiplied by the number of weeks of separation, attendance at an educational institution, infirmity or imprisonment.

In 1982, the Child Care Expense Deduction was always taken by the mother of the child if she was present. Since then, the deduction or tax credit is normally allocated to the spouse with the lower net income, exclusive of the child care expense deduction, unless that person is separated, in school, infirm or in prison.

SPSM Implementation

The amount of Child Care Expenses Allowed is derived from income tax records during the database creation process (see the *Database Creation Guide*). This value represents the amount allowed according to the base year regulations. Though this amount may be grown or diminished by a fixed factor (GFC CET), the rules described above cannot be easily altered in the current version of SPSM.

The parameter CCEROPT determines which spouse in a two-parent family claims the Child Care Expense Deduction. If CCEROPT is given a value of 1, the deduction is always taken by the mother. With a value of 2, the deduction is taken by the parent with the lower Net Income (iminet).

The condition for a temporarily absent, lower income spouse (condition c. above) is not checked.

On the database, only one spouse of a two-parent family will have been attributed a value for Child Care Expense Deduction Allowed. The assignment of this value is done before we have complete information about the relative net incomes and may therefore be given to an inappropriate person. The model uses the current value of Net Income (iminet) to re-allocate the deduction if necessary.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| CCEAEMPF | CCEA fraction of employment income (Limit `B') |
| CCEALIM | CCEA overall limit |
| CCEAOAGE | CCEA Maximum eligible age for oldest child |
| CCEAOLD | CCEA old child limit |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| CCEAYNG | CCEA young child limit |
| CCEROPT | Child care expense deduction recipient [1=mother,2=lower income] |
| CCESFLAG | CCE full-time student flag |
| CCESOLD | CCEA old child limit for full-time students |
| CCESYNG | CCEA young child limit for full-time students |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| INPUT VARIABLES: | |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| ideducm | Eligible months of education allowance |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idsex | Sex |
| imccez | Is CCE zeroed? |
| imisa | Social assistance (or replacement program) |
| OUTPUT VARIABLES: | |
| imcce | Child care expenses allowed |
| imcce | Child care expenses claimed on behalf of child |
| imdedft | Deductions from total income |
| iminet | Net income |
| imninc | No income flag |

SUMMARY

The federal Child Tax Credit and the Child Tax Benefit provide benefits to help low and middle income families meet the costs of raising children under the age of 18. The txctc function calculates benefits from the federal Child Tax Credit (CTC) program based upon the number of children in a family and the net income of the family. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

The level of benefits varies with the number of children.

Program Description

The federal Child Tax Credit provides benefits to help low and middle income families meet the costs of raising children under the age of 18. It was implemented in 1979 and is administered by Revenue Canada, Taxation, through the income tax system.

Any person who receives Family Allowances is eligible to apply for the Child Tax Credit. The credit is available on behalf of a child for whom Family Allowances were paid for in the month of January following a given taxation year. An eligible person who voluntarily refrains from receiving Family Allowances may still claim the Child Tax Credit. The CTC must be applied for by filing an income tax return regardless of the income of the eligible parent or guardian. A foster parent in receipt of Special Allowances is not eligible for the CTC. Canadian residents living outside Canada, but paying Canadian taxes may apply for the credit.

The amount of the CTC is determined by the number of eligible children and the family's income. Family income is defined as the net income (as defined for income tax purposes) of both parents, whether married or not (provided they are living together), or the net income of a single parent. The net income of any other person who is claiming a personal exemption for a dependent child (whether or not the person lives with the claimant of the CTC) must also be included in family income. For families with taxable incomes the refundable credit to which they are entitled reduces the tax which must be paid; families whose taxes are less than the credit, or who pay no taxes at all receive a non-taxable lump sum payment.

The maximum annual credit is payable if net family annual income is less than a specified level of income called a benefit reduction level or turndown. Families with net incomes above this turndown are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum CTC for eligible parent(s) is zero. In 1993, the CTC was replaced by the Child Tax Benefit. This program is comprised of two parts: the basic Child Tax Benefit, and the Earnings supplement (also called the Working income supplement). The basic child tax benefit consists of \$1,020 per child, plus \$75 for the third child and subsequent children. There is an additional \$213

for each child under 7 with no child care expenses. The benefit is reduced at family incomes over \$25,921 at a 5% rate (or 2.5% if only 1 child).

The Working Income Supplement was a maximum of \$500 per family. It started at earnings of \$3,750, reached the maximum at earnings of \$10,000, and was then reduced, reaching \$0 at family incomes of \$25,921.

In 1997, the Working Income Supplement was enriched. Instead of \$500 per family, the benefit was \$605 for the first child, \$405 for the second child, and \$330 for the third and subsequent children. It was phased in at family earnings of \$3,750, reached a maximum at \$10,000, and was phased out starting at family incomes of \$20,921. The reduction rates were 12.1% for families with 1 child, 20.2% for families with 2 children, and 26.8% for families with 3 or more children.

In 1998, the program was renamed the Canada Child Tax Benefit (CCTB). The basic benefit has the same level and structure of the Child Tax Benefit. The Working Income Supplement was replaced by the CCTB National Child Benefit Supplement. It is no longer dependent on earnings, and therefore is not phased in. Otherwise, it follows the same rules as the 1997 Working Income Supplement.

SPSM Implementation

The `txctc` function calculates the federal Child Tax Credit based on the number of children in a family and the net income of the family. Residency requirements are deemed to have been met in all cases. The function always allocates the Child Tax Credit to the mother unless one is not present in the nuclear family. The function only outputs a value for the federal child tax credit and this reflects the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txctc` function operates at the nuclear family level. It first calculates a local variable for the family's net income by adding the eldest member's net income and that of their spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are then obtained by multiplying the number of children in the nuclear family by the maximum benefit per child (`nfkids * CTCPC`). The maximum CTC is then reduced at the specified reduction rate (`CTCRR`) applied to family net income in excess of the CTC turndown (`CTCTD`). This reduction is performed using the `taxbak1` function. Finally the federal Child Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

When the `FCBEIE` flag is turned on, the Working Income Supplement has a different rate according to the number of children in the household, `FCBEIS1`, `FCBEIS2`, `FCBEIS3` and is also reduced at varying rates, `FCBERR1`, `FCBERR2`, `FCBERR3`. The enriched WIS is phased in starting at family incomes `FCBECI` and reaches its maximum at `FCBEMX`. The phase in rate is linear and depends again on the number of children in the family.

There was also a fix for the Quebec child tax benefits. The benefits (`QCBC3`) are now being assigned to the third and each additional child in a family.

Interpretation

Results obtained from the SPSM with respect to Child Tax Credit benefits differ from Revenue Canada administrative data. Overall the SPSM reports 101.9% more 1984 tax year benefits than does Revenue Canada for provincial Canada. However, the number of children for which the credit is paid is 99.6% of Revenue Canada's figures. One would expect the number of children on the SPSD to be low due to the non-coverage of persons residing on reservations and outside Canada. Thus there would seem to be a small deficit on the SPSD in the net income of families with eligible children.

Relation to Other SPSM Routines

The txctc function is called by drv. The function outputs one dollar value variable that is used in memo1 for reporting purposes.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| ACBC1 | Alberta Child benefit per child aged 0 - 6 |
| ACBC2 | Alberta Child benefit per child aged 7 - 11 |
| ACBC3 | Alberta Child benefit per child aged 12- 15 |
| ACBC4 | Alberta Child benefit per child aged 16- 17 |
| CTCERF | CTC child care expense reduction fraction |
| CTCINC | CTC family income scaling factor |
| CTCOPT | Child tax credit option |
| CTCPC | Child tax credit per child |
| CTCREF | CTC post-reform rules flag |
| CTCRR | Child tax credit reduction rate |
| CTCSUP | CTC young child supplement |
| CTCTD | Family income child tax credit turndown |
| CTCTUR | CTC take up rate table [benefit,rate] |
| FCBBAS | Basic child benefit (per child) |
| FCBECE | Child benefits earning supplement cut-in level |
| FCBEIE | Flag for WIS dependent on number of children |
| FCBEIS | Child benefits earned income supplement |
| FCBEIS1 | Enriched WIS for first child |
| FCBEIS2 | Enriched WIS for second child |
| FCBEIS3 | Enriched WIS for each additional child |
| FCBEMX | Earnings where WIS phase-in is at maximum |
| FCBERR | Child benefits earning supplement reduction rate |
| FCBERR1 | WIS reduction rate for families with 1 child |
| FCBERR2 | WIS reduction rate for families with 2 children |
| FCBERR3 | WIS reduction rate for families with 3+ children |
| FCBESR | Child benefits earned income supplement rate |
| FCBETD | Child benefits earning supplement turndown level |
| FCBLRG | Supplement for 3rd and subsequent kids |
| FCBRR | Multi-children family income reduction rate |

| | |
|-------------|---|
| FCBRRS | Single-child family income reduction rate |
| FCBTD | Federal child benefits family income turndown |
| FCBYNG | Supplement for children under age 7 |
| FCBYNGR | Child care expense reduction rate |
| PYINC | Deflator to calculate previous year income |
| QCBC1 | Quebec Child benefit for 1st child |
| QCBC2 | Quebec Child benefit for 2nd child |
| QCBC3 | Quebec Child benefit for 3rd child |
| QCBCFLG | Quebec Child benefit flag for Quebec calculation |
| methodology | |
| QCBCS | Quebec Child benefit supplement child aged 12- 17 |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idrand | Random numbers [array] |
| idsex | Sex |
| imcce | Child care expenses claimed on behalf of child |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--|
| imctc | Child tax credit |
| imfcben | Total Federal Child Benefits |
| imfcbenb | Total Federal Child Benefits Base |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imninc | No income flag |

txfstc Compute federal sales tax credit

SUMMARY

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales

Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

Program Description

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. It was implemented for the 1986 and subsequent tax years and is administered by Revenue Canada, Taxation, through the income tax system.

Upon application, through the filing of an income tax return, the federal sales tax credit is available to any individual who at the end of the year was married, had a child, or was over 18 years of age. Eligible individuals may claim the credit for themselves, their qualified relations, and one spouse. Individuals who are not subject to tax in Canada or who were confined to a prison or similar institution for a period of over six months in the year for which a claim is made may not claim the credit. A married couple may make only one claim.

Maximum family benefits are a function of the type and number of individuals in the family as well as the net income of the family. There are three individual credit maximums; one for the filer; one for a spouse with whom the filer resided at the end of the year; and one for any other person under the age of 18 at the end of the year who was a child of the individual or their spouse or was a person in respect of whom the individual or his spouse has claimed a personal deduction. Family net income is the net income, for tax purposes, of the head of the family and their spouse if present.

The maximum annual credit is payable if net family annual income is less than a specified level of income (called turndowns, exemptions, or benefit reduction levels). Families with net incomes above this reduction point are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum STC is zero. In 1986 the maximum credit was \$50 per adult and \$25 per dependent child, the reduction point was \$15,000 and the reduction rate was 5%. So, for example, a family with a spouse and two eligible children and a net income of \$17,000 would receive a tax credit of \$100.00. (The 1986 credit becomes zero for families of this type with a net income at or above \$18,000.)

SPSM Implementation

The `txfstc` function calculates the federal Sales Tax Credit based on the number, age, and type of persons in a family and the net income of the family. The function always allocates the Sales Tax Credit to the spouse with the higher net income in the nuclear family. The function outputs values for the federal Sales Tax Credit and these reflect the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txfstc` function operates at the nuclear family level. It first increments two local variables based on information on the eldest member of the nuclear family; one for the family's net income by adding the eldest member's net income; and one for the maximum family benefits by adding the maximum entitlement for a filer. The program next increments both local

variables for the spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are incremented last by multiplying the number of children in the nuclear family by the maximum benefit per child ($\text{nfnkids} * \text{FSTCC}$). The maximum STC is then reduced at the specified reduction rate (FSTCR) applied to family net income in excess of the STC reduction point (FSTCL). This reduction is performed using the `taxbak1` function. Finally the federal Sales Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

The federal sales tax credit is claimable at age 19. Parents may claim additional amounts for children aged 18 and younger. When calculating the GST credit, the income concept used is the previous year's incomes. The GST credit for a given year, say 1992, would represent the amounts paid from July 1992 to July 1993.

Interpretation

Results obtained from the SPSM with respect to Sales Tax Credit benefits have no valid Revenue Canada administrative data with which to compare the results. In general, the SPSM should be slightly low due to certain coverage issues. Further analysis will be required to correctly estimate who in a married couple is claiming the benefit. Take-up issues may also be relevant.

Relief for Heating Expenses

When `HEATRLFLG` is turned on, persons will receive a transfer from the federal government for the relief of heating expenses (`imheatrl`). In order to receive it, a person has to have received a GST credit (`imfstc`). Qualifying persons who live with a spouse or children receive `HEATFAM` and others receive `HEATSNG`.

Note that, as indicated in the federal economic statement 2000, in order to receive a check in 2001 a person had to qualify for the GST credit in January 2001 or June 2000. In the SPSM this is the modeled GST credit for 2000 (we assume that the entire check is given in June), based on 1999 income. In order to simplify the code, we used receipt of the 2001 GST credit as a proxy for receipt of the 2000 GST credit. Given the fact that there was no change in the rules governing the GST credit in these two years, this should have a small effect.

Relation to Other SPSM Routines

The `txfstc` function is called by `drv`. The function outputs one variable that is used in `memo1` for reporting purposes. The function makes use of (calls) the `taxbak1` function.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| FSTCC | Federal sales tax credit amount for dependant |
| FSTCF | Federal sales tax credit amount for filer |
| FSTCL | Federal sales tax credit reduction level |
| FSTCR | Federal sales tax credit reduction rate |
| FSTCS | Federal sales tax credit amount for spouse |
| GSTAC | GST additional credit amount |
| GSTAR | GST additional credit rate of net income |
| GSTASPFLAG | Maximum GST additional credit for single parents flag |
| GSTAXM | GST additional credit exemption |
| GSTCTUNC | GST credit take up by number of children |
| GSTFLAG | GST credit activation flag |
| HEATFAM | Federal relief for heating expenses for families |
| HEATRLFLG | Federal relief for heating expenses activation flag |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| INPUT VARIABLES: | |
| cfageeld | Age of eldest in census family |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idrand | Random numbers [array] |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| OUTPUT VARIABLES: | |
| imfstc | Federal sales tax credit |
| imheatrl | Federal relief for heating expenses |
| imninc | No income flag |

SUMMARY

When IMSHTOPT is set to 1, imputation of provincial paid rents and property taxes are calculated based on Greenbook data, when set to .2 they are based on FAMEX. The rent and property tax are imputed to head's of census families and census family spouses reporting positive net income.

CROSS REFERENCE**Function Description**

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| IMSHTOPT | Paid rent and property tax imputation option |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| fxio | I/O expenditure categories [array] |
| fxprtax | Property tax |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hnnin | Number of individuals in household |
| idcfrh | Relationship to census family head |
| idhhrh | Relationship to head of household |
| idproptx | Net property taxes paid (556) |
| idrentpd | Total rental payments (555) |

OUTPUT VARIABLES:

| | |
|----------|---------------------------|
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |

SUMMARY

This function calculates exemptions or tax credits for dependants as well as performing transfers of deductions between spouses. The algorithms included in this function are:

- calculate and allocate Tax Credits for Wholly Dependant Children
- calculate and allocate Spouse (or Married) Tax Credit
- calculate Spouse (or Married) Equivalent Tax Credit
- calculate Deductions Transferred from Spouse

Calculate and Allocate Tax Credits for Wholly Dependant Children

Before 1988, filers with dependant children were eligible to claim a personal exemption based upon the age and net income of the child. The exemption was calculated as a fixed amount (adjusted annually) minus a proportion of the child's income exceeding the reduction level. The amounts varied with the age of the child. Children under 18 years of age were treated differently from children 18 and over. This claim could be split between supporting parents or grandparents.

The June 1987 White Paper on Tax Reform proposed the conversion of the exemption on behalf of children under 18 into a tax credit and the elimination of the exemption for children 18 and over.

SPSM Implementation

(Note: this paragraph needs to be rewritten.) The amount of the tax credit on behalf of dependants under 18 is calculated by subtracting a proportion (YCTCR) of the child's Net Income (iminet) which exceeds the Reduction Level (YCTCT) from the Maximum Young Child Tax Credit (YCTC).

The amounts for all children are accumulated in ctxct which may later be adjusted by the calculation of the Spouse Equivalent Tax Credit. If a spouse is present, the one with the higher Net Income iminet receives the full amount of the tax credit for all dependent children (imctxcs) which is used to reduce Basic Federal Tax imbft in the function txcalc.

There is no tax credit for dependent children 18 and over. The model has no provision for a tax credit for infirm dependants aged 18 and over.

The model does not partition exemptions for wholly dependant children between spouses as is allowed in tax regulations. If it were partitioned, certain families would pay slightly lower taxes.

Spouse Tax Credit

Persons legally married during the taxation year are eligible to claim a non-refundable Spouse Tax Credit. The tax credit amounts to a fixed amount reduced by a proportion of the spouse's net income exceeding a specified level. Net income for this purpose includes the spouse's GIS/SPA benefits.

SPSM Implementation

The Spouse Tax Credit (immartxc) amounts to a fixed value (MXM) reduced by the amount of the spouse's Net Income (imdepni) exceeding the reduction level (MXMT). This is

calculated only for the spouse with the higher Net Income.

The Spouse Tax Credit (`immartxc`) is used to reduce Basic Federal Tax in the function `txcalc`.

Although the regulations allow special considerations for persons who changed marital status during the taxation year, they are not implemented in the model.

Equivalent-to- Spouse Tax Credit

Filers who are single, divorced, separated or widowed and supported a relative related by blood, marriage or adoption are eligible to claim that relative for the Equivalent-to-Spouse Tax Credit, amounting to a fixed value reduced by a proportion of the relative's net income exceeding a reduction level.

SPSM Implementation

The SPSM calculates the Equivalent-to-Spouse Tax Credit on behalf of dependant children, not other relatives who may be eligible. If a non-claimable dependant is present, he or she is chosen to be claimed for the credit. If there is no such dependant, then the one with the lowest Net Income (`iminet`) is claimed.

The credit is calculated as a fixed amount (`EMXM`) reduced by the amount of the dependant's Net Income (`imdepni`) exceeding the reduction level (`EMXMT`). If the credit is being claimed on behalf of a dependant who is also eligible for the Wholly Dependant Child Tax Credit, the amount claimed for that dependant is subtracted from the total Wholly Dependant Child Tax Credit and the total number of children claimed is reduced by one.

The Spouse Equivalent Tax Credit is added to Total Nontransferable Tax Credits (`imtaxcr`) which is subtracted from Basic Federal Tax (`imbft`) in the function `txcalc`.

Calculate supplement to the basic personal tax credit

The supplement to the basic personal tax credit announced in the 1998 federal budget is calculated by reducing the maximum supplement (`BXMS`) by a proportion (`BXMSRR`) of taxable income above the level of the basic exemption (`BXM`) plus the maximum supplement (`BXMS`). The supplement is added to the basic personal tax credit (`imbtc`). Persons who claim the married amount or equivalent-to-spouse amount get an additional supplement. This program was cancelled in the 1999 federal budget.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|------------------|---------------------------------|
| <code>BXM</code> | Basic personal exemption/amount |
|------------------|---------------------------------|

| | |
|--------|--|
| BXMS | Basic personal exemption supplement |
| BXMSPI | Basic personal exemption supplement phase in |
| BXMSRR | Basic personal exemption supplement reduction rate |
| EMXM | Married equivalent exemption/amount |
| EMXMT | Married equivalent exemption/amount turndown level |
| FNTCR | Federal non-refundable tax credit rate |
| MXM | Married exemption/amount |
| MXMT | Married exemption/amount turndown level |
| YCXM1 | Dependent child amount (1st child) |
| YCXM2 | Dependent child amount (2nd child) |
| YCXM3 | Dependent child amount (3rd ,etc.) |
| YCXMT | Dependent child exemption/amount turndown level |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imbtcs | Basic personal tax credit supplement |
| imcchc | Child's non-refundable credit |
| imcemc | Child's equivalent to married credit |
| imchclm | Number of dependent children claimed |
| imctxcs | Dependent children tax credits |
| imdepni | Dependant's net income |
| immartxc | Married tax credit claimed |

txinet Compute net income

SUMMARY

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures which are discussed in order in terms of the description of the tax measure and its SPSM implementation.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Calculate Taxable Dividends
- Calculate Taxable Capital Gains
- Calculate Total Income
- CPP/QPP Contributions Tax Credit

- Unemployment Insurance Contributions Tax Credit
- Tuition Fees Tax Credit
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

Program Description

Other Allowable Employment Expenses

Certain special employment expenses not claimable elsewhere are allowed.

According to the 1984 definition, these expenses include:

- employee's expenses for travel, office and wages to assistants,
- commission sales employees may claim certain expenses paid to earn their income,
- transport employees may deduct the cost of meals and lodging while away from home, and
- power saw operators may claim expenses incurred in operating the power saw.

This is a special deduction from employment income and is not available to most employees.

SPSM Implementation

The value for Other Allowable Employment Expenses (idalexp) already exists on the database. This value is derived from actual taxation statistics. For more details, please see the [Database Creation Guide](#). This value is multiplied by the parameter ALEXPP (Proportion of Other Allowable Expenses to Use as a Deduction) to obtain imalexp, the modeled amount for Other Allowable Expenses.

Calculate Taxable Capital Gains

Capital Gains arise when an individual sells a property for more than it originally cost. If a property is sold for less than it cost, a capital loss may be claimable.

Only a portion of Capital Gains received are considered taxable. Similarly only a portion of capital losses may be claimed as a loss. The value of idicapg represents the actual amount of the Capital Gain or Loss Allowed. Losses, in 1984, were limited to \$2,000. This represents the lower limit of the variable idicapg. Modeled Taxable Capital Gains or Losses imicapgt are calculated by multiplying idicapg by the Capital Gains Inclusion Rate (CAPGIR).

Calculate Taxable Dividends

To avoid double taxation of dividends earned in Canadian business, the dividends from taxable Canadian corporations are treated differently from other sources of income. Before taxation, these dividends are "grossed-up" or increased to an amount which approximates the underlying corporate tax already paid on these earnings. A Dividend Tax Credit is paid based on the grossed-up amount and approximated the corporate taxes already paid.

The gross-up tax credit system ensures that income earned by Canadian corporations and then distributed in the form of dividends bears the same amount of total tax as if the income were earned directly by the shareholders.

SPSM Implementation

Total Dividends Received is represented on the database by the variable `idivid`. The taxable amount (`imidivt`) which is added to total income is calculated by multiplying `idivid` by the Federal Dividend Gross-up Rate (FDGUR).

Calculation of Total Income

At this point, the SPSM is able to calculate a first approximation of total income for tax purposes. This is not a final value since Family Allowances cannot be allocated to the mother or father until the Net Income of both is known. This temporary value of Total Income (`itot`) is the sum of:

| | |
|------------------------|--|
| <code>idiemp:</code> | Earnings From Employment |
| <code>idisenf:</code> | Self-employment Earnings (Non-farm), optionally scaled by the parameter <code>FACTISENF</code> |
| <code>idisefm:</code> | Self-employment Earnings (Farm) |
| <code>idiint:</code> | Interest Income |
| <code>idioinv:</code> | Other Investment Income |
| <code>idicqp:</code> | CPP/QPP Benefits Received |
| <code>iditogv:</code> | Other Taxable Government Income |
| <code>idipens:</code> | Pension Income |
| <code>iditoth:</code> | Other Taxable Income |
| <code>imiuib:</code> | Modeled Unemployment Insurance Benefits Received |
| <code>imiotg:</code> | Modeled New Taxable Demogrants |
| <code>imioas:</code> | Modeled OAS Benefits |
| <code>imidivt:</code> | Modeled Taxable Amount of Dividends |
| <code>imicapgt:</code> | Modeled Taxable Capital Gains and Losses |

Calculate CPP/QPP Contribution Tax Credit

All Canadians aged 18 to 64 and in the labour force are covered by either the Canada Pension Plan (CPP) or the Quebec Pension Plan (QPP). The pension plans provide retirement benefits as well as survivor benefits for a widow or dependant when the contributor dies prematurely, a death benefit and disability benefits. The plans are publicly funded, based on contributions from all employed persons aged 18 to 70 with pensionable earnings.

Contributions to the Canada and Quebec Pension Plans are based on employment income and are usually made through payroll deductions. Self-employed persons make their contribution through the tax system, the amount of the contribution is added to federal taxes payable.

The amount contributed is not subject to taxation and is therefore either deducted from total income or treated as a tax credit.

In most cases, an employee and his or her employer will contribute the same amount to the employee's pension plan. Self-employed persons contribute a twice the rate of employees.

Although employees have their CPP/QPP contribution deducted from their paycheck, refunds for overpayment are made through the personal income tax system.

SPSM Implementation

CPP/QPP Contributions are calculated separately on employment and self-employment earnings. Employment earnings subject to contribution are calculated by subtracting the amount of exemptable earnings (CPPXM) from Earnings from Employment (*idiemp*). This amount cannot exceed the Maximum Earnings Subject to Contribution (YMPE minus CPPXM). Earnings Subject to Contribution are then multiplied by the CPP/QPP contribution rate (WSCF) to derive the amount of the contribution (*wscon*).

Contributions from self-employment earnings (*secon*) is a proportion (SECF) of Earnings from Employment (*idiemp*) plus Earnings from Self-employment (*idisenf* + *idisefm*) that are in excess of the Annual Exemption Level (CPPXM) and less than the year's Maximum Pensionable Earnings Level, less a multiple (WSCM) of contributions made on Earnings from Employment (*wscon*). WSCM is the ratio of the contribution rate on earnings from self-employment to the rate on earnings from employment.

The total CPP/QPP Contribution is the sum of the Contribution Payable on Earnings from Employment (*wscon*) plus the Contribution Payable on Earnings from Self-employment (*secon*).

There is no information in the database concerning the actual amount deducted through payroll deductions; therefore, refunds for overpayment cannot be calculated.

The CPP/QPP Contribution tax credit (*imcppctc*) is calculated as a proportion (FNTCR) of the total contributions (*imcqqpc*). The tax credit is applied in the function *txcalc*.

When CPPSEDEDFLG is turned on, a fraction (CPPSEDFRC) of a person's contributions to

the CPP/QPP in regards to their self employment earnings are treated as an exemption (imcppse) and is added to imdedft. The rest, along with the contributions on wages and salaries, can still be claimed as a tax credit (imcppct).

Unemployment Insurance Contributions

Unemployment Insurance is intended to provide short-term financial support to the unemployed. It also provides benefits for those suffering from extended sickness, for women leaving the labour force temporarily because of pregnancy and childbirth, and supplementary benefits to unemployed fishermen and to persons undertaking manpower training courses. The program is given its mandate by the Unemployment Insurance Act (1971). The act covers nearly all members of the labour force except self-employed persons and those who earn less than the minimum insurable earnings. The program is funded by employee and employer contributions as well as additional revenue from the consolidated revenue fund.

Contributions are calculated as a proportion of weekly earnings. Only earnings above the minimum insurable earnings and less than the maximum insurable earnings are subject to contribution.

Unemployment Insurance premiums are deducted from the employee's paycheck by the employer. Reimbursements for overpayment are made through the tax system. The amount contributed is not subject to tax. Before 1988, UI contributions were deducted from total income. The June 1987 White Paper on Tax Reform proposed the conversion of this deduction into a non-refundable tax credit.

Two major Employment Insurance Reforms were added, the difference in contributions, and the benefits repayable.

SPSM Implementation

The database contains no detail on an individual's weekly distribution of earnings throughout the year. Weekly earnings are estimated by dividing the annual Earnings from Employment (idiemp) by the Number of Weeks Worked (idlyww). This assumes that the earnings were evenly distributed throughout the year. It also assumes that the earner worked at least 20 hours during each week.

If average weekly earnings are less than $UIMINPCT * UIERNMAX$, no UI contributions are made. Otherwise, the annual UI Contribution (imuic) are calculated as a proportion (UIPF) of average weekly earnings not exceeding the Maximum Weekly Earnings Subject to Contribution (UIERNMAX), multiplied by the number of weeks worked.

The UI Contribution Tax Credit (imuictc) is calculated as a proportion (FNTCR) of the contributions. This tax credit is later applied to reduce Basic Federal Tax in the function txcalc.

When Employment Insurance is activated (UIEIOPT = 2), then the EI contributions (imuic) are calculated using the UI contribution rate on earnings (UIPF) with no weekly maximums and no exemptions for low income. The EI contribution refund (imuicrf) is then calculated

and subtracted from the contributions.

The method of calculating UI/EI benefit recovery (imuiobr) is also changed when UIEIOPT is activated. When UIEIREPOPT is set to 1, it now depends on the amount of previous weeks of EI received. If employment insurance benefits (imiuib) have been received and net income is in excess of: (a) UIBRA for persons with previous EI receipt, or (b) UIBRANR for persons with little previous benefits or for persons not on regular EI claims; UIEIRPR is applied to the lower of (a) total EI benefits and (b) the excess net income up to a maximum percent of their total benefits (UIEIBRP), to calculate the repayment.

When UIEIREPOPT is set to 2, sickness, maternity, and parental benefits are exempt from benefit repayment. Persons who claim EI for the first time are also exempt from benefit repayments. For the rest, the repayment is equal to the UIEIRPR times the minimum of net income in excess of UIBRANR and EI benefits.

See UIEIRPR, UIBRANR, UIEIBRP, UIBRA, and UIEINRT for more details.

Tuition Fees

Tuition fees paid to an educational institution may be claimed as a tax credit by the student or may be transferred to a spouse or supporting parent.

SPSM Implementation

A value for Tuition Deduction Allowed in the base year (idtuitn) exists on the database. This value is imputed from income tax records (see the *Database Creation Guide*). To calculate the Tuition Tax Credit, idtuitn, is multiplied by the Federal Non-Refundable Tax Credit Rate FNTCR and the result (imtutxc) is later applied as a tax credit in the function txcalc.

Assign Taxable Family Allowance

For tax purposes, Family Allowances are attributed to the person who claims a personal exemption (or post-reform, a tax credit) for the child. The model assumes that the exemptions are allocated to the spouse with the higher net income (iminet, excluding FA) if present. This is the spouse who would benefit most from claiming the children and, therefore, this is the one who also must claim Taxable Family Allowances.

Calculate Net Income

Net Income (iminet) is calculated as Total Income (imitot) minus All Deductions from Total Income (imdedft). imdedft is the sum of:

| | |
|----------|--|
| idrpp: | Registered Pension Plan Contributions |
| idrrsp: | Registered Retirement Savings Plan Contributions |
| iddues: | Union and Professional Dues |
| imiloss: | Allowable Business Investment Loss |

idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions
imuic: optionally, UI Contributions
idtuitn: optionally, Tuition Fees
imcceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txceca)

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALEXPP | Proportion of other allowable employment expenses to use as deduction |
| CAPGIR | Capital gains inclusion rate |
| CPP60T64 | CPP/QPP Contributions Take up (60 - 64) by earnings with CPP income |
| CPPGT64 | CPP/QPP Contributions Take up (over 64) by earnings with CPP income |
| CPPLT60 | CPP/QPP Contributions Take up (under 60) by earnings with CPP income |
| CPPSEDEDFLG | CPP/QPP contribution deduction for self-employed earnings flag |
| CPPSEDFRC | CPP/QPP contribution deduction fraction for self-employed earnings |
| CPPXM | CPP/QPP exemptible earnings |
| FACTISENF | Scale-up factor for non-farm self-employment income |
| FARR | Family allowance repayment rate |
| FATBPI | Family allowance take-back phase in |
| FATD | Family allowance turndown income |
| FDGUR | Federal dividend gross-up rate |
| FNTCR | Federal non-refundable tax credit rate |
| NETOASFLG | Net the clawback from Old Age Security |
| OASRR | OAS reduction rate |
| OASTBPI | OAS take-back phase in |
| OASTD | OAS turndown income |
| REPNETFLAG | Social program repayments reduce net income flag |
| SECF | CPP/QPP contribution rate on self-employment earnings |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |
| UIBRP | UI benefit recovery portion (UI only) |

| | |
|------------|--|
| UIEIBRP | Maximum clawback under EI reform [Past Wks ben][Rate] (EI only) |
| UIEINRT | UI EI Non repeater level for higher clawback turndown (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIREF | EI contribution refund cut-in (EI only) |
| UIEIREFTK | EI contribution refund take up |
| UIEIREPOPT | EI Benefit repayment option (1=repeaters have higher rate,2=one rate)(EI only) |
| UIEIRPR | UI EI benefit clawback rate (EI only) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIMINPCT | Exemption limit (percent of maximum insurable earnings) (UI only) |
| UIPF | UI contribution rate on earnings (UI and EI) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| WSCF | CPP/QPP contribution rate on employment earnings |
| WSCM | Ratio of self-employed to employed contribution fraction |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|----------|--|
| hdprov | Province |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcarry | Carrying charges (221) |
| iddalimo | Alimony paid (220) |
| iddues | Union and professional dues (212) |
| idexplr | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idlyww | Weeks worked |
| idmovexp | Imputed moving expenses (219) |
| idothded | Other deductions from total income (232) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idtuitn | Tuition fees (320) |
| iduirank | Predicted ranked likelihood of getting UI |
| imiotg | Other taxable demogrants |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| nfineld | Eldest person in nuclear family [pointer] |
| nfnspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |
| ubcalpd | Benefits paid in calendar year |

| | |
|---------|---------------------------|
| ubeiwbp | Weeks of past EI benefits |
| ucbtyp | Claim type |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|----------|---|
| imalexp | Allowable employment expenses |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedft | Deductions from total income |
| imfar | Family allowance recovery |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imioas | OAS benefits |
| imitot | Total income |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imtfa | Taxable family allowances |
| imtutxc | Tuition tax credit |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |
| imuicrf | UI EI contribution refund |
| imuictc | UIC contributions tax credit |

txitax Compute taxable income and individual credits

SUMMARY

The process of computing taxable income is divided into two separate routines. Deductions and tax credits which are not dependent upon information from other members of the family (e.g., Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

The algorithms contained in txitax are:

- Basic Personal Tax Credit
- Age Tax Credit
- Pension Income Deduction
- Medical Expense Tax Credit, Charitable Donations Tax Credit
- Disability Tax Credit
- Education Tax Credit
- Capital Gains Deduction

- UI Benefit Repayment Payable
- Family Allowance and OAS Repayment Payable (optional)
- Employee Home Relocation Loan Deduction
- Stock Option Deduction

Basic Personal Tax Credit

The non-refundable Basic Personal Tax Credit is calculated by assigning the value of the parameter BXM (Basic Personal Tax Credit) to the variable imbtc (Modeled Basic Personal Tax Credit) which is applied to reduce Basic Federal Tax in the function txcalc.

Age Tax Credit

All Canadians who were 65 years of age or older on December 31st of the taxation year would be eligible to claim the Age Tax Credit.

When the Age Tax Credit is calculated, imatxc (Modeled Age Tax Credit) receives the value assigned to the parameter AXM. The function txcalc performs any applicable transfer of the tax credit from the spouse and applies the tax credit to reduce Basic Federal Tax.

Pension Income Tax Credit

Certain pension income from a pension plan or upon the death of a spouse qualifies for a Pension Income Tax Credit. The deduction amounted to the lesser of the maximum deduction (fixed at \$1,000) and eligible income. Any amount of this deduction not required to reduce taxable income to zero is transferable to the spouse.

The June, 1987 White Paper on Tax Reform proposed the conversion of this deduction into a tax credit amounting to a proportion of eligible income up to a maximum of \$170. This tax credit would also be transferable.

SPSM Implementation

The Modeled Pension Income Tax Credit (impentxc) is assigned the minimum of:

- a) qualified pension income (idipens) and
- b) the Maximum Allowable Tax Credit (YPNDL),
times the Tax Credit Rate (FNTCR).

Any portion of the Pension Income Tax Credit not required to reduce a filer's Basic Federal Tax to zero is transferable to the spouse. The transfer is calculated in the function txcalc.

Medical Expense Tax Credit

The filer is allowed a non-refundable tax credit for certain medical expenses paid on behalf of the filer, spouse or dependants. All medical expenses claimed require supporting proof to be allowed as a tax credit and only medical expenses in excess of 3% of net income are claimable.

SPSM Implementation

The value of Medical Expenses Allowed (immeda) is calculated as the value of the gross medical expenses from the database (idmedgro) less either MEDANF percent of net income or MEDALL, whichever is less. The Medical Expense Tax Credit (immedatc) is calculated as a proportion (FNTCR) of the value of Medical Expenses Allowed (immeda). The Medical Expense Tax Credit is applied to reduce Basic Federal Tax in the function txcalc.

Although medical expenses paid on behalf of dependants are claimable by either spouse, no transfers between spouses are made for this tax credit.

Charitable Donations Tax Credit

The filer is allowed a non-refundable tax credit on behalf of charitable donations and gifts to Canada or a province. SPSM Implementation

The database contains a value for gross charitable donations (idcharit). The allowable charitable donations (imchara) are calculated as the lesser of idcharit and CHATNF percent of net income. The value of gifts or donations to Canada, a province or a cultural institution are then added to imchara.

A two-tier, non-refundable Charitable Donation Tax Credit (imchartc) is calculated. Allowable Donations (imchara) up to a set amount (CHATL1) are converted at the first tax credit rate (CHATR1) and the remainder is converted at the second rate (CHATR2).

The Charitable Donations Tax Credit is a component of the total non-refundable tax credits used to calculate Basic Federal Tax in the function txcalc.

Disability Tax Credit

Disabled persons whose impairment has markedly restricted or is expected to restrict their activities of daily living for a continuous period of at least 12 months are eligible to claim a special Disability Tax Credit. SPSM Implementation

The Disability Tax Credit (imdisatc) is assigned the value of the parameter MAXDX (Maximum Disability Tax Credit) for filers with reported disability amounts for self (iddisslf) or other dependents (iddisoht). Any portion of the tax credit not required to reduce Basic Federal Tax to zero may be transferred to the spouse or a supporting parent in the function txcalc.

Education Tax Credit

The Education Tax Credit represents the amount that students with full-time attendance at a designated post-secondary institution may claim. The number of eligible months is multiplied by a maximum allowable amount per month. The filer may transfer to a spouse, parent or grandparent the part of the education tax credit that is not needed to reduce the federal income tax to zero.

SPSM Implementation

The Education Tax Credit (*imedtxc*) is calculated as the number of eligible months of education amount (*ideducm*) multiplied by the Education Tax Credit per Month (*EDXPM*). The function *txcalc* may transfer unused amounts of the tax credit to a parent or spouse.

Capital Gains Deduction

Since 1985, a deduction has been allowed on behalf of capital gains income. The Capital Gains Deduction is being phased in with an increasing annual deduction limit amounting to \$10,000 in 1985 and \$25,000 in 1986. The amount an individual may claim during his or her lifetime is limited to a fixed amount. These measures were introduced in the May, 1985 Budget Papers and subsequently modified in the June, 1987 White Paper on Tax Reform.

SPSM Implementation

The Capital Gains Deduction is calculated as the minimum of:

- a) the Annual Capital Gains Deduction Limit (The Annual Limit based on gross Capital Gains, *CAPGAL*, times the Capital Gains Inclusion Rate, *CAPGIR*, and
- b) Taxable Capital Gains (*imicapgt*) minus:
 - Allowable Business Investment Loss (*idcloss*)
 - Net Capital Losses of Other Years (*imiloss*)

The resultant deduction is added to Total Deductions from Net Income (*imdedfn*).

The database contains no information on the filer's previous Capital Gains Deduction and therefore, the lifetime limit cannot be applied.

Unemployment Insurance Benefit Repayment Payable

If an individual has received Unemployment Insurance Benefits and his or her Net Income exceeds a fixed amount (\$38,610 in 1986), a portion of the benefits must be repaid. This repayment is added to Federal Taxes Payable. The amount repaid becomes a deduction from Net Income.

SPSM Implementation

The amount repayable is a proportion (*UIBRP*) of the UI Benefits received (*imiuib*) or a proportion of Net Income exceeding the Repayment Level (*UIBRA*) whichever is less. The Repayment Amount (*imuibr*) is a proportion (*UIBRP*) of the lesser of:

- (a) *imiuib*: Modeled UI Benefits
- (b) *iminet* *UIBRA*: the amount by which Net Income exceeds the Repayment Level

The value of *imuibr* is added into the variable *imrepay* which accumulates modeled repayment amounts. *imrepay* is added to Total Deductions from Net Income (*imdedfn*).

Family Allowance and OAS Repayments

The SPSM includes optional algorithms which allow the analysis of certain modifications to Family Allowances and the Old Age Supplement. These algorithms are presented with the SPSD/M for illustrating a glass box application. Users may consult the *Programmer's Guide* for further details.

The Family Allowance Repayment is calculated if the parameter FARR (Family Allowance Repayment Rate) is non-zero. The repayment is calculated as the lesser of:

- a) a proportion (FARR) of family net income (the net income of the head plus the net income of the spouse) exceeding the Family Allowance Reduction Level (FATD), and
- b) Taxable Family Allowances Received (imtfa).

The OAS repayment is based on the filer's own Net Income and is computed as the lesser of:

- a) OAS Received (imioas), and
- b) a proportion (OASRR) of Net Income (iminet) exceeding the OAS Repayment Reduction Level (OASTD).

Neither the FA nor the OAS repayments are stored in separate variables. They are accumulated into the variable imrepay which is applied as a deduction from Net Income in the function txitax and is added to Taxes Payable in the function memo1.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AXM | Age amount |
| AXPI | Age amount phase in rate for 1994 and beyond |
| AXRR | Age amount credit reduction rate |
| AXTD | Age amount net income turndown |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CHATL1 | Charitable donations amount level 1 |
| CHATNF | Charitable donations maximum net income fraction |
| CHATR1 | Charitable donations tax credit rate 1 |
| CHATR2 | Charitable donations tax credit rate 2 |
| EDXPM | Education amount per month |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MEDALL | Medical allowance maximum lower limit |
| MEDANF | Medical allowance lower limit net income fraction |
| REPNETFLAG | Social program repayments reduce net income flag |
| YPNDL | Maximum pension income deduction/amount |
| INPUT VARIABLES: | |
| hnnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idcapgex | Capital gains exemptions (254) |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idclose | Allowable other years capital loss (253) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idemplo | Employee home relocation loan dedn (248) |
| idforavg | Forward averaging amount withdrawal (237) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idipens | Pension income (115) |
| idmedgro | Medical expenses, gross (330) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idstkded | Stock option deduction (249) |
| imicapgt | Capital gains (taxable) |
| iminet | Net income |
| imninc | No income flag |
| imrepay | Social Benefits Repayments |

OUTPUT VARIABLES:

| | |
|----------|---|
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imcapgex | Modelled capital gains deduction (254) |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchartc | Charitable donations tax credit |
| imdedfn | All deductions from net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |

txman Compute provincial taxes for Manitoba

SUMMARY

When MTXFLG is turned off, Manitoba Basic Provincial Tax (imbpt) is calculated as a proportion (MPTF) of Basic Federal Tax (imbft).

The Manitoba Surtax is calculated based on a series of family credits. The surtax is added to Basic Provincial Tax to derive Manitoba Tax (imtxp).

When the tax on taxable income flag is turned on (MTXFLG), a provincial tax table (MPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax).

Non-refundable tax credits are calculated using the non-refundable tax credit rate (MPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (MBXM) |
| impatxc | Age amount tax credit | (MAXM, MAXRR, MAXTD, MAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (MMXM, MMXMT, MEMXM, MEMXMT) |
| impcgtc | Caregiver tax credit | (MCGTC, MCGTCFLG, MCGTCTC, MCGTCTD, MCGTCTK) |
| impchrctc | Charitable donations | (MCHATL1, MCHATR1, MCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (MMAXDX) |
| impdtxc | Dividend tax credit | (MDTCR) |
| impedtxc | Education tax credit | (MEDXPM, MMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (MYPNDL) |
| imptutxc | Tuition Tax credit | (MMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using MAMTOPT.

The refundable learning tax credit (immanltc) is equal to MANLTCF times (the tuition amount (idtuitn) plus the education amount (imeducm * EDXPM) plus the education amounts transferred from a spouse or kids (imedrcv) minus the education amounts which have been transferred to a spouse or parents (imedtrf)). It is included in the refundable tax credits (imptc). Beginning in 1998, the credit is limited to MANLTMAX for each student.

The Manitoba labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Manitoba provincial credit is modelled as MLVCRT times the gross amount up to MLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Manitoba homeowner's school tax assistance was introduced in 1993 and is part of the total property tax credit (impptxtc). MSCHFLAG turns it on or off. In order to qualify for assistance, Manitoba residents must be homeowners and be older than MSCHAGE. The basic credit is MSCHBXM which is reduced by income over the turndown MSCHTD by a rate MSCHRR. The value of the benefit is also rounded (see MSCHRND). The benefit may not exceed school taxes paid (idmschpd) less the minimum threshold of MSCHMNTH. The school tax assistance is added to the basic property tax credit and applied against occupancy

costs in order to derive the total property tax credit (impptxtc).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| EDXPM | Education amount per month |
| MAMTOPT | Man. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| MAMTPCTF | Man. amt rate as pct of additional fed tax due to minimum tax |
| MAMTPCTM | Man. amt rate as pct of federal minimum tax amount |
| MAMTTX | Man. amt rate as tax on adjusted income |
| MANLTCF | Manitoba learning tax credit factor |
| MANLTMAX | Manitoba learning tax credit maximum amount per student |
| MAXM | Man. Age Amount |
| MAXPI | Man. Age Amount phase in rate for 1994 and beyond |
| MAXRR | Man. Age Amount credit reduction rate |
| MAXTD | Man. Age Amount net income turndown |
| MBXM | Man. Basic Personal Exemption/amount |
| MCAXM | Manitoba cost-of-living age credit |
| MCBXM | Manitoba cost-of-living basic credit |
| MCDISEX | Manitoba cost-of-living disability credit |
| MCEMXM | Manitoba cost-of-living married equivalent credit |
| MCFINCR | Manitoba cost-of-living family income reduction rate |
| MCGTC | Man. Caregiver Tax Credit |
| MCGTCFLG | Man. Caregiver Tax Credit activation flag |
| MCGTCTC | Man. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| MCGTCTD | Man. Caregiver Tax Credit Turn Down Income |
| MCGTCTK | Man. Caregiver tax credit take-up rate by income level [employment income,rate] |
| MCHATL1 | Man. Charitable Donations amount level 1 |
| MCHATR1 | Man. Charitable Donations tax credit rate 1 |
| MCHATR2 | Man. Charitable Donations tax credit rate 2 |
| MCMXM | Manitoba cost-of-living married credit |
| MCODISEX | Manitoba cost-of-living old disabled dependant credit |
| MCSAXM | Manitoba cost-of-living spouse age credit |
| MCSDISEX | Manitoba cost-of-living spouse disabled credit |
| MICYXCM | Manitoba cost-of-living young dependants credit |
| MDTCR | Man. dividend tax credit rate |
| MEDXPM | Man. Education Amount per month |
| MEMXM | Man. equivalent to married amount |
| MEMXMT | Man. equivalent to married turndown level |
| MHMASOPT | Manitoba homeowner assistance option (1=Model 2=database) |
| MLVCMAX | Maximum Man. labour-sponsored funds tax credit allowed |
| MLVCRT | Percent of Man. labour-sponsored funds cost allowed as credit |
| MMAXDX | Man. Maximum Disability deduction/amount |
| MMAXET | Man. maximum on transfer of education and tuition amount |

| | |
|----------|---|
| MMXM | Man. married amount |
| MMXMT | Man. married amount turndown level |
| MNITR | Manitoba net income tax rate |
| MPAXM | Manitoba property tax credit senior citizen credit |
| MPBXM | Manitoba property tax credit basic credit |
| MPFINCRR | Manitoba property tax credit family income reduction rate |
| MPMINC | Manitoba property tax credit minimum credit |
| MPMNTH | Manitoba property tax minimum threshold |
| MPNTR | Man. provincial non-refundable tax credit rate |
| MPRIR | Manitoba property tax credit rental inclusion rate |
| MPTC | Manitoba political contribution table [total donations,donation allowed] |
| MPTCBEN | Maximum Manitoba political tax credit allowed |
| MPTF | Manitoba provincial tax fraction |
| MPTX | Man. tax table [taxable income,basic provincial tax] |
| MRAXM | Manitoba tax reduction age credit |
| MRBXM | Manitoba tax reduction basic credit |
| MRDISEX | Manitoba tax reduction disability credit |
| MREMXM | Manitoba tax reduction married equivalent credit |
| MRMXM | Manitoba tax reduction married credit |
| MRODISEX | Manitoba tax reduction old disabled dependant credit |
| MRSAXM | Manitoba tax reduction spouse age credit |
| MRYCXM | Manitoba tax reduction young dependants credit |
| MSAXM | Manitoba surtax age credit |
| MSBXM | Manitoba surtax basic credit |
| MSCHAGE | Manitoba school tax minimum age |
| MSCHBXM | Manitoba school tax basic amount |
| MSCHFLAG | Manitoba school tax assistance activation flag |
| MSCHMNTH | Manitoba school tax minimum threshold |
| MSCHRND | Manitoba school tax assistance rounding unit |
| MSCHRR | Manitoba school tax reduction rate |
| MSCHTD | Manitoba school tax turndown |
| MSDISEX | Manitoba surtax disability credit |
| MSEMXM | Manitoba surtax married equivalent credit |
| MSMXM | Manitoba surtax married credit |
| MSODISEX | Manitoba surtax old disabled dependant credit |
| MSSAXM | Manitoba surtax spouse age credit |
| MSYCXM | Manitoba surtax young dependants credit |
| MTCINCFI | Manitoba tax credit income definition flag |
| MTRNIO | Manitoba tax reduction net income offset |
| MTXFLG | Man. tax on taxable income activation flag |
| MYPNDL | Man. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdtenur | Tenure |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |

| | |
|----------|---|
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idmschpd | Manitoba school taxes paid |
| idothpe | Other dependant exemptions (305) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imatxc | Age tax credit |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imstxcrt | Tax credits transferred from spouse |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------|
| imbpt | Basic provincial tax |
| immanltc | Manitoba learning tax credit |
| immhmas | Manitoba Homeowners Assistance |

| | |
|-----------|---|
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmarctc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impptxtc | Provincial Property tax tax credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnb Compute provincial taxes for New Brunswick

SUMMARY

When BTXFLG is turned off, the basic Provincial Tax (imbpt) for New Brunswick is simply a proportion (BPTF) of Basic Federal Tax (imbft).

The 2000 budget announced that New Brunswick would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (BTXFLG), a provincial tax table (BPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (BPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|---------|-----------------------|----------------------|
| impbtc | Basic amount | (BBXM) |
| impatxc | Age amount tax credit | (BAXM, BAXRR, BAXTD, |

| | | |
|-----------|--|--|
| | | BAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (BMXM, BMXMT, BEMXM, BEMXMT) |
| impcgtc | Caregiver tax credit | (BCGTC, BCGTCFLG, BCGTCTC, BCGTCTD, BCGTCTK) |
| impchrctc | Charitable donations | (BCHATL1, BCHATR1, BCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (BMAXDX) |
| impdtxc | Dividend tax credit | (BDTCR) |
| impdtxc | Education tax credit | (BEDXPM, BMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (BYPNDL) |
| imptutxc | Tuition Tax credit | (BMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using BAMTOPT.

The New Brunswick labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The New Brunswick provincial credit is modeled as BLVCRT times the gross amount up to BLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Child Tax Benefit

When NBCTBFLG is assigned a value of 1, the New Brunswick Child Tax Benefit calculation is activated. imnbcben is the total benefits received under the New Brunswick Child Benefits program announced in the 1997 New Brunswick Budget and commencing in April 1997. A first component is the base amount, imnbcbb, which is calculated as the base amount per child, NBCBBAS, times the number of children. The level of benefit is reduced, based on family income, at a rate NBCBRRS for families with only one child, and at rate NBCBRR for the others.

If the family gross employment income is higher than a threshold, NBCBECI, then the maximum supplement is NBCBEIS. The supplement is reduced at a rate NBCBESR for each \$ of employment income exceeding the threshold FCBECI. If the family income is higher than NBCBETD then the supplement is reduce at a rate NBCBERR. The final value of the work income supplement is stored in imnbwis.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BAMTOPT | N.B. alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| BAMTPCTF | N.B. amt rate as pct of additional fed tax due to minimum tax |
| BAMTPCTM | N.B. amt rate as pct of federal minimum tax amount |
| BAMTTX | N.B. amt rate as tax on adjusted income |
| BAXM | N.B. Age Amount |
| BAXPI | N.B. Age Amount phase in rate for 1994 and beyond |
| BAXRR | N.B. Age Amount credit reduction rate |
| BAXTD | N.B. Age Amount net income turndown |
| BBXM | N.B. Basic Personal Exemption/amount |
| BCGTC | N.B. Caregiver Tax Credit |
| BCGTCFLG | N.B. Caregiver Tax Credit activation flag |
| BCGTCTC | N.B. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| BCGTCTD | N.B. Caregiver Tax Credit Turn Down Income |
| BCGTCTK | N.B. Caregiver tax credit take-up rate by income level [employment income,rate] |
| BCHATL1 | N.B. Charitable Donations amount level 1 |
| BCHATR1 | N.B. Charitable Donations tax credit rate 1 |
| BCHATR2 | N.B. Charitable Donations tax credit rate 2 |
| BDCR | N.B. dividend tax credit rate |
| BEDXPM | N.B. Education Amount per month |
| BEMXM | N.B. equivalent to married amount |
| BEMXMT | N.B. equivalent to married turndown level |
| BLVCMAX | Maximum N.B. labour-sponsored funds tax credit allowed |
| BLVCRT | Percent of N.B. labour-sponsored funds cost allowed as credit |
| BMAXDX | N.B. Maximum Disability deduction/amount |
| BMAXET | N.B. maximum on transfer of education and tuition amount |
| BMXM | N.B. married amount |
| BMXMT | N.B. married amount turndown level |
| BPNTCR | N.B. provincial non-refundable tax credit rate |
| BPTC | New Brunsw. political contribution table [total donations,donation allowed] |
| BPTCBEN | Maximum New Brunswick political tax credit allowed |
| BPTF | New Brunswick provincial tax fraction |
| BPTX | N.B. tax table [taxable income,basic provincial tax] |
| BSCI | New Brunswick provincial tax above which surtax applies |
| BSF | New Brunswick provincial surtax rate |
| BTRBAS | Base N.B. low income tax reduction |
| BTRRR | N.B. low income tax reduction Reduction Rate |
| BTRSP | N.B. low income tax reduction for spouse or equivalent-to-spouse |
| BTRTD | N.B. low income tax reduction Turndown |
| BTXFLG | N.B. tax on taxable income activation flag |
| BYPNDL | N.B. Pension Income Deduction Amount |

| | |
|----------|---|
| CTCINC | CTC family income scaling factor |
| NBCBBAS | NB Basic child benefit (per child) |
| NBCBECI | NB Child benefits earning supplement cut-in level |
| NBCBEIS | NB Child benefits earned income supplement |
| NBCBERR | NB Child benefits earning supplement reduction rate |
| NBCBESR | NB Child benefits earned income supplement rate |
| NBCBETD | NB Child benefits earning supplement turndown level |
| NBCBPI | NB Child benefits phase-in rate |
| NBCBRR | NB Multi-children family income reduction rate |
| NBCBRRS | NB Single-child family income reduction rate |
| NBCBTD | NB child benefits family income turndown |
| NBCTBFLG | NB child benefit activation flag |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtsg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |

| | |
|-----------|--|
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imisp | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnbcbb | NB child tax Benefits base amount |
| imnbcben | Total NB child tax Benefits |
| imnbwis | NB child tax Benefits WIS |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transferred |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnfl Compute provincial taxes for Newfoundland

SUMMARY

When NTXFLG is turned off, Basic Provincial Tax (imbpt) for Newfoundland is simply a

proportion (NPTF) of Basic Federal Tax (imbft).

For Newfoundland, the SPSM calculates provincial surtax (impsur) as NSF percent of provincial taxes (imtxp) above the level NSCI.

The 2000 budget stated that Newfoundland would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (NTXFLG), a provincial tax table (NPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (NPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (NBXM) |
| impatxc | Age amount tax credit | (NAXM, NAXRR, NAXTD, NAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (NMXM, NMXMT, NEMXM, NEMXMT) |
| impcgtc | Caregiver tax credit | (NCGTC, NCGTCFLG, NCGTCTC, NCGTCTD, NCGTCTK) |
| impchrctc | Charitable donations | (NCHATL1, NCHATR1, NCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (NMAXDX) |
| impdtxc | Dividend tax credit | (NDTCR) |
| impedtxc | Education tax credit | (NEDXPM, NMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (NYPNDL) |
| imptutxc | Tuition Tax credit | (NMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using NAMTOPT.

A new refundable sales tax credit was modeled and added to the provincial tax credit (imptc). Similar to the federal credit, it allows for NSTCA dollars for each adult, NSTCC dollars for each child, and it reduced starting at family incomes over NSTCL at a rate of NSTCR.

Newfoundland and Labrador Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget. The Newfoundland and Labrador Child Benefit (imncb) is a tax-free monthly payment to help low-income families with the cost of raising children under age 18. Benefits from this program are combined with the Canada Child Tax Benefit into a single monthly payment. The program was implemented in July 1999.

SPSM Implementation

This benefit is turned by NCBFLG. Under the Newfoundland and Labrador Child Benefit program, you may be entitled to receive a benefit of NCB1 for the first child, NCB2 for the second child, NCB3 for the third child, and NCB4 for each additional child. The benefit is reduced when net family income is greater than NCBTD and is completely phased out when net family income is at least NCBPO. The benefit (imncb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| NAMTOPT | NFLD alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| NAMTPCTF | NFLD amt rate as pct of additional fed tax due to minimum tax |
| NAMTPCTM | NFLD amt rate as pct of federal minimum tax amount |
| NAMTTX | NFLD amt rate as tax on adjusted income |
| NAXM | NFLD Age Amount |
| NAXPI | NFLD Age Amount phase in rate for 1994 and beyond |
| NAXRR | NFLD Age Amount credit reduction rate |
| NAXTD | NFLD Age Amount net income turndown |
| NBXM | NFLD Basic Personal Exemption/amount |
| NCB1 | Nfld. child benefit for first child |
| NCB2 | Nfld. child benefit for second child |
| NCB3 | Nfld. child benefit for third child |
| NCB4 | Nfld. child benefit for 4th and subsequent child |
| NCBFLG | Newfoundland child benefit activation flag |
| NCBPI | Nfld. child benefit program phase in |
| NCBPO | Nfld. child benefit family income phase out |
| NCBTD | Nfld. child benefit family income turndown |
| NCGTC | NFLD Caregiver Tax Credit |
| NCGTCFLG | NFLD Caregiver Tax Credit activation flag |
| NCGTCTC | NFLD Caregiver tax credit take-up rate by age of elderly [age,rate] |
| NCGTCTD | NFLD Caregiver Tax Credit Turn Down Income |
| NCGTCTK | NFLD Caregiver tax credit take-up rate by income level [employment income,rate] |
| NCHATL1 | NFLD Charitable Donations amount level 1 |
| NCHATR1 | NFLD Charitable Donations tax credit rate 1 |
| NCHATR2 | NFLD Charitable Donations tax credit rate 2 |
| NDTCR | NFLD dividend tax credit rate |
| NEDXPM | NFLD Education Amount per month |
| NEMXM | NFLD equivalent to married amount |
| NEMXMT | NFLD equivalent to married turndown level |
| NHEATFLG | Newfoundland home heating fuel rebate activation flag |

| | |
|----------|---|
| NHEATREB | Newfoundland home heating fuel rebate amount |
| NLVCMAX | Maximum NFLD labour-sponsored funds tax credit allowed |
| NLVCRT | Percent of NFLD labour-sponsored funds cost allowed as credit |
| NMAXDX | NFLD Maximum Disability deduction/amount |
| NMAXET | NFLD maximum on transfer of education and tuition amount |
| NMXM | NFLD married amount |
| NMXMT | NFLD married amount turndown level |
| NPNTCR | NFLD provincial non-refundable tax credit rate |
| NPTC | Newfoundland political contribution table [total donations, donation allowed] |
| NPTCBEN | Maximum Newfoundland political tax credit allowed |
| NPTF | Newfoundland provincial tax fraction |
| NPTX | NFLD tax table [taxable income, basic provincial tax] |
| NSCI | Newfoundland provincial tax above which surtax applies |
| NSCI2 | Newfoundland provincial surtax level 2 |
| NSF | Newfoundland provincial surtax rate |
| NSF2 | Newfoundland provincial surtax rate 2 |
| NSTCA | NFLD sales tax credit amount for adults |
| NSTCC | NFLD sales tax credit amount for children |
| NSTCFLAG | NFLD sales tax credit activation flag |
| NSTCL | NFLD sales tax credit reduction level |
| NSTCR | NFLD sales tax credit reduction rate |
| NTXFLG | NFLD tax on taxable income activation flag |
| NYPNDL | NFLD Pension Income Deduction Amount |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfageeld | Age of eldest in census family |
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| fxio | I/O expenditure categories [array] |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |

| | |
|----------|---|
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| imigist | GIS provincial top-up |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imncb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |

impuictc Prov UI/EI contributions tax credit
 imtxp Provincial income tax payable

txns Compute provincial taxes for Nova Scotia

SUMMARY

This function calculates provincial taxes and credits for Nova Scotia. The programs simulated are as follows:

- Basic provincial tax
- Two level surtax
- Family tax reduction
- Phamacare tax and tax credits
- Provincial foreign tax credit
- Provincial political tax credit
- Provincial labour-sponsored venture capital tax credit
- Stock savings plan tax credit
- Home ownership savings plan tax credit
- Direct Assistance

Basic Provincial Tax

When VTXFLG is turned off, the algorithm first calculates basic provincial tax. Basic provincial tax (imbpt) for Nova Scotia is calculated as a proportion (VPTF) of Basic Federal Tax (imbft). Provincial taxes payable (imtxp) are then initialized to the value of basic provincial tax (imbpt).

The 2000 budget announced that Nova Scotia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (VTXFLG), a provincial tax table (VPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (VPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (VBXM) |
| impatxc | Age amount tax credit | (VAXM, VAXRR, VAXTD, VAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (VMXM, VMXMT, VEMXM, VEMXMT) |
| impcgtc | Caregiver tax credit | (VCGTC, VCGTCFLG, VCGTCTC, VCGTCTD, VCGTCTK) |
| impchrtc | Charitable donations | (VCHATL1, VCHATR1, |

| | | |
|-----------|-----------------------------|------------------|
| | | VCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (VMAXDX) |
| impdtxc | Dividend tax credit | (VDTCR) |
| impedtxc | Education tax credit | (VEDXPM, VMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (VYPNDL) |
| imptutxc | Tuition Tax credit | (VMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using VAMTOPT.

Provincial Surtax

The Nova Scotia surtax (impsur) is calculated as VSF percent of provincial taxes (imtxp) above the level VSCI plus VSF2 percent of provincial taxes above the level VSCI2. This amount is then added to provincial taxes payable (imtxp).

Family Tax Reduction

Program Description

The Nova Scotia tax reduction for low income individuals and families was introduced in 1994. To be eligible for the reduction a filer must be either over age 18, or have a spouse, or be a parent. This a family based tax reduction and only one person of a married couple may claim the reduction. The reduction has prescribed maximum amounts for the claimant, a spouse and children. There is an equivalent to married amount in cases where a claimant has filed for the federal equivalent to married non-refundable tax credit. The total of these amounts is then subject to a family income test.

SPSM Implementation

The calculation closely follows the structure on form T1C (N.S.). Individuals are first tested for eligibility on the basis of age (idage), marital status (idspoflg), and parental status. Parental status is only relevant for young (<19) families and single parents and so is tested using relation to head (idcfrh == 0) and presence of young children (nfnkids).

Persons without a spouse are assigned the basic amount (VTRBAS). Heads of census families with a spouse are assigned the basic and spouse amounts (VTRBAS + VTRSP). Equivalent to married amounts (VTREM) are given to spouseless heads who claim the federal married tax credit (immartxc). Amounts for children are given to the head of the census family. No child amounts are given with respect to children who triggered the equivalent to married amount.

The maximum deduction is then reduced by a fixed proportion (VTRRR) of the net income (iminet) of the head plus spouse (if present) in excess of the income base amount (VTRTD). This calculation is performed for persons without spouses or heads of census families with

spouses. The amounts for families with spouses are then assigned to the spouse with the higher net income. The tax reduction thus calculated is written to the non-refundable provincial tax reduction variable (imptr) and is used to decrease provincial taxes payable (imtxp).

Pharmacare Program

Program Description

Introduced in the 1995 provincial budget, the pharmacare program consists of an annual pharmacare premium payable by all seniors and a refundable tax credit for low income seniors.

SPSM Implementation

The pharmacare premium (VPHPREM) is assigned to the variable impeht for all Nova Scotians age 65 or older. This amount is then used to increase provincial taxes payable (imtxp).

The pharmacare refundable tax credit (impehtc) is calculated for all Nova Scotia seniors in receipt of GIS benefits (imigis). It is calculated as the basic tax credit (VPHTC) less a fixed proportion (VPHRR) of income (imgisinc) above a threshold (VPHTD). The pharmacare refundable tax credit (impehtc) is added to the variable for refundable provincial tax credits (imptc).

Starting in 1996, the tax credit no longer depended on whether or not a person received GIS. Instead, the credit is taxed back depending on family income. When VPHOPT is set to 1, the program depends on GIS receipt, and when it is set to 2 it depends on family income. There are now two turndowns, VPHTD for singles (also used in the original program) and VPHTDC for couples.

Provincial Foreign Tax Credit

The provincial foreign tax credit is imputed from the Greenbook (idprvftc). Only the amount of the foreign tax credit required to reduce provincial tax payable (imtxp) to zero is applied to the variable for non-refundable provincial tax credits (imnptc). Provincial tax payable (imtxp) is then reduced by the amount imnptc.

Political Contribution Tax Credit

Labour Sponsored Venture Capital Tax Credit

The Nova Scotia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Nova Scotia provincial credit is modeled as

VLVCRT times the gross amount up to VLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Direct Assistance

Program Description

Introduced in the 1997 provincial budget, direct assistance gives a benefit to low income Nova Scotians who would not be otherwise eligible for the tax reduction.

Beginning in 2000, direct assistance is only granted to families with children.

SPSM Implementation

Nova Scotia residents 19 and over are eligible for direct assistance if their income is below the cut-off (VDACI for families or VDASI for single individuals). The benefits are VDACB for families and VDASB for single individuals.

Differences between the SPSM estimate and reality will primarily come from two problems. Persons are eligible for Direct Assistance if they were full time students for 4 months or less or if they received Social Assistance for three months or less. In the SPSM model, anyone who is a full-time student in March (idestat==1) or anyone who receives Social Assistance was deemed ineligible for the program. This should lower estimates. But since people have to apply for the program, the take-up is probably not going to be 100% which will increase the SPSM estimate.

Nova Scotia Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget.

SPSM Implementation

The benefit is turned on by the flag VCBFLG, and families whose net income is less than VCBTD are eligible. They receive VCBBAS1 for their first child, VCBBAS2 for their second child, and VCBBAS3 for their third and each additional child. The benefit is completely phased out when the family net income reaches VCBPO. The benefit (imnscb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

CTCINC CTC family income scaling factor
 PYINC Deflator to calculate previous year income
 VAMTOPT N.S. alternative minimum tax option (1=none, 2=% fed, 3=fed
 adj inc, 4=% min amt)
 VAMTPCTF N.S. amt rate as pct of additional fed tax due to minimum
 tax
 VAMTPCTM N.S. amt rate as pct of federal minimum tax amount
 VAMTTX N.S. amt rate as tax on adjusted income
 VAXM N.S. Age Amount
 VAXPI N.S. Age Amount phase in rate for 1994 and beyond
 VAXRR N.S. Age Amount credit reduction rate
 VAXTD N.S. Age Amount net income turndown
 VBXM N.S. Basic Personal Exemption/amount
 VCBBAS1 NS child benefit for first child
 VCBBAS2 NS child benefit for second child
 VCBBAS3 NS child benefit for third or additional child
 VCBFLG NS child benefit activation flag
 VCBPO NS child benefit family income phase out
 VCBTD NS child benefit turndown
 VCGTC N.S. Caregiver Tax Credit
 VCGTCFLG N.S. Caregiver Tax Credit activation flag
 VCGTCTC N.S. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 VCGTCTD N.S. Caregiver Tax Credit Turn Down Income
 VCGTCTK N.S. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 VCHATL1 N.S. Charitable Donations amount level 1
 VCHATR1 N.S. Charitable Donations tax credit rate 1
 VCHATR2 N.S. Charitable Donations tax credit rate 2
 VDACB NS Direct assistance benefit for couples
 VDACI NS Direct assistance maximum income for couples
 VDAFLAG NS Direct assistance benefit flag
 VDAFWC NS Direct assistance benefit for families with children
 flag
 VDASB NS Direct assistance benefit for singles
 VDASI NS Direct assistance maximum income for singles
 VDTCR N.S. dividend tax credit rate
 VEDXPM N.S. Education Amount per month
 VEMXM N.S. equivalent to married amount
 VEMXMT N.S. equivalent to married turndown level
 VLVCMAX Maximum N.S. labour-sponsored funds tax credit allowed
 VLVCRT Percent of N.S. labour-sponsored funds cost allowed as
 credit
 VMAXDX N.S. Maximum Disability deduction/amount
 VMAXET N.S. maximum on transfer of education and tuition amount
 VMXM N.S. married amount
 VMXMT N.S. married amount turndown level
 VPHOPT Nova Scotia pharmacare premium option (1=GIS, 2=income)
 VPHPREM Nova Scotia pharmacare premium
 VPHRR Nova Scotia pharmacare tax credit reduction rate
 VPHTC Nova Scotia pharmacare refundable tax credit
 VPHTD Nova Scotia pharmacare tax credit turndown
 VPHTDC Nova Scotia pharmacare tax credit turndown for couples
 VPNTCR N.S. provincial non-refundable tax credit rate
 VPTC Nova Scotia political contribution table [total
 donations,donation allowed]
 VPTCBEN Maximum Nova Scotia political tax credit allowed

| | |
|--------|---|
| VPTF | Nova Scotia provincial tax fraction |
| VPTX | N.S. tax table [taxable income,basic provincial tax] |
| VSCI | Nova Scotia provincial tax above which surtax applies |
| VSCI2 | Nova Scotia provincial tax above which surtax applies (2nd level) |
| VSF | Nova Scotia provincial surtax rate |
| VSF2 | Nova Scotia provincial surtax rate (2nd level) |
| VTRBAS | Nova Scotia tax reduction basic amount |
| VTREM | Nova Scotia tax reduction equivalent to spouse amount |
| VTRKID | Nova Scotia tax reduction child amount |
| VTRRR | Nova Scotia tax reduction family income reduction rate |
| VTRSP | Nova Scotia tax reduction spouse amount |
| VTRTD | Nova Scotia tax reduction family income turndown |
| VTXFLG | N.S. tax on taxable income activation flag |
| VYPNDL | N.S. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idestat | Educational status |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtvg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imcemc | Child's equivalent to married credit |
| imchara | Allowable charitable donations and gifts (calculated) |

| | |
|----------|--|
| imcppse | CPP contributions deduction for self-emp |
| imcqppc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imgisinc | Individual's income for GIS/SPA reduction |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| idinspo | Person's spouse [pointer] |
| imbpt | Basic provincial tax |
| iminsda | NS Direct Assistance Program |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imnscb | Nova Scotia Child Benefit |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impeht | Provincial elderly health tax |
| impehtc | Provincial elderly health tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |

imtxp Provincial income tax payable

txont Compute provincial taxes for Ontario

SUMMARY

When OTXFLG is turned off, the Ontario Provincial Tax (imbpt) is calculated as a proportion (OPTF) of Basic Federal Tax (imbft). Added to Basic for some years is the Social Services Maintenance Tax which is a proportion (OSSMR) of Basic Provincial Tax (imbpt) exceeding the tax level (OSSML).

When the tax on taxable income flag is turned on (OTXFLG), a provincial tax table (OPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (OPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (OBXM) |
| impatxc | Age amount tax credit | (OAXM, OAXRR, OAXTD, OAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (OMXM, OMXMT, OEMXM, OEMXMT) |
| impcgtc | Caregiver tax credit | (OCGTC, OCGTCFLG, OCGTCTC, OCGTCTD, OCGTCTK) |
| impchrctc | Charitable donations | (OCHATL1, OCHATR1, OCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (OMAXDX) |
| impdtxc | Dividend tax credit | (ODTCR) |
| impdtxc | Education tax credit | (OEDXPM, OMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (OYPNDL) |
| imptutxc | Tuition Tax credit | (OMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using OAMTOPT.

Ontario provides a tax reduction for persons with a low taxable income. This reduction amounts to a proportion (OTRF) of taxable income (imitax) below the Ontario Tax Reduction Level (OMTY). This is subtracted from Basic Provincial Tax to derive Provincial

Tax Payable (imtxp).

The Ontario labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Ontario provincial credit is modeled as OLVCRT times the gross amount up to OLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Employer Health Tax (imonteht) only applies to self-employed persons, and is calculated when OEHTFLAG is set to 1. When a person's income from self-employment is less than OEHTTD1, the Employer Health Tax is calculated using the rate OEHTRR1 on self-employment earnings over the exemption OEHTEX. When a person's income from self-employment is less than this value, but greater than OEHTTD1, the Employer Health Tax is calculated by adding OEHTRR1 times the difference between the first turndown (OEHTTD1) and the exemption rate (OEHTEX) and OEHTRR2 times the difference between earnings from self-employment and OEHTTD1. When self-employment earnings are greater than OEHTTD2, the Ontario Employer Health Tax is calculated as OEHTRR3 times earnings from self-employment which are greater than the exemption OEHTEX.

When the parameter OCCEAFLG is set to 1, the child care expense credit is calculated. The maximum amount of the benefit is calculated as the lower of either OCCEAPCT times actual child care expenses (imccea), or of a specified amount per child (OCCEAYNG) times the number of children age 6 and under in the census family. Maximum family benefits are then reduced by a proportion (OCCEARR) of family net income above the threshold (OCCEATD). The model assigns the imputed Child Care credit (imoccea) to the mother, if present.

When OCWISFLG is set to 1, the supplement for working families is calculated as a percentage (OCWISRR) of family income over a threshold OCWISTD. The percentage depends on the number of children under the age of 7 in the family. The Supplement cannot exceed OCCEAYNG times the number of children under the age of 7. In single parent families, the maximum cannot exceed OCWISSP times the number of children under the age of 7 as announced in the Ontario 2000 Budget. The benefit which is given is the maximum value of either the supplement or the childcare expenses credit.

The taxpayer dividend (imotxdv) announced in the 2000 Budget was implemented. It is equal to taxes paid in the previous year up to a maximum (OTXDVMAX). People who paid over 0\$ in taxes would get a minimum rebate of OTXDVMIN. The benefit is included in refundable tax credits of 2000. Since it is based on the previous year's taxes, the taxes are multiplied by OPYTAX in order to estimate the lagged effect.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CAPGIR | Capital gains inclusion rate |
| OAMTOPT | Ont. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| OAMTPCTF | Ont. amt rate as pct of additional fed tax due to minimum tax |
| OAMTPCTM | Ont. amt rate as pct of federal minimum tax amount |
| OAMTTX | Ont. amt rate as tax on adjusted income |
| OAXM | Ont. Age Amount |
| OAXPI | Ont. Age Amount phase in rate for 1994 and beyond |
| OAXRR | Ont. Age Amount credit reduction rate |
| OAXTD | Ont. Age Amount net income turndown |
| OBXM | Ont. Basic Personal Exemption/amount |
| OCAPGIR | Ont. Capital Gains Inclusion Rate |
| OCCEAFLG | Ont. Child Care Expense Credit activation flag |
| OCCEAPCT | Ont. Child Care Expense Credit qualifying percentage |
| OCCEARR | Ont. Child Care Expense Credit benefit reduction rate |
| OCCEATD | Ont. Child Care Expense Credit family income turndown |
| OCCEAYNG | Ont. Child Care Expense Credit allowance per child |
| OCGIRFLG | Ont. Capital Gains Inclusion Rate Activation Flag |
| OCGTC | Ont. Caregiver Tax Credit |
| OCGTCTFLG | Ont. Caregiver Tax Credit activation flag |
| OCGTCTC | Ont. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| OCGTCTD | Ont. Caregiver Tax Credit Turn Down Income |
| OCGTCTK | Ont. Caregiver tax credit take-up rate by income level [employment income,rate] |
| OCHATL1 | Ont. Charitable Donations amount level 1 |
| OCHATR1 | Ont. Charitable Donations tax credit rate 1 |
| OCHATR2 | Ont. Charitable Donations tax credit rate 2 |
| OCWISFLG | Ont. Child Care Working Income Supplement activation flag |
| OCWISRR | Ont. Child Care Working Income Supplement Rate [children][rr] |
| OCWISSP | Ont. Child Care Working Income Supplement maximum benefit for single parents |
| OCWISTD | Ont. Child Care Working Income Supplement minimum earnings |
| ODTCR | Ont. dividend tax credit rate |
| OEDXPM | Ont. Education Amount per month |
| OEHTDRR | OEHT - Income Tax Deduction Rate |
| OEHTEX | OEHT - Exemption |
| OEHTFLAG | OEHT - Ontario Employer Health Tax Flag |
| OEHTRR1 | OEHT - Rate 1 |
| OEHTRR2 | OEHT - Rate 2 |
| OEHTRR3 | OEHT - Rate 3 |
| OEHTTD1 | OEHT - Turndown 1 |
| OEHTTD2 | OEHT - Turndown 2 |
| OEMXM | Ont. equivalent to married amount |
| OEMXMT | Ont. equivalent to married turndown level |

| | |
|----------|---|
| OLVCMAX | Maximum Ont. labour-sponsored funds tax credit allowed |
| OLVCRT | Percent of Ont. labour-sponsored funds cost allowed as credit |
| OMAXDX | Ont. Maximum Disability deduction/amount |
| OMAXET | Ont. maximum on transfer of education and tuition amount |
| OMTY | Ontario tax reduction limit |
| OMXM | Ont. married amount |
| OMXMT | Ont. married amount turndown level |
| OPCRA | Ontario property tax college residence amount |
| OPNTCR | Ont. provincial non-refundable tax credit rate |
| OPOCAR | Ontario property tax percent of occupancy cost |
| OPOCM | Ontario property tax maximum occupancy cost |
| OPRIR | Ontario property tax credit rental inclusion rate |
| OPSMAX | Ontario property/sales tax credit maximum |
| OPTC | Ontario political contribution table [total donations,donation allowed] |
| OPTCBEN | Maximum Ontario political tax credit allowed |
| OPTCFLAG | Ontario political contribution refundable tax credit flag |
| OPTF | Ontario provincial tax fraction |
| OPTX | Ont. tax table [taxable income,basic provincial tax] |
| OPYTAX | Estimate of previous year's Ontario taxes |
| ORDOPT | Ontario tax reduction calculation option |
| OSPOCM | Ontario seniors property tax maximum occupancy cost |
| OSSML | Ontario surtax first cut-in level |
| OSSML2 | Ontario surtax second cut-in level |
| OSSMR | Ontario surtax first level rate |
| OSSMR2 | Ontario surtax second level rate |
| OSSTCP | Ontario seniors sales tax credit percent of income |
| OSTCB | Ontario sales tax credit basic credit |
| OSTCD | Ontario sales tax credit dependant credit |
| OSTCFLAG | Ontario seniors tax credit claimed flag |
| OSTCNIBA | Ontario seniors tax credit net income base amount |
| OSTCP | Ontario sales tax credit percent of income |
| OSTCS | Ontario sales tax credit spouse credit |
| OTCNIBA | Ontario tax credit net income base amount |
| OTRBPA | Ontario tax reduction basic personal amount |
| OTRDCA | Ontario tax reduction dependant child amount |
| OTRDDA | Ontario tax reduction disabled dependant amount |
| OTRF | Ontario tax reduction Ontario tax multiplier |
| OTRFP | Ontario tax reduction personal amount multiplier |
| OTXDVMAX | Maximum taxpayer dividend |
| OTXDVMIN | Minimum taxpayer dividend for people with non-zero taxes |
| OTXFLG | Ont. tax on taxable income activation flag |
| OYPNDL | Ont. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |

| | |
|----------|---|
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcapgex | Capital gains exemptions (254) |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnfn | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imccea | Child care expenses allowed |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdedft | Deductions from total income |
| imdepni | Dependant's net income |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfnkids | Number of children in nuclear family |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imiotax | Ontario taxable income |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| imonteht | Ontario Employers Health Tax (Self-employed) |
| imotxdv | Ontario Taxpayer Dividend |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgctc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txpei Compute provincial taxes for P.E.I.

SUMMARY

When PTXFLG is off, the Basic Provincial Tax (imbpt) for Prince Edward Island is simply a proportion (PTF) of Basic Federal Tax (imbft).

The 2000 budget announced that PEI would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (PTXFLG), a provincial tax table (PPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (PPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (PBXM) |
| impatxc | Age amount tax credit | (PAXM, PAXRR, PAXTD, PAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (PMXM, PMXMT, PEMXM, PEMXMT) |
| impcgtc | Caregiver tax credit | (PCGTC, PCGTCFLG, PCGTCTC, PCGTCTD, PCGTCTK) |
| impchrctc | Charitable donations | (PCHATL1, PCHATR1, PCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (PMAXDX) |
| impdtxc | Dividend tax credit | (PDTCR) |
| impedtxc | Education tax credit | (PEDXPM, PMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (PYPNDL) |
| imptutxc | Tuition Tax credit | (PMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using PAMTOPT.

The Prince Edward Island labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Prince Edward Island provincial credit is modeled as PLVCRT times the gross amount up to PLVCMAX. The credit cannot be more than provincial taxes (imtxp).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| PAMTOPT | P.E.I. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| PAMTPCTF | P.E.I. amt rate as pct of additional fed tax due to minimum tax |
| PAMTPCTM | P.E.I. amt rate as pct of federal minimum tax amount |
| PAMTTX | P.E.I. amt rate as tax on adjusted income |
| PAXM | P.E.I. Age Amount |
| PAXPI | P.E.I. Age Amount phase in rate for 1994 and beyond |
| PAXRR | P.E.I. Age Amount credit reduction rate |
| PAXTD | P.E.I. Age Amount net income turndown |
| PBXM | P.E.I. Basic Personal Exemption/amount |
| PCGTC | P.E.I. Caregiver Tax Credit |

PCGTCTFLG P.E.I. Caregiver Tax Credit activation flag
 PCGTCTC P.E.I. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 PCGTCTD P.E.I. Caregiver Tax Credit Turn Down Income
 PCGTCTK P.E.I. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 PCHATL1 P.E.I. Charitable Donations amount level 1
 PCHATR1 P.E.I. Charitable Donations tax credit rate 1
 PCHATR2 P.E.I. Charitable Donations tax credit rate 2
 PDTCR P.E.I. dividend tax credit rate
 PEDXPM P.E.I. Education Amount per month
 PEMXM P.E.I. equivalent to married amount
 PEMXMT P.E.I. equivalent to married turndown level
 PLVCMAX Maximum P.E.I. labour-sponsored funds tax credit allowed
 PLVCRT Percent of P.E.I. labour-sponsored funds cost allowed as
 credit
 PMAXDX P.E.I. Maximum Disability deduction/amount
 PMAXET P.E.I. maximum on transfer of education and tuition amount
 PMXM P.E.I. married amount
 PMXMT P.E.I. married amount turndown level
 PPNTCR P.E.I. provincial non-refundable tax credit rate
 PPTC P.E.I. political contribution table [total
 donations,donation allowed]
 PPTCBEN Maximum P.E.I. political tax credit allowed
 PPTF P.E.I. provincial tax fraction
 PPTX P.E.I. tax table [taxable income,basic provincial tax]
 PSCI P.E.I. provincial tax above which surtax applies
 PSF P.E.I. provincial surtax rate
 PTRBAS Base PEI low income tax reduction
 PTRKID PEI low income tax reduction for dependent child
 PTRRR PEI low income tax reduction Reduction Rate
 PTRSP PEI low income tax reduction for spouse or equivalent-to-
 spouse
 PTRTD PEI low income tax reduction Turndown
 PTXFLG P.E.I. tax on taxable income activation flag
 PYPNDL P.E.I. Pension Income Deduction Amount

INPUT VARIABLES:

cfin First person in census family [pointer]
 cfinch First child in census family [pointer]
 cfineld Eldest person in census family [pointer]
 cfinspo Spouse of eldest [pointer]
 cfnchild Number of children (including 18+)
 cfnpers Number of persons in census family
 cfspoflg Census family contains married couple
 efin First person in economic family [pointer]
 efnpers Number of persons in economic family
 hhncf Number of census families in household
 hhnef Number of economic families in household
 hhnin Number of individuals in household
 hhnnf Number of nuclear families in household
 idage Age
 idcfrh Relationship to census family head
 iddisab Disability status
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 ideducm Eligible months of education allowance

| | |
|----------|---|
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |

| | | | | | | | | |
|--|-------------------------------------|-----------------------------------|----------|-------------------------|----------|-------------------------------------|-------|-------------------------------|
| imp <tr><td>impttxct</td><td>Prov total tax credits transfered</td></tr> <tr><td>imptutxc</td><td>Prov Tuition tax credit</td></tr> <tr><td>impuictc</td><td>Prov UI/EI contributions tax credit</td></tr> <tr><td>imtxp</td><td>Provincial income tax payable</td></tr> | impttxct | Prov total tax credits transfered | imptutxc | Prov Tuition tax credit | impuictc | Prov UI/EI contributions tax credit | imtxp | Provincial income tax payable |
| impttxct | Prov total tax credits transfered | | | | | | | |
| imptutxc | Prov Tuition tax credit | | | | | | | |
| impuictc | Prov UI/EI contributions tax credit | | | | | | | |
| imtxp | Provincial income tax payable | | | | | | | |

txprov Compute provincial taxes

SUMMARY

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax as in Newfoundland, Prince Edward Island, New Brunswick and Nova Scotia to a parallel of the federal system in Quebec. The other provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|--------|----------|
| hdprov | Province |
|--------|----------|

txqcalc Calculate income tax (Quebec)

SUMMARY

The txqcalc function calculates Quebec income tax for those individuals affected.

SPSM Implementation

Each census family is processed in turn. First, the basic provincial tax is computed via a table look-up for each person. Next the non-refundable tax credits are applied and unused credits are transferred between spouses, if appropriate. Subsequently, the 'family situation' and 'eligible income' are computed followed by the family tax reduction. After the family tax reduction has been calculated, the refundable property tax credit is computed.

Relation to Other SPSM Routines

txqcalc is called from within txprov and is in a subsidiary relationship to it. It does not call, and is not called by, any further functions.

Sales tax credit

The refundable sales tax credit (imqstr) is activated when QSTRFLAG is set to 1. The sales tax credit includes a base credit (QSTRBCRD), a credit (QSTRCHILD) is added for each child in the family. A second credit is added (QSTRFTP3) when no spouse is present and at least one dependent child is present. And finally another credit is added (QSTRFTP4) is for a person living alone or with at least one dependent. The credit is reduced by the income considered at a rate QSTRRR.

Housing of Parent tax credit

The Housing of Parent Tax Credit (imqhptc) calculation is activated by a flag (QHPTCFLG) and the base tax credit is QHPTC. An economic family is eligible to the imqhptc if the parent or grandparent of the head of the economic family, or his/her spouse is in the economic family. A take-up rate QHPTCTC based on age of the potential parent assigns individuals with idefrh=3 as a parent according to SCF data. A take-up rate QHPTCTK based on employment income select the appropriate number of beneficiaries according to Portrait de la fiscalité des particuliers au Québec.

Medical Expenses tax credit

The calculation of the refundable tax credit for medical expenses is activated by the flag QMRTCFLG. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). The tax credit is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. Eligibility is also limited to persons aged 18 and over with employment related earnings greater than QMEDRMIN. The medical expenses tax credit was introduced in 1997.

Dues as non-refundable tax credit

Starting in 1997, dues that where a deduction (iddues) in txqinet are a tax credit activated by the option QDUESOPT = 2. The value of the tax credit is imquetc. When QDUESOPT = 1, the dues are calculated in txqinet.

Tuition as non-refundable tax credit

Starting in 1997, tuition are considered as a deduction (idtuitn) in txqinet are now a tax credit activated by the option QTUIOPT = 2. The value of the tax credit is imquitc.

Family Allowance Tax Credit

The Quebec Family Allowance Tax Credit started in September 1997 but is implemented in the model starting 1998. The Quebec Family Allowance Tax Credit is a credit based on

previous year net family income and is non-taxable. The maximum credits vary with the number of children (QFATCMXK), and a supplement QFATCSUP is allocated to single parent families. For families with 4 kids and more, a supplement, QFATCK6, is added that varies with the number of kids and the number of kids under 6 years of age. The credit is the maximum until it reaches the first turn down income level with a specific reduction rate. The sequence of turn down incomes and reduction rates for single parent families are in QFATCSRR and for married couples in QFATCMRR. The turning point at QFATD4K is increased by QFATD4KI for each child over three. The benefits are reduced up to a minimum based on the number of children in the family (QFATCMNK) until the net family income reaches the last turning point in either QFATCSRR or QFATCMRR. At this last turning point the benefits are starting to reduce until they reach a minimum for payments of QFATCMIN. The program is implemented by copying the reduction rate table (QFATCSRR or QFATCMRR) into a temporary table. Then another temporary table assigns benefits and reduction rates to turning point incomes. Finally, the calculated benefits, imqfatc, are assigned to the women in the married couples or to the head of the single parent family. When activated, the take-up rate, QFATCTK, selects the assigned individual only if a random number is higher than the level specified by its total income. As a standard, QFATCTK is set to zero and all individuals are selected.

Alternative Minimum Tax

The Alternative Minimum Tax in Quebec started in 1986 and is now fully implemented. The calculation is activated by QAMTXFLG. The calculation of the income considered is slightly different than the Federal Alternative Minimum Tax because of difference in the rates considered for:

- . the inclusion of an amount of capital in the income considered (QCAPAMTX),
- . the dividing factor for the dividends (QDIVRAT), and
- . the allowable taxable portion the capital gains (QAMTINCRT - QCAPGIR).

The exemption level is QAMTX and the tax rate is QAMTTX. When the Alternative Minimum Tax is higher than the calculated tax using the standard algorithm, the difference is stored in imqamt. A flag, imqamtfg, identifies the individuals with the modified income tax. In 1995, the definition of income was changed and QAMTXREF indicates new components used in the calculation of taxable income.

When QAMTXSTKFLG is set to 1, the stock option deduction (imqstkdd) can be deducted when calculating the Quebec Alternative Minimum Tax.

Political Contribution

Starting in 1995, the political contribution is subject to two rates (QPCTR) instead of one (QPTC). The calculation procedure for 1995 and after is activated when QPCOPT is set to 2, otherwise it is the single rate that applies.

Labour-sponsored venture capital tax credit

The Quebec labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Quebec provincial credit is modeled as QLVCRT times the gross amount up to QLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Simplified tax program (low income credit)

The simplified tax program, which includes a flat tax credit, started in 1998. People were allowed to decide whether it was in their benefit to fill out the simplified or general tax form. A worksheet was provided in order to facilitate the choice.

The SPSM has implemented this tax system in the following way. When QSFOPT is set to 1, everyone in Quebec fills out the general tax form. This is the system which was in place prior to 1998. If QSFOPT is set to 2, then everyone fills in the simplified tax form. And when QSFOPT is set to 3, then an optimization procedure is run. In this scenario, an approximation of the worksheet which was provided with the 1998 tax form is calculated prior to the computation of taxes. People are assigned to either the general tax form (which includes all deductions) or the simplified tax form (which includes few deduction but an additional credit - QSFTC). The variable imqsfflg notes which form was chosen.

A person can transfer all of their extra credits and deductions to their spouse when both spouses fill out the simplified tax form. When using the general form, only a limited number of deductions can be transferred. Because the worksheet does not take into account all the inter-spouse complexities, the optimization procedure will tend to overstate taxes. While it is very accurate for single persons, it tends to maximize the individual's gain which is not necessarily the couple's gain. The model may therefore slightly overstate Quebec taxes.

At the same time, the number of income tax brackets in QTX is reduced from 5 to 3, the Surtax and the Tax Reduction are eliminated.

This tax change also signified the replacement of the age, living alone, and retirement credits with a combined family-based credit (imqcalr).

Improved Tax System for Self Employed Workers

The improved tax system for self employed workers in Quebec was added. This improved system was announced in the Quebec 2000 Budget to enable the increasing number of self-employed workers to benefit from the simplified tax form. This system will standardize the tax treatment applicable to that part of the contribution paid by a worker in respect of pensionable self-employed earnings that could be equated with an employer's contribution, and refrain from excluding a growing number of self-employed workers from the simplified tax system. When activated (QITSFSEW), it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new

deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine the contribution to the Health Services Fund payable by individuals. The calculated amount of the contributions to be converted is held in imqcpse.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. The value of the tax credit is calculated in txqitax.

Refundable Tax Credit for Medical Expenses

When QMRTCFLG is assigned to 1, the Quebec refundable tax credit for medical expenses (imqmedrc) is calculated for persons aged 18 and over who had employment related earnings greater than QMEDRMIN. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). It is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. When QMRTCFLG is assigned to 0, the calculation of the Quebec refundable tax credit for medical expenses is suppressed.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| PYINC | Deflator to calculate previous year income |
| QAMTCBX | Quebec Alternative Minimum Tax Calculate Basic Exemption |
| QAMTDIV | Quebec Alternative Minimum Tax Taxable Dividend Limit |
| QAMTINCRT | Quebec Alternative Minimum Tax Inclusion Rate |
| QAMTNEGTTI | Quebec Alternative Minimum Tax Allow Negative Taxable Income |
| QAMTRITC | Quebec Alternative Minimum Tax Retirement Income Credit Deduction |
| QAMTRPFLG | RRSP/RPP included in Quebec Alternative Minimum Tax (1=include) |
| QAMTTX | QAMTX tax rate |
| QAMTX | QAMTX exemption level |
| QAMTXFLG | Quebec alternative minimum tax, QAMTX, activation flag |
| QAMTXREF | Quebec alternative minimum tax 1995 reform indicator (flag) |

| | |
|------------------|--|
| QAMTXSTKFLG | QAMTX stock option deduction inclusion (1=stk can be deducted) |
| QAPFFLG | Quebec anti-poverty fund activation flag |
| QAPFRAT | Quebec anti-poverty fund rate |
| QAXM | Quebec age exemption/amount |
| QBXM | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPAMTX | QAMTX taxable capital ratio |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |
| QCCETCR | Refundable CCE credit rate [net income, % cce claimable] |
| QCRDFLG | Quebec income credit flag [1=if social contribution are deducted] |
| QDIVRAT | QAMTX dividends ratio |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEIA1 | Quebec eligible income family type #1 |
| QEIA2 | Quebec eligible income family type #2 |
| QEIA3 | Quebec eligible income family type #3 |
| QEIA4 | Quebec eligible income family type #4 |
| QEIA5 | Quebec eligible income family type #5 |
| QEIAA | Quebec eligible income aged amount |
| QFAMDED | Quebec Family related deduction on income in refundable credits |
| QFAMFLG | Quebec family income deduction activation flag |
| QFAMNETI | Quebec family allowance tax credit net income concept flag |
| QFAMRAT | Quebec family income rate |
| QFATCHIRR | QFATC High income reduction rate |
| QFATCHITD | QFATC High income turndown |
| QFATCK6 | QFATC Supplement for kids under 6 in large families |
| [#kids][#kids<6] | |
| QFATCK6PYR | QFATC supplement for kids under 6 phase out year proportion |
| QFATCK6YR | QFATC Supplement for kids under 6 phase out year |
| QFATCMIN | QFATC minimum benefit paid |
| QFATCMNK | QFATC Minimum benefits by kid rank |
| QFATCMRR | QFATC turn down income levels and reduction rate for married parents |
| QFATCMXK | QFATC Maximum benefits by kid rank |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFATCSRR | QFATC turn down income levels and reduction rate for single parent |
| QFATCSUP | Quebec Family Allowance Tax Credit Supplement for single parent |
| QFATCTK | QFATC Take-up rates by total income |
| QFATD4K | QFATC turn down income for 4 children and more |
| QFATD4KI | QFATC turn down income increase by child for 4 children and more |
| QFTRA1 | Quebec family tax reduction family type #1 |
| QFTRA2 | Quebec family tax reduction family type #2 |
| QFTRA3 | Quebec family tax reduction family type #3 |
| QFTRA4 | Quebec family tax reduction family type #4 |
| QFTRFLAG | Quebec family tax reduction activation flag |
| QFTRRR | Quebec family tax reduction reduction rate |

QGIFTOPT Quebec gifts as tax credit
 QHPTC Quebec Housing Parent Tax Credit
 QHPTCFLG Quebec Housing Parent Tax Credit activation flag
 QHPTCTC QHPTC take-up rate by age of elderly [age,rate]
 QHPTCTK QHPTC take-up rate by income level [employment income,rate]
 QHSCI Quebec surtax first cut-in level
 QHSCI2 Quebec surtax second cut-in level
 QHSF Quebec surtax first level rate
 QHSF2 Quebec surtax second level rate
 QITSFSEW Quebec improved tax system for self-employed worker
 activation flag
 QLAXM Quebec living alone exemption/amount
 QLVCMAX Maximum Quebec labour-sponsored funds tax credit allowed
 QLVCRT Percent of Quebec labour-sponsored funds cost allowed as
 credit
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDRATE Proportion of expenses allowed for refundable tax credit
 for medical expenses
 QMEDRMAX Maximum expenses allowed for Que. refundable tax credit for
 medical expenses
 QMEDRMIN Minimum earnings for Quebec refundable tax credit for
 medical expenses
 QMEDRRR Reduction rate for the Que. refundable tax credit for
 medical expenses
 QMEDRTD Turndown level for Que. refundable tax credit for medical
 expenses
 QMRTCFLG Quebec refundable tax credits for medical expenses
 activation flag
 QNTPCR Quebec nominal tax credit rate
 QPCOPT Quebec political contribution option
 QPCTR Quebec political contribution tax rates
 QPTC Quebec political contribution table [total
 donations,donation allowed]
 QPTCBEN Maximum Quebec political tax credit allowed
 QPTRGISB Quebec property tax rebate GIS bonus
 QPTRMTP Quebec property tax minimum tax per person
 QPTRMTR Quebec property tax maximum tax for reduction
 QPTRRR Quebec property tax rebate reduction rate
 QPTRTF Quebec property tax fraction
 QRTRFLAG Quebec real estate rebate activation flag
 QSFDISFLAG Quebec Simplified Form Disability tax credit inclusion flag
 QSFOPT Quebec Simplified Form Option (1=general 2=simplified
 3=optimized)
 QSFTC Quebec Simplified Form tax credit
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QSTRBCRD Quebec sales tax rebate base credit
 QSTRCHILD Quebec sales tax rebate children dependent credit
 QSTRFLAG Quebec sales tax rebate activation flag
 QSTRFTP3 Quebec sales tax rebate family type 3 credit
 QSTRFTP4 Quebec sales tax rebate family type 4 credit
 QSTROPT Quebec sales tax rebate option=1 based on imigis, =2
 otherwise
 QSTRRR Quebec sales tax rebate reduction rate
 QTRBE Quebec Tax Reduction Breakeven
 QTROPT Quebec Tax Reduction calculation option 1=universal
 2=income tested

QTRP Quebec tax Reduction proportion
 QTUIOPT Quebec tuition tax credit option
 QTX Quebec income tax table [taxable income,basic provincial
 tax]
 QYPDL Quebec deduction limit for pension income
 TARGETYEAR Year of analysis

INPUT VARIABLES:

cfin First person in census family [pointer]
 cfinch First child in census family [pointer]
 cfindeld Eldest person in census family [pointer]
 cfinspo Spouse of eldest [pointer]
 cfnkids Number of children in census family
 cfnpers Number of persons in census family
 cfspoflg Census family contains married couple
 efin First person in economic family [pointer]
 efnpers Number of persons in economic family
 hdnadult Number of adults in household
 hdnpers Number of persons in household
 hhncf Number of census families in household
 hhnef Number of economic families in household
 hhnnf Number of nuclear families in household
 idage Age
 idcarry Carrying charges (221)
 idccet Child care expenses associated with child
 idccett Child care expenses (Limit A, Form T778)
 idcfrh Relationship to census family head
 idcloss Allowable other years capital loss (253)
 iddisab Disability status
 ideofrh Relationship to economic family head
 idemplo Employee home relocation loan dedn (248)
 idexplor Exploration and development expenses (224)
 idicapg Capital gains (actual)
 idiemp Wages & salaries
 idiloss Business investment losses (217)
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idisefm Self-employed income - farming
 idisenf Self-employed income - non-farming
 idlabtxg Gross Labour funds bought (413)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idprvppl Provincial political contributions (565)
 idrand Random numbers [array]
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idsex Sex
 idspoflg Person has spouse
 imigis GIS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 immtot Total income
 improptx Imputed property tax paid
 imqalexp Quebec allowable employment expenses
 imqatc Quebec age tax credit
 imqbtc Quebec basic tax credit
 imqcapgx Quebec modelled capital gains deduction (254)

| | |
|----------|--|
| imqcchc | Quebec child's non-refundable credit |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdctc | Quebec dependent child tax credits |
| imqdedfn | Quebec all deductions from net income |
| imqdedft | Quebec deductions from total income |
| imqdistc | Quebec disability tax credit |
| imqduetc | Quebec Dues Tax Credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqidivt | Quebec taxable dividends |
| imqinet | Quebec net income |
| imqitax | Quebec taxable income |
| imqitot | Quebec total income |
| imqlatc | Quebec living alone tax credit |
| imqmeda | Quebec medical expenses allowed |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |
| imqritc | Quebec retirement income tax credit |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqstkdd | Quebec modelled Stock option deduction (249) |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| implvctc | Provincial labour-sponsored funds tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impsur | Provincial surtax |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| imqamt | Quebec Minimum Tax Amount |
| imqamtfg | Quebec Minimum Tax flag |
| imqapf | Quebec Anti-Poverty Fund |
| imqcalr | Quebec combined age, living alone, retirement credit |
| imqcceni | Quebec net income for refundable cce credit calculation |
| imqccetc | Quebec refundable child care expenses Tax Credit |
| imqdtxc | Quebec dividend tax credit |
| imqei | Quebec eligible income for tax reduction |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqfs | Quebec family situation (1-5) |
| imqftr | Quebec family tax reduction |
| imqhptc | Quebec Home Parent Tax Credit level |
| imqittr | Quebec income tested tax reduction |
| imqmedrc | Quebec refundable tax credit for medical expenses |
| imqptr | Quebec property tax refund |
| imqstr | Quebec sales tax refund |
| imqtca | Quebec tax credits applied |
| imqtct | Quebec tax credits transferable |
| imqtcts | Quebec tax credits transferred from spouse |
| imqtottc | Quebec total tax credits |

imtxp Provincial income tax payable

txqceea Compute child care expense allowance (Quebec)

SUMMARY

Since the amounts allowable for the Child Credit Expense Deduction differ slightly between the federal and Quebec provincial tax systems, it would be desirable to use the actual amount allowed for Quebec provincial tax purposes in the calculation of this deduction. The rules for eligibility exactly parallel the federal (see txceea). The algorithms are therefore essentially the same as the ones modeling the allocation of the federal Child Care Expense Deduction.

Unlike the federal algorithm, child care expenses are always treated as a deduction from total income. There is no option for treating them as a tax credit.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| QCCEAC1 | Quebec CCEA earned income fraction (1 child) |
| QCCEAC2 | Quebec CCEA earned income fraction (2 children) |
| QCCEAC3 | Quebec CCEA earned income fraction (3+ children) |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |

INPUT VARIABLES:

| | |
|----------|---|
| cfinch | First child in census family [pointer] |
| cfined | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |

OUTPUT VARIABLES:

| | |
|----------|---|
| imqccea | Quebec child care expenses allowed (dedn) |
| imqdedft | Quebec deductions from total income |
| imqinet | Quebec net income |

txqhstr Compute family-related deductions or credits (Quebec)

SUMMARY

This function parallels txhstr which performs similar calculations for federal taxes. The major difference is that the model does not incorporate the conversion of deductions into tax credits for the calculation of Quebec taxes. The algorithms include:

- calculate and allocate Personal Exemptions for Wholly Dependent Children
- calculate and allocate Married Exemption
- calculate Family Support Exemption (similar to federal Married Equivalent Exemption)
- calculate and transfer deductions from spouse

Calculate and Allocate Personal Exemptions for Wholly Dependent Children

Quebec filers with dependent children are eligible to claim an exemption based on the age and net income of the child. The exemption is calculated as a fixed amount minus a proportion of the child's net income exceeding the reduction level. The young child exemption is claimable on behalf of children aged 16 or 17. The old child exemption is claimable on behalf of children 18 and over but under 21, or over 20 and attending school full-time.

For taxation year 1986 and later, the definition of dependant's net income for the purpose of calculating the Exemption for Wholly Dependent Children requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The exemptions for all children are accumulated in cdeds which may later be adjusted by the calculation of the Family Support Exemption. If a spouse is present, the one with the higher Net Income (imqinet) receives the full amount of the exemption for all dependent children (imqcdeds) which is used to reduce Taxable Income (imqitax).

The model does not partition the exemptions for dependent children between spouses as is allowed by the tax regulations. This means that the tax burden of spouses with similar net incomes is not minimized.

In calculating the amount of the exemption, the model does not adjust the Net Income of the dependant to include certain non-taxable amounts of the Guaranteed Income Supplement (GIS), Spouse's Allowance (SPA) or Social Assistance as is specified in the Quebec tax regulations.

Calculate and Allocate Married Tax Credit

Persons legally married during the taxation year are eligible to claim a Married Tax Credit amounting to a fixed value reduced by the spouse's net income. The definition of spouse's net income for the purpose of calculating the Married Tax Credit requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The Married Tax Credit (imqmtc) is calculated only for the spouse with the lower Net Income (imqinet). It amounts to a fixed value (QMXM) reduced by the other spouse's Net Income. imqmtc is used to reduce the taxable income (imqitax) of the claiming spouse.

Note that the value of Net Income is not adjusted to include GIS, SPA, Social Aid and non-taxable amounts from international sources. GIS and SPA are calculated later in the model and the amounts are not available when this function is executed. Non-taxable amounts from international sources cannot be separated from other non-taxable income in the database.

Calculate Family Support Exemption

The definition of the Family Support Exemption is similar to the federal Married Equivalent Exemption. Filers who are single, divorced, separated or widowed and who supported a relative related by blood, marriage or adoption are eligible to claim that relative for a Family Support Exemption. This exemption amounts to a fixed value reduced by a proportion of the dependant's net income exceeding a reduction level.

The definition of the dependant's net income for the purpose of calculating the Family Support Exemption requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- Earnings from international sources which are tax exempt in Canada

SPSM Implementation

SPSM calculates the Family Support Exemption on behalf of dependent children and not other relatives who may be eligible.

The model attempts to make the claim on behalf of the dependant for whom a claim will benefit the filer most. The first choice for the exemption is a dependant who is not claimable for the child exemption, i.e., one who is 15 years of age or younger, or one who is over 21 and not attending an educational institution. If more than one dependant is eligible under these conditions, then the one with the lower Net Income (imqinet) is chosen. If there is no such dependant, the dependant claimable for the child exemption with the lowest Net Income is chosen.

If the Family Support Exemption is claimed on behalf of a dependant who is also claimable for the child exemption, the accumulated amount of the child exemption is adjusted by subtracting the amount claimed for that dependant.

The Family Support Exemption (imqmarex) is added to Total Personal Exemptions (imqpex) and subtracted from Taxable Income (imqitax).

Calculate and Transfer Deductions From Spouse

As in the federal case (see the function txhstr) Quebec allows the transfer of certain deductions from the spouse in the calculation of provincial income taxes. Deductions that may be transferred are:

- Age Exemption
- Interest and Dividend Income Deduction
- Deduction for Retirement Income
- Disability Deduction

Only the amount not required to reduce the spouse's taxable income to zero may be transferred. There is a limit to the amount of combined Interest and Dividend Income Deduction and Pension Income Deduction transferable which amounts to the unused proportion of the Married Exemption, i.e., if the full Married Exemption was claimed, no portion of these two deductions may be transferred.

SPSM Implementation

For the spouse with the lower Net Income (imqinet) the model calculates a value for potentially transferable deductions as the sum of:

- Age Exemption (imqaxm)
- Disability Deduction (imqdisex)

the lesser of:

- Total Pension Income Deduction (imqpendn) and Interest Income Deduction (imqintdn),
and
- the unused portion of the Married Exemption (QMXM minus imqmarex).

minus any amount required to reduce the spouse's Taxable Income to zero (imqinet minus QBXM).

The amount transferred from the spouse is subtracted from the filer's Taxable Income (imqitax) and added to Total Deductions from Net Income (imqdedfn). The spouse's Taxable Income and deductions are not adjusted because, if a transfer occurs, taxable income is zero by definition. The amounts recorded for the individual deductions (e.g., imqaxm, imqpendn) are not adjusted to reflect the transfer.

The value of Net Income used in the calculation of the transfer is not adjusted to include GIS, SPA and Social Aid income.

Calculate Living alone tax credit

The calculation of the living alone tax credit imqlatc is based on the value of the tax credit QLAXM adjusted by the nominal tax credit rate (QNTCR).

Starting in 1996, the calculation of the living alone tax credit is subject to turndown income (QLAXTD) and a reduction rate (QLAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QLAXPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqlatc is set to zero.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QLAXM | Quebec living alone exemption/amount |
| QLAXPI | Quebec living alone phase-in |
| QLAXRR | Quebec living alone reduction rate |
| QLAXTD | Quebec living alone turn down |
| QLPXM | Quebec lone parent exemption/amount |
| QMEDINC | Income definition for Que. refundable tax credit for medical expenses |
| QMXM | Quebec married exemption/amount |
| QNTCR | Quebec nominal tax credit rate |
| QPSXM | Quebec post-secondary exemption/amount |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QYCXM1 | Quebec dependent child #1 amount |
| QYCXM2 | Quebec dependent child #2 amount |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |

| | |
|----------|---|
| cfspoflg | Census family contains married couple |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idestat | Educational status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqinet | Quebec net income |
| imqitot | Quebec total income |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imqcchc | Quebec child's non-refundable credit |
| imqdctc | Quebec dependent child tax credits |
| imqdepni | Quebec dependant's net income |
| imqlatc | Quebec living alone tax credit |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |

txqinet Compute net income (Quebec)

SUMMARY

The Quebec provincial personal income tax system largely parallels the federal system: deductions and exemptions reduce total income to a taxable amount for which the basic provincial tax is calculated, then tax credits are applied to derive the amount of provincial tax payable. The function calculates net income for Quebec taxpayers and is similar to the process for calculating net income for federal income tax purposes.

SPSM Implementation

The algorithms for calculating Net Income for Quebec Provincial Income Tax Purposes are similar to the algorithms for calculating federal Net Income described under the function txinet. The major difference is that there are no options to treat deductions and personal exemptions as tax credits.

Whenever possible values already calculated in the computation of federal Net Income are applied here. The implementation of specific measures are described below.

Employment Expense Deduction

The calculation of the Quebec Employment Expense Deduction (imqdedia) is the same as the federal case. imqdedia is a proportion (QEAP) of Earnings from Employment (idiemp) up to a maximum deduction of QEAMAX. There is no flag controlling the calculation of

this value. If this deduction is to be eliminated, the values of QEAP and QEAMAX may be set to zero.

This value is added into Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Other Allowable Employment Expenses

The model assumes that the definition for Other Allowable Employment Expenses as applied to Quebec Provincial Taxes is the same as the federal definition (see txinet). The same value as used in the federal algorithm (idalexp) is used here. The value of idalexp may be scaled up or down by supplying an appropriate value for the parameter QALEXP (Proportion of Other Allowable Employment Expenses to Use as a Deduction).

The amount idalexp is added to Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Calculate Taxable Capital Gains

Capital Gains are treated as they are for federal taxes (see function txinet). Taxable Capital Gains for Quebec Provincial Tax Purposes (imqcapgt) is calculated as Total Capital Gains Received (idicapg) multiplied by the Capital Gains Inclusion Rate for Quebec Provincial Taxes (QDGUR).

Taxable Dividends

The treatment of dividends is similar to the federal algorithms described under the function txinet. Taxable Dividends for Quebec Provincial Taxes (imqdivt) are calculated as Total Dividends Received (idivid) multiplied by the Quebec Dividend Gross-up Rate (QDGUR).

Calculation of Total Income

As in the federal case (see function txinet), Total Income at this stage does not include Family Allowances which cannot be allocated until it is known whether the mother or the father have the higher net income. Total Income (imqitot) is calculated as the sum of:

| | |
|----------|---|
| idiemp: | Earnings From Employment |
| idisenf: | Self-employment Earnings (Non-farm), optionally scaled by the parameter FACTISENF |
| idisefm: | Self-employment Earnings (farm) |
| idiint: | Interest Income |
| idioinv: | Other Investment Income |
| idicqp: | CPP/QPP Benefits Received |
| iditogv: | Other Taxable Government Income |
| idipens: | Pension Income |
| iditoth: | Other Taxable Income |
| imiuib: | Modeled Unemployment Insurance Benefits Received |
| imiotg: | Modeled New Taxable Demogrants |
| imffa: | Modeled Family Allowance Benefits (optional) |

imioas: Modeled OAS Benefits
imqidivt: Modeled Taxable Amount of Dividends for Quebec
imqcapgt: Modeled Taxable Capital Gains and Losses for Quebec

The parameter QFAIFLAG controls whether federal Family Allowances are included in total income. If QFAIFLAG is set to one then imffa is added to imqitot. Also, Employment Expenses (imqdedia) and Other Allowable Employment Expenses (imqalexp) are added into All Deductions from Total Income (imqdedft) and not subtracted from Total Income as in the federal algorithms.

Calculation of Net Income

All Deductions from Total Income (imdedft) is calculated as the sum of:

idrpp: Registered Pension Plan Contributions
idrrsp: Registered Retirement Savings Plan Contributions
iddues: Union and Professional Dues
idtuitn: optionally, Tuition Fees
imqiloss: Allowable Business Investment Loss
idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions (calculated in txinet)
imuic: optionally, UI Contributions (calculated in txinet)
imqceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txqceca)
imqdedia: Employment Expenses
imqalexp: Other Allowable Employment Expenses

Dues as a tax credit

The dues as a deduction is activated by the option QDUESOPT = 1. Starting in 1997, dues are used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Tuition as a tax credit

The tuition as a deduction is activated by the option QTUIOPT = 1. Starting in 1997, tuition is used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Improved Tax System for Self-Employed Workers

The improved tax system for self employed workers in Quebec was added. When activated by QITSFSEW, it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine

the contribution to the Health Services Fund payable by individuals.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CPPXM | CPP/QPP exemptible earnings |
| QALEXP | Quebec proportion of other allowable employment expenses to use |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCPPOPT | Quebec CPP/QPP contribution deduction/credit option [1=deduction,2=credit] |
| QDGUR | Quebec dividend gross-up rate |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEAMAX | Quebec maximum employment allowance deduction |
| QEAP | Proportion of earnings for Quebec employment allowance deduction |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QITSSEF | Quebec percentage of self-employ CPP/QPP contributions to convert to deduction |
| QMAXDX | Quebec maximum disability deduction/amount |
| QMEDANF | Quebec medical allowance lower limit net income fraction |
| QNTCR | Quebec nominal tax credit rate |
| QREPNETFG | Social program repayments reduce Quebec net income flag |
| QSFDISFLAG | Quebec Simplified Form Disability tax credit inclusion flag |
| QSFOPT | Quebec Simplified Form Option (1=general 2=simplified 3=optimized) |
| QSFSMXI | Quebec simplified form spouse maximum income for work sheet |
| QSFTC | Quebec Simplified Form tax credit |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QUICOPT | Quebec UI contributions deduction/credit option [1=deduction,2=credit] |
| WSCF | CPP/QPP contribution rate on employment earnings |
| YMPE | CPP/QPP maximum pensionable earnings |
| INPUT VARIABLES: | |
| hhnin | Number of individuals in household |
| idalexp | Other allowable employment expenses (229) |

| | |
|----------|--|
| idcarry | Carrying charges (221) |
| idcclos | Allowable other years capital loss (253) |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqpp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmedgro | Medical expenses, gross (330) |
| idmovexp | Imputed moving expenses (219) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imcqqpc | CPP/QPP contributions |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imiotg | Other taxable demogrants |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|--|
| imqalexp | Quebec allowable employment expenses |
| imqcapgt | Quebec taxable capital gains |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdedia | Quebec employment allowance |
| imqdedft | Quebec deductions from total income |
| imqduetc | Quebec Dues Tax Credit |

| | |
|----------|--|
| imqidivt | Quebec taxable dividends |
| imqiloss | Quebec Modelled Business investment losses (243) |
| imqinet | Quebec net income |
| imqitot | Quebec total income |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |

txqitax Compute taxable income and individual credits (Quebec)

SUMMARY

The process of computing taxable income for Quebec provincial taxes parallels that of the federal method. The following deductions are calculated and subtracted from Net Income (imqinet) to derive a tentative value for Taxable Income (imqitax):

| | |
|-----------|---|
| imqpendn: | Pension Income Deduction |
| imqintdn: | Interest Income Deduction |
| imqstddn: | Combined Medical Expense Deduction, Charitable Donations and Gifts to Canada or a Province |
| imqdisex: | Disability Deduction |
| imqdedfn: | Calculate Deductions from Net Income |
| imqaxm: | Age Exemption |
| imqexm: | Basic Exemption |

The computation of Taxable Income is completed by the function txqhstr which calculates exemptions for dependents and performs the transfer of deductions between members of the family.

Unlike the algorithms for the calculation of Federal Taxable Income, this function contains no options for converting these deductions into tax credits.

Pension Income Deduction

Depending upon the filer's age and the type of income, pension and retirement income may be eligible for the Pension Income Deduction. Any portion of this deduction not required to reduce a filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Modeled Pension Income Deduction (imqpendn) is calculated as the lesser of:

- a) Eligible Pension Income (idipens), and
- b) the Maximum Pension Income Deduction (QYPDL)

The Modeled Pension Income Deduction (imqpendn) is added to Total Deductions from Net

Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet).

The function txqhstr may transfer some amount of the Pension Income Deduction to the spouse. In this event, adjustments are made to imqdedfn and imqinet but not to imqpendn.

The model assumes that the value of idipens represents pension income eligible for this deduction. No further checks are made to ensure that the pension is of the appropriate type for the age of the filer.

After the reform in 1988, the non-refundable tax credit for pension income (imqritc) was the minimum of the base credit (QYPDL) and the eligible pension income (idipens). Starting in 1996, the calculated deduction for pension income (imqritc) based on the credit (QYPDL) is now subject to turn-down income (QYPTD) and a reduction rate (QYPRR) for pension income (idipens) in excess. In 1996 the reduction is only 50% and 100% after and it is controlled by the phase in variable QYPPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqritc is set to zero.

Interest Income Deduction

Interest income and dividends from Canadian sources are eligible for the Interest Income Deduction. This deduction amounts to the lesser of a fixed amount and the eligible income. Any portion of the deduction not required to reduce the filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Interest and Dividend Income Deduction (imqintdn) is calculated as the lesser of:

- a) the Maximum Interest and Dividend Income Deduction (QYIDL), and
- b) the sum of Interest Income (idiint) and Dividends (imqidivt) minus Carrying Charges (idcarry).

The deduction is added to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet) to derive Taxable Income (imqitax).

Since the Interest and Dividend Income Deduction is transferable between spouses, the function txqhstr may adjust the values of imqdedfn and imqitax. The value of imqintdn is not adjusted to reflect a transfer to the spouse.

Medical Expense and Charitable Donations Deduction

The filer is allowed a deduction for certain medical expenses, charitable donations and gifts to Canada or a province. In 1984, eligible medical expenses were deductible if they exceeded 3% of Net Income. Deductible charitable donations were limited to 20% of Net Income.

Before 1997, the calculation of the medical exemption in txqitax was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997,

(with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

SPSM Implementation

The database contains variables representing the federal Medical Expense Deduction Allowed (immeda) and combined Eligible Charitable Donations and Gifts to Canada or a Province (imchara). Net Medical Expenses represent medical expenses in excess of 3% of Net Income. Eligible Charitable Donations represent charitable donations not exceeding QCHATNF percent of Net Income.

The Combined Medical Expense and Charitable Donations Deduction (imqstdn) is calculated by taking the higher of:

- a) the Standard Deduction (QSTD), which may be zero, and
- b) the sum of Net Medical Expenses Allowed (imqmeda), Eligible Charitable Donations and Gifts to Canada or a Province (imqchara).

The variable imqstdn is added to Total Deductions from Net Income (imqdedfn) which is subsequently used to reduce Taxable Income.

Disability Deduction

As in the case of the federal income tax system, Quebec allows a special deduction for blind persons or persons confined to a bed or a chair. Any unused portion of the Disability Deduction may be transferred to a spouse or supporting parent.

SPSM Implementation

The database contains a value of the Disability Deduction Allowed on behalf of the filer (iddisslf), spouse or dependents (iddisoth). If either of these values are non-zero, the Quebec Disability Deduction (imqdisex) takes on the value assigned to the parameter QMAXDX. imqdisex is added in to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income.

Since this deduction is potentially transferable, the function txqhstr checks the relative net incomes of the head and spouse and performs any necessary transfers. The values of imqdedfn and imqitax are adjusted to reflect these changes. The value of imqdisex is not updated if the Disability Deduction is transferred to a spouse.

The model does not transfer unused portions of the Disability Deduction from dependant to parent. This probably does not cause a large error since the value on the database already takes into account amounts transferred from the spouse or dependents. The transfer between head and spouse is repeated in txqhstr because the estimate of Net Income is more accurate at this stage than during the database creation process.

Calculate Deductions from Net Income

The variable imqdedfn stores the value of All Deductions from Net Income. It is calculated

as the sum of:

| | |
|-----------|---|
| imqstdn: | Combined Medical Expense and Charitable Donations Deduction |
| imqintdn: | Interest and Dividend Income Deduction |
| imqpendn: | Pension Income Deduction |
| imqdisex: | Disability Deduction |
| imuibr: | Unemployment Insurance Benefits Reimbursed |
| idclos: | Capital Losses from Other Years |
| idnclos: | Non-capital Losses from Other Years |

The variable imqdedfn is subtracted from Net Income (imqinet) and may be adjusted in the function txqhstr if deductions are transferred between spouses.

The model does not include the Exemption for Members of a Religious Order, the Exemption for Dependents Aged 21 and Over Suffering from a Physical or Mental Infirmary, Deduction for a Home Relocation Loan, the Sociétés de placements dans l'entreprise québécois Deduction, or the Capital Gains Deduction.

Basic Exemption

Each filer claims a Basic Exemption which is subtracted from Net Income. The Amount of the Basic Exemption for Quebec Provincial Income Taxes is increased occasionally.

SPSM Implementation

For all filers with income, the Quebec Basic Exemption (QBXM) is added to the variable imqexm which accumulates personal exemptions. imqexm is subsequently added to imqpex which accumulates all exemptions and is later subtracted from Net Income imqinet.

Age Exemption

All filers who were 65 years of age or older during the taxation year claim the Age Exemption. The value of the Age Exemption is increased occasionally. Any unused portion of the Age Exemption may be transferred to the spouse.

SPSM Implementation

The Modeled Quebec Age Exemption (imqaxm) is assigned the value of the parameter QAXM for all filers 65 or over (idage \geq 65) if they have income (imninc $>$ 0). This value is added to imqexm (All Personal Exemptions on behalf of filer) which is subsequently added to imqpex (All Personal Exemptions) and subtracted from Net Income imqinet. The function txqhstr may transfer the unused portion of the Age Exemption to the spouse and make corresponding adjustments to the value of imqinet but not to imqaxm.

Starting in 1996, the calculation of the age exemption tax credit is subject to turndown income (QAXTD) and a reduction rate (QAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QAXPI.

Medical exemption calculation

Before 1997, the calculation of the medical exemption was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997, the calculation of the medical exemption is transferred to txqhstr (with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. Beginning in 2000, there are two tax credit rates applied to gifts in Quebec. The activation flag, QGIFTHCR, is used to implement the calculation. Allowable gifts up to QGIFTL1 use the QNTCR. The higher credit rate QGFTCR is applied to allowable gifts over QGIFTL1. The total value of the tax credit is imqchatc.

CROSS REFERENCE

| Function | Description |
|--------------------|---|
| INPUT PARAMETERS : | |
| QAXM | Quebec age exemption/amount |
| QAXPI | Quebec age exemption reduction phase in |
| QAXRR | Quebec age exemption reduction rate |
| QAXTD | Quebec age exemption income turn down |
| QBXN | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCHATNF | Quebec charitable donations maximum % net income |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QGFTCR | Quebec credit rate for gifts over upper limit |
| QGIFTFLG | Quebec max to gifts to Federal/Province/Crown activation flag |
| QGIFTHCR | Quebec higher tax credit on large gifts activation flag |
| QGIFTL1 | Quebec minimum gift limit subject to higher credit rate |
| QGIFTOPT | Quebec gifts as tax credit |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSCFLAG | Quebec Health Services Fund Contribution calculation flag |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QMAXDX | Quebec maximum disability deduction/amount |

QMEDALL Quebec medical allowance maximum lower limit
 QMEDANF Quebec medical allowance lower limit net income fraction
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDOPT Quebec Medical Tax Credit option
 QNFSDED Quebec deduction of net federal supplements (SPA and GIS)
 from net income flag
 QNTPCR Quebec nominal tax credit rate
 QREPNETFG Social program repayments reduce Quebec net income flag
 QSADED Quebec deduction of social assistance benefits from net
 income flag
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QYPDL Quebec deduction limit for pension income
 QYPPI Quebec deduction phase-in for pension income
 QYPRR Quebec deduction reduction rate for pension income
 QYPTD Quebec deduction turn down for pension income

INPUT VARIABLES:

hhnin Number of individuals in household
 idage Age
 idcagpex Capital gains exemptions (254)
 idcarry Carrying charges (221)
 idcfrh Relationship to census family head
 idcharit Charitable donations (340)
 idclos Allowable other years capital loss (253)
 iddalimo Alimony paid (220)
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 idemplo Employee home relocation loan dedn (248)
 idgifts Gifts to Canada/provinces/culture (342)
 ididiv Dividend income (actual)
 idiemp Wages & salaries
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idmedgro Medical expenses, gross (330)
 idnclos Allowable other years non-capital loss (252)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idspoflg Person has spouse
 idstkded Stock option deduction (249)
 imigis GIS benefits
 imioas OAS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 imninc No income flag
 imoasr OAS recovery
 imqalexp Quebec allowable employment expenses
 imqcapgt Quebec taxable capital gains
 imqcppse Quebec self-employ. QPP/PPP Cont. deduction
 imqiloss Quebec Modelled Business investment losses (243)
 imqinet Quebec net income
 imqitot Quebec total income
 imqsfflg Quebec simplified tax form flag 0=general 1=simplified
 imrepay Social Benefits Repayments
 imuibr UI benefit recovery

OUTPUT VARIABLES:

| | |
|----------|--|
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |
| imqchara | Quebec allowable charitable donations(calc) |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqdedfn | Quebec all deductions from net income |
| imqdistc | Quebec disability tax credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqitax | Quebec taxable income |
| imqmeda | Quebec medical expenses allowed |
| imqritc | Quebec retirement income tax credit |
| imqstkdd | Quebec modelled Stock option deduction (249) |

txque Compute provincial taxes for Quebec

SUMMARY

For residents of Quebec, the calculation of provincial taxes roughly approximates the process of calculating federal taxes. The SPSM divides this task among three functions which are described in another section of this document:

1. txqinet calculates total and net income tax
2. txqitax calculates a provisional value for taxable income subject to updating by txqhstr
3. txqhstr performs the calculation of personal exemptions for dependents and the allocation of deductions between head and spouse

The value of Taxable Income (imqitax) calculated by txqhstr is used to look up a value for Basic Provincial Tax (imbpt) in the tax table (QTX).

The Quebec Dividend Tax Credit (imqdtxc) is calculated as a proportion (QDTCR) of Taxable Dividends (imqidivt) and is subtracted from Basic Provincial Tax to derive Provincial Tax Payable (imtxp). Also subtracted is the Quebec Tax Reduction which is a proportion (QTRP) of Provincial Tax Payable (imtxp).

txsask Compute provincial taxes for Saskatchewan

SUMMARY

When STXFLG is off, Saskatchewan Basic Provincial Tax is a proportion (SPTF) of Basic Federal Tax (imbft). A flat surtax, calculated as a proportion (SFTAX) on Net Income (iminet) is added to Basic Tax.

The 2000 budget announced that Saskatchewan would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (STXFLG), a provincial tax table (SPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (SPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (SBXM) |
| impatxc | Age amount tax credit | (SAXM, SAXRR, SAXTD, SAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (SMXM, SMXMT, SEMXM, SEMXMT) |
| impcgtc | Caregiver tax credit | (SCGTC, SCGTCFLG, SCGTCTC, SCGTCTD, SCGTCTK) |
| impchrctc | Charitable donations | (SCHATL1, SCHATR1, SCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (SMAXDX) |
| impdtxc | Dividend tax credit | (SDTCR) |
| impedtxc | Education tax credit | (SEDXPM, SMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (SYPNDL) |
| imptutxc | Tuition Tax credit | (SMAXET) |
| impuictc | EI contributions tax credit | |
| imsctxc | Saskatchewan Non-refundable child tax credit | (SCNTC) |
| imssstxc | Saskatchewan senior supplement tax credit | (SSSTC) |

The option to apply a minimum tax is controlled using SAMTOPT.

Adjusted Saskatchewan Tax Payable (before a tax reduction is applied, is stored in the temporary variable a) is calculated as Basic Saskatchewan Tax (imbpt) plus a proportion (SSF) of Basic Saskatchewan Tax exceeding the Saskatchewan Surtax Level (SSCI).

Saskatchewan also implements a system of tax reductions for senior citizens and persons with dependent children. The Basic Tax Reduction (STRBR) is augmented by the Senior Citizen's Tax Reduction (STRSC) if the filer is age 65 or older. A tax reduction per child under 18 (STRPC) up to a maximum total for all children (STRCL) is also added. The number of children claimable for this tax reduction is taken from imnfach, the number of children eligible for Family Allowances.

The total potential tax credit is reduced by a proportion (STRRR) of the tax credit exceeding Adjusted Saskatchewan Tax Payable a to derive Reduced Saskatchewan Tax Payable imtxp.

Starting in 1992, a surtax (SDSF) for the reduction of the deficit is applied to the tax (imtxp). In 1995, an amount (SDSRA) was deducted from the surtax.

The Saskatchewan labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Saskatchewan provincial credit is modeled as SLVCRT times the gross amount up to SLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Saskatchewan Child Benefit and Saskatchewan Employment Supplement announced in the 1998 budget are modeled. When the SCBFLG is activated, families receive a benefit which depends on the number of children in the family (SCB1, SCB2, and SCB3). The benefit is reduced in two stages. Net family income greater than SCBTD1 and less than SCBTD2 is reduced at a rate SCBRR1 which depends on the number of children in the family. The benefit is further reduced at a rate of SCBRR2 for income over SCBTD2.

The Saskatchewan Employment Supplement is a monthly program. In the SPSD/M, the program is modeled in a yearly fashion. The maximum benefit is derived by multiplying a family's employment income in excess of SESCO (up to a maximum of SESMXIP) by a rate (SESR) which depends on the number of children in the family. The benefit is reduced for any family net income in excess of SESTD by a SESRR rate. The supplement started in mid-1998 and hence a phase-in rate SESPI was applied.

The estimate resulting from the SPSD/M may differ from the administrative totals. In modeling the program, employment income is assumed to be evenly distributed during the year. No maintenance income (e.g. child or spousal support) is added to employment income. The program is administered monthly with eligibility being determined depending on each month's income.

The Saskatchewan Sales Tax Credit announced in their 2000 Budget is now modelled. The Saskatchewan Sales Tax Credit is activated when SSTCFLAG is set to 1.

The Saskatchewan Sales Tax Credit was introduced in 2000 and became effective April 1, 2000 to offset the effect of sales taxes on lower income earners. SSTCPI represents the phase in rate for the program. The Saskatchewan Sales Tax Credit (imsstc) will consist of an adult component and a child component. This credit will be fully refundable and will be assigned to the spouse with the highest income.

The adult component of the Saskatchewan Sales Tax Credit will rise at a rate of SSTCBASPIR of individual net income up to a maximum (SSTCBAS). It will be reduced at a rate of SSTCRR as family net income increases above SSTCBASTD. An individual will also be eligible for SSTCSP in additional benefits for a dependent spouse or equivalent. This amount will be reduced at a rate of SSTCRR as family net income rises over SSTCSPTD.

The child component of the Saskatchewan Sales Tax Credit will provide an additional

SSTCKID per child. For two-parent families, the maximum child component will be SSTCKID + SSTCKID. For single parent families, the first child will be eligible for the adult benefit of SSTCSP and the maximum child component will be SSTCKID. The child component of the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC1KIDTD for families with one qualifying child. For families with more than one qualifying child, the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC2KIDTD.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| SAMTOPT | Sask. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| SAMTPCTF | Sask. amt rate as pct of additional fed tax due to minimum tax |
| SAMTPCTM | Sask. amt rate as pct of federal minimum tax amount |
| SAMTTX | Sask. amt rate as tax on adjusted income |
| SAXM | Sask. Age Amount |
| SAXPI | Sask. Age Amount phase in rate for 1994 and beyond |
| SAXRR | Sask. Age Amount credit reduction rate |
| SAXTD | Sask. Age Amount net income turndown |
| SBXM | Sask. Basic Personal Exemption/amount |
| SCB1 | Sask Child Benefit max for 1st child |
| SCB2 | Sask Child Benefit max for 2nd child |
| SCB3 | Sask Child Benefit max for 3rd and additional child |
| SCBFLG | Sask Child Benefit activation flag |
| SCBRR1 | Sask Child Benefit 1st reduction rate [number of kids] |
| SCBRR2 | Sask Child Benefit 2nd reduction rate [number of kids] |
| SCBTD1 | Sask Child Benefit 1st turndown |
| SCBTD2 | Sask Child Benefit 2nd turndown |
| SCGTC | Sask. Caregiver Tax Credit |
| SCGTCFLG | Sask. Caregiver Tax Credit activation flag |
| SCGTCTC | Sask. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| SCGTCTD | Sask. Caregiver Tax Credit Turn Down Income |
| SCGTCTK | Sask. Caregiver tax credit take-up rate by income level [employment income,rate] |
| SCHATL1 | Sask. Charitable Donations amount level 1 |
| SCHATR1 | Sask. Charitable Donations tax credit rate 1 |
| SCHATR2 | Sask. Charitable Donations tax credit rate 2 |
| SCNTC | Sask. non-refundable child tax credit amt per child |
| SDSF | Saskatchewan provincial deficit surtax fraction |
| SDSRA | Saskatchewan deficit surtax reduction rate |
| SDTCR | Sask. dividend tax credit rate |

| | |
|-----------------------------|---|
| SEDXPM | Sask. Education Amount per month |
| SEMXM | Sask. equivalent to married amount |
| SEMXT | Sask. equivalent to married turndown level |
| SESCI | Sask Employment Supplement cut in level |
| SESMIN | Sask Employment Supplement minimum benefit |
| SESMXIP | Sask Employment Supplement maximum benefit income point |
| SESPI | Sask Employment Supplement phase-in |
| SESR | Sask Employment Supplement benefit rate [number of kids] |
| SESRR | Sask Employment Supplement reduction rate |
| SESTD | Sask Employment Supplement turndown level |
| SESTK | Sask. Employment Supplement take up by number of kids |
| SESYPI | Sask Employment Supplementary benefit for under 13 phase-in |
| SESYR | Sask Employment Supplementary benefit for under 13 rate |
| [number of kids] | |
| SESYRR | Sask Employment Supplementary benefit for under 13 |
| reduction rate | |
| SFTAX | Saskatchewan provincial flat surtax rate on net income |
| SHEATFAM | Saskatchewan Home Heating Assistance Rebate for families |
| SHEATFLG | Saskatchewan Home Heating Assistance Rebate activation flag |
| SHEATSNG | Saskatchewan Home Heating Assistance Rebate for singles |
| SLVCMAX | Maximum Sask. labour-sponsored funds tax credit allowed |
| SLVCRT | Percent of Sask. labour-sponsored funds cost allowed as |
| credit | |
| SMAXDX | Sask. Maximum Disability deduction/amount |
| SMAXET | Sask. maximum on transfer of education and tuition amount |
| SMXM | Sask. married amount |
| SMXMT | Sask. married amount turndown level |
| SPNTR | Sask. provincial non-refundable tax credit rate |
| SPTC | Saskatchewan political contribution table [total |
| donations,donation allowed] | |
| SPTCBEN | Maximum Saskatchewan political tax credit allowed |
| SPTF | Saskatchewan provincial tax fraction |
| SPTX | Sask. tax table [taxable income,basic provincial tax] |
| SSCI | Saskatchewan surtax cut-in |
| SSF | Saskatchewan provincial high income surtax fraction |
| SSSTC | Sask. senior supplement tax credit |
| SSTC1KIDTD | Sask. sales tax credit child amount turndown if only 1 |
| child | |
| SSTC2KIDTD | Sask. sales tax credit child amount turndown if more than 1 |
| child | |
| SSTCBAS | Sask. sales tax credit base amount |
| SSTCBASPIR | Sask. sales tax credit base amount phase in rate |
| SSTCBASTD | Sask. sales tax credit base amount turndown |
| SSTCFLAG | Sask. sales tax credit activation flag |
| SSTCKID | Sask. sales tax credit child amount |
| SSTCPI | Sask. sales tax credit phase in |
| SSTCRR | Sask. sales tax credit reduction rate |
| SSTCSP | Sask. sales tax credit spousal amount |
| SSTCSPTD | Sask. sales tax credit spousal amount turndown |
| SSTR | Saskatchewan spousal & married equivalent tax reduction |
| STRBA | Saskatchewan tax reduction base amount |
| STRBR | Saskatchewan basic provincial tax reduction |
| STRCL | Saskatchewan child tax reduction limit |
| STRPC | Saskatchewan tax reduction per child |
| STRRR | Saskatchewan tax reduction reduction rate |
| STRSC | Saskatchewan tax reduction for senior citizens |
| STXFLG | Sask. tax on taxable income activation flag |

SYPNDL Sask. Pension Income Deduction Amount

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| imuic | UIC contributions |

| | |
|----------|---|
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| impptc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impттxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imscb | Saskatchewan Child Benefit |
| imsctxc | Saskatchewan Non-refundable child tax credit |
| imses | Saskatchewan Employment Supplement |
| imssstxc | Saskatchewan senior supplement tax credit |
| imsstc | Saskatchewan refundable sales tax credit |
| imtxp | Provincial income tax payable |

ui Compute UI benefits

SUMMARY

Unemployment Insurance (UI) and Employment Insurance (EI) benefits are calculated by a set of functions which mimic application of UI/EI regulations to individual employment and

claim histories. These histories are summaries of administrative data from a 1% sample of persons with some UI/EI claim activity . Benefits are first calculated on a claim basis. Adjustments are then made to allow for claims overlapping more than one calendar year. Finally, taxable benefits received by individuals within a calendar year are determined.

Program Description

Unemployment/Employment insurance is an income support program financed jointly by employees, employers and the federal government. It is intended to provide income maintenance during temporary interruptions in employment. As such, it is not a universal program. Among those excluded from coverage are persons who do not participate in the labour force, the self-employed (other than fishermen) and persons who have exhausted benefit entitlements.

SPSM Implementation

The SPSM implementation of the UI/EI program has distinct steps representing application of program regulations to a given claim. The function `ui` operates as a controller which calls the sub-functions which apply UI/EI regulations to each claim and each UI/EI claimant within a household and returns the benefits received by individuals for the calendar year. Claimants may have one or two claims overlapping the survey calendar year. Payments within the calendar year are determined assuming benefits are paid on consecutive weeks.

For SPSM purposes, the unemployment regions are urban size classes within each province. These are not the regions defined for administration of the UI/EI program. The use of proxy unemployment regions is required to ensure data confidentiality.

For purposes of determining entitlements, the claim histories include the initial claim type `ucbtyp` (i.e., Maternity, Sickness, Retirement, Fishing or Regular) and a type change flag (i.e., indicating that a Sickness claim, for example, was changed to a Regular claim within the Initial Phase). SPSM deems the type change to have taken place immediately after the claim is established and does not attempt to subdivide the Initial Phase into Special and Regular periods. Since type change takes place, the special benefits totals (e.g., Sickness benefits) can not be determined by eliminating the type (e.g., by setting eligibility requirements high) and calculating the reduction in benefits. A second claim type (`ucmtyp`) is also imputed. If there was more than one type of benefit received within a claim, `ucmtyp` represents the claim type which had the majority of weeks. By turning on `UIEIMTYPFLG`, `ucmtyp` is modelled instead of `ucbtyp`.

The UI/EI algorithm has no behavioral response capacity, so that, for example, no new claims can be created. However, there have been more people with claims imputed in the base year than was necessary. The means that the number of persons with claims can be modified using the `UITARGET` and `UIEITKP` parameters. Similarly, the duration of modeled claims does not exceed observed durations, except when the following parameters are used: `UIREGWKFCT`, `UITRNWKFCT`, `UIOTHWKFCT`, `UIEXTMATWKS`. Unless these parameters are modified, the assumption is that individuals would not increase their duration on claim, if their entitlements were increased. However, no restriction is placed on

durations within each phase. Consequently, the elimination of a phase need not reduce the overall duration of a claim.

There are several sub-functions contained in the *ui* function. The first called is *uicl*m which calculates benefits for a single claim. *uicl*m does this by first calling three sub-functions which test for eligibility requirements based on claim type, repeat claim status, and regional unemployment rates (*uielent*, *uielrep*, *uielrge*). *uicl*m next calls three sub-functions which determine the weeks of entitlement in the Initial, Labour Force Extended and Regional Extended Phases (*uiwkbas*, *uiwklfe* and *uiwkrge*). The *ui* function then calls *uitrnc*l*m* which calculates training and other benefits (excluding regular, fishing, sickness, maternity, and parental which are calculated in *uicl*m). If a second claim is required *uicl*m and *uitrnc*l*m* are called again. Each function and sub-function are briefly described below.

ui

The *ui* function serves to pass information about each individual with a UI/EI claim in a household to *uicl*m. If an individual has more than one claim, modeled weeks of benefits in the qualifying period are computed for the first claim and passed to *uicl*m when the second claim is processed. UI/EI benefits for a calendar year are returned.

***uicl*m**

The sub-function *uicl*m processes distinct claims from the information passed to it by *ui*. In the event of a repeat claim, *ui* passes information about modeled claim activity in the qualifying period. Modeled changes to UI/EI regulations may produce important differences in first claim activity, thereby effectively changing the status of the second claim.

The *uicl*m function operates at a claim rather than an individual level. It calls *uielent*, *uielrep* and *uielrge* to establish eligibility. It then changes the type of eligible claims, where appropriate.

Once a claim is established, *uicl*m calls *uiwkbas*, *uiwklfe* and *uiwkrge* to determine the weeks of entitlement in each of the Initial, Labour Force Extended and Regional Extended Phases, respectively. The claim is represented by four pointers which identify:

Pointer #1 - 1st week of benefits (following waiting period)

Pointer #2 - 1st week of Labour Force Extended benefits

Pointer #3 - 1st week of Regional Extended benefits

Pointer #4 - week after end of Regional Extended Benefits.

Weeks are identified by integers with the week of January 1 being zero. The differences between succeeding pointers will initially equal the entitlement on the appropriate phase. *uicl*m then calls a utility function *uisqz* which ensures that interval between #1 and #4 does not exceed the original claim (minus any training or other weeks) or the maximum allowable duration of a claim. A subsequent call to *uisqz* produces a second set of (windowed) pointers that do not include any weeks outside the calendar year.

The *uicl*m function then calculates the weekly benefits. Benefits are the product of phase weeks times the weekly benefit rate for each phase summed over phases. However, benefit

rates may be increased or decreased by the following modelled programs: minimum divisor rule (see UIEIDIVFLG), the intensity rule (see UIEIFIFLG), an enhanced rate should there be dependents (see UIENSTRO), and the family supplement (see UIEIFSFLG).

uielent

The uielent sub-function applies eligibility tests based on the minimum weeks or hours of insurable employment in the qualifying period required for each initial claim type. These are basic tests which may be superseded by special tests applied to repeaters, new entrants/re-entrants, and other regular claimants. The function sets a flag indicating eligibility status.

uielrep

The uielrep function performs special eligibility tests that apply to repeaters only. The required weeks of insurable employment depend on the regional unemployment rate and on weeks of benefits in the qualifying period. The function performs a two dimensional table lookup to determine whether eligibility is established. The function sets a flag indicating eligibility status.

uielrge

Claims that are initiated as regular claims are subject to variable entrance requirements that depend on the regional unemployment rate. The function uielrge performs the table lookup necessary for these tests. The function sets a flag indicating eligibility status.

uiwkbas

The function uiwkbas determines entitlements in the Initial Phase. For special benefit types (i.e., claims that remain maternity, fishing, sickness or parental), this is the total claim entitlement and is determined by a table lookup. For regular claims, entitlements, up to a maximum number of weeks, are determined in proportion to weeks or hours of insurable employment in the qualifying period up to a maximum number of weeks.

uiwklfe

The function uiwklfe determines entitlements in the Labour Force Extended Phase. As in the Initial Phase, entitlements are determined in proportion to weeks, above a minimum, of insurable employment in the qualifying period.

uiwkrge

The function uiwkrge determines entitlements in the Regional Force Extended Phase. Entitlements are determined by the regional unemployment rate.

uitrnclm

The function uitrnclm is called by the ui function after the uiclm function. Therefore, regular, sickness, maternity, fishing, and parental benefits have already been assigned. The uitrnclm function assigns first other types of benefits, then training benefits. Other types of

benefits will include everything not included in regular, sickness, maternity, parental, fishing or training. The list of other benefits included will vary depending on the year of the program. But they may include such items as job creation benefits, work sharing benefits, and self-employed assistance.

Other benefits are calculated using the imputed weeks of other benefits (ucothwk) and a weekly benefit rate (ucothbr). These can be adjusted using UIOTHWKFCT and UIOTHBNFCT. Training benefits are calculated in a similar manner using uctrnwk, uctrnbr, UITRNWKFCT, and UITRNBNFCT. There are no eligibility tests for these types of benefits. New pointers, ubp5 and ubp6 are created to signify the end of these benefit phases.

Adjusting UI/EI

Some parameters were added to the model in order to mimic some historical changes to the UI/EI program which the model cannot do without changes to the database. The UITARGET and UIEITKP parameters allow the users to increase or decrease the number of UI/EI recipients. The following parameters: UIREGWKFCT, UITRNWKFCT, UIOTHWKFCT, UIEXTMATWKS allow the users to increase the number of weeks of benefits over and above the weeks claimed on the database. UITRNBNFCT and UIOTHWKFCT allow the benefit rate for training and other benefits to be increased.

1 - Qualifying for benefits is now based on hours of work instead of weeks of work

Since the SPSD does not contain total hours of work, these are derived using the weeks of work prior to claim (ucwwork) multiplied by a new variable: the average weekly hours of work (ucwchr) which was imputed from the Survey of Labour and Income Dynamics. For more information, see UIREGHRMIN, UIMATHRMIN, UISICHRMIN,.

As for fishing benefits, qualification is based on earnings in the past 31 weeks. These are derived using weeks of work prior to claim (ucwwork) and average weekly earnings (ucern). It is assumed that the weeks ucwwork occurred immediately prior to the start of the claim. See UIFSHERMIN.

2 -The Family Income Supplement was added

When UIEIFSFLG is set to 1, the Family supplement is calculated. The total amount of the family supplement paid on a claim is ubclmfs. The total amount of family supplement paid on a claim in the calendar year is ubcalfs.

The Family Supplement was introduced as part of the Employment Insurance system reform introduced in 1995. It increases the basic benefit of families with low income. It replaces the older program which gave an enhanced rate for individuals with low income (in the SPSD/M this older program was controlled by UIENSRATE, UIDEPOPT, UIENSRTCO).

There are two methods of calculating the Family Supplement. When UIEIFSOPT is set to 1, then family supplement is directly tied into the Canada Child Tax Benefit (imfcben). Families which are eligible for the Child Tax Benefit receive the weekly amount of the benefit in addition to their regular Employment Insurance. It is reduced at a rate (UIEIFSRR) over incomes greater than UIEIFSRL.

Some simplifications were made in order to implement this program in the SPSM. The calculation of the Canada Child Tax Benefit is done after the calculation of EI in the model since it requires net income. But it requires the previous year's net income which is estimated as PYINC times the current year's net income.

When the Family Supplement is activated, the tax/transfer driver (drv) is run through twice per eligible household. The first time, no one will get a family supplement since the child tax benefit is equal to zero. The value of the benefit is saved (in cceopt) and drv is called again. This time, the previously saved value for the child tax benefit is used to calculate the family supplement. The family supplement will be slightly inconsistent with the child tax benefit since the latter will be recalculated and may be slightly smaller than the one used for deriving the family supplement since family net income will increase due to the family supplement.

Another simplification in deriving the family supplement derives from the fact that the SPSM assumes that the Child Tax Benefit is given in one lump sum amount in July. Therefore in the case of the Family supplement, the rules governing the Child Tax Benefit may be a year off if the benefit is received in the first half of the year.

When UIEIFSOPT is set to 2, the family supplement is calculated independently of the child tax benefit. First the number of children under the age of 7 is calculated (imuiydep). By going through the drv twice, the family's net income (prior to the addition of the family supplement) is available and the previous year's income is derived by multiplying it by PYINC. The family supplement is then derived by looking up the base value (UIEIFS1 for families with 1 child, UIEIFS2 for families with 2 children, and UIEIFS3 for families with 3 or more children). A supplement for each child over and above the third is added (UIEIFSTOPUP) as is a supplement for each child under the age of 7 (UIEIFSYNG).

The Family supplement rules changed on July 1999. Since the methodology under UIEIFSOPT = 1 would be off by a year, it was decided to treat all of 1999 under the methodology introduced in July 1999 (UIEIFSOPT = 2).

Under both options, EI weekly benefits including the family supplement cannot exceed a proportion (UIEIMFSP) of the claimant's weekly earnings (ubern). Nor can EI benefits, including the family supplement exceed the base rate (UIEIRATE) times the maximum weekly earnings (UIERNMAX).

Also, under both options, when the UIEIFIFLG is turned on, people who receive the family supplement are exempted from the intensity rule.

3 - The Intensity Rule

For persons receiving regular or fishing EI benefits and who did not receive the Family Income Supplement, the intensity rule was applied. The benefit rate (UIEIRATE) depends on the number of weeks of EI collected in the past. See UIEIFIFLG, UIEIRATE, UIEIYRS, ubeiwbp, ucy1, ucy2, ucy3, ucy4, ucy5 for more details.

4 -The Minimum Divisor

In order to obtain their maximum benefits, EI claimants must work two weeks more than the minimum entrance requirements. The minimum divisor rule is controlled by UIEIDIVFLG and UIEIDIV.

5 -Minor Changes

There was a minor change in the method used to derive training weeks and training benefits.

The method of using the UI/EI regular benefit weeks adjustment factor UIREGWKFACT was adjusted.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| PYINC | Deflator to calculate previous year income |
| UIBASFLAG | Basic phase calculation flag (UI and EI) |
| UIBASOPT | UI reform option [1=normal, 2=Apr'89] (UI and EI) |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIDEPOPT | UI dependency option [1=normal, 2=Feb'94] (UI only) |
| UIEFFFLAG | Observed effective weekly benefit rate flag (UI and EI) |
| UIEIDIV | EI minimum divisor [uer][divisor] (EI only) |
| UIEIDIVFLG | EI minimum divisor flag (EI only) |
| UIEIFIFLG | EI intensity rule exemption for family supplement receivers (EI only) |
| UIEIFS1 | Max fam supplement 1 child (EI only) |
| UIEIFS2 | Max fam supplement 2 children (EI only) |
| UIEIFS3 | Max fam supplement 3+ children (EI only) |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIFSOPT | UI EI calculate family supplement option (EI only) |
| UIEIFSRL | UI EI family supplement reduction level (EI only) |
| UIEIFSRR | UI EI family supplement reduction rate (EI only) |
| UIEIFSTOPUP | Max fam supplement top up for more than 3 kids (EI only) |
| UIEIFSYNG | Max fam supplement top up for young children (EI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIMTYPFLG | Flag to model main benefit type (UI and EI) |
| UIEINEREFLG | Flag to check for hours for new entrants and re-entrants (EI only) |

| | |
|----------------------------|---|
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIRATE | Benefit rate under EI reform [Past Wks ben][Rate] (EI only) |
| UIEITKP | UI EI takeup rate [index] : index based on prov, sex, age, |
| weeks | |
| UIEIYRS | Number of years of previous EI benefits calculated (EI |
| only) | |
| UIENSRATE | Enhanced rate for basic phase (UI only) |
| UIENSRTCO | Enhanced rate cutoff (UI only) |
| UIENTFLAG | Basic entrance requirements flag (UI and EI) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIEWK | Entitlement (weeks) [wkwrk, uer] (UI and EI) |
| UIEXTMATWKS | Additional weeks for maternity - behavioural response (UI |
| and EI) | |
| UIFLAG | UI/EI Activation flag (UI and EI) |
| UIFSHERMIN | Min. earnings to qualify for fish. benefits [unempl. rate] |
| (EI only) | |
| UIFSHMINWK | Minimum weeks to qualify for fishing benefits (UI only) |
| UILFEFLAG | Labour force extended phase calculation flag (UI only) |
| UILFEMIN | Weeks worked in qualifying period [UILFEWKS index] (UI |
| only) | |
| UILFERATE | Benefit rate for labor force extended phase (UI only) |
| UILFEWKS | Weeks LFE entitlement [UILFEMIN](UI only) |
| UIMATHRMIN | Minimum hours to qualify for maternity benefits (EI only) |
| UIMATMINWK | Minimum weeks to qualify for maternity benefits (UI only) |
| UIMAXBASEWKS | Maximum number of weeks - regular (UI and EI) |
| UIMAXDUR | Maximum duration of a UI claim (UI and EI) |
| UIMAXFSHWKS | Maximum number of weeks - fishing (UI and EI) |
| UIMAXMATWKS | Maximum number of weeks - maternity (UI and EI) |
| UIMAXPARWKS | Maximum number of weeks - parental (UI and EI) |
| UIMAXSICWKS | Maximum number of weeks - sickness (UI and EI) |
| UINEREHRMIN | Minimum hours to qualify for new entrant or re-entrant (EI |
| only) | |
| UIOTHBNFCT | UI other benefits per week adjustment factor (EI and EI) |
| UIOTHWKFCFCT | UI other benefits weeks adjustment factor (UI and EI) |
| UIREGHRMIN | Min. hours to qualify for reg. benefits [unempl. rate] (EI |
| only) | |
| UIREGMINWK | Minimum weeks to qualify for regular benefits (UI only) |
| UIREGWKFCFCT | UI regular benefit weeks adjustment factor (UI and EI) |
| UIREPPREV | Weeks of insurable employment [weeks] (UI only) |
| UIREPUER | Regional unemployment rate [rates] (UI only) |
| UIREPWWKD | Repeater eligibility requirements [weeks x rates] (UI only) |
| UIRGEFLAG | Regional extended phase calculation flag (UI only) |
| UIRGEMIN | Unemployment rate for Regional Extended entitlement |
| [UIRGEWKS index] (UI only) | |
| UIRGERATE | Benefit rate for regional extended phase (UI only) |
| UIRGEWKS | Weeks Regional Extended entitlement [UIRGEMIN] (UI only) |
| UIRGNFLAG | Regional requirements flag (UI only) |
| UIRGNMIN | Regional unemployment rate (UI only) |
| UIRGNWKS | Weeks required for eligibility (UI only) |
| UIRPTFLAG | Repeater requirements flag (UI only) |
| UISICHRMIN | Minimum hours to qualify for sickness benefits (EI only) |
| UISICMINWK | Minimum weeks to qualify for sickness benefits (UI only) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| UITRBNFCT | UI training benefit per week adjustment factor (EI and EI) |
| UITRNWKFCFCT | UI training benefit weeks adjustment factor (UI and EI) |
| UIWAITWKS | Minimum waiting period all claims (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hdurb | Size of urban area |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| hhnfn | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinOTH | Other money income (non-taxable) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditOTH | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idnfn | Person's nuclear family [pointer] |
| idninco | No income flag (SPSD variables) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| iduirank | Predicted ranked likelihood of getting UI |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imuidpfg | UI claimants has dependents flag |
| nfn | First person in nuclear family [pointer] |
| nfnch | First child in nuclear family [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnpers | Number of persons in nuclear family |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucgotpa | Received paternity benefits |
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucyl | Weeks on UI in first year before claim |

| | |
|------|---|
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

OUTPUT VARIABLES:

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imuibr | UI benefit recovery |
| imuidpfg | UI claimants has dependents flag |
| imuiydep | Number of dependents under 7 for family supplement (EI only) |
| ubcalfs | Family supplement paid in calendar year |
| ubcalpd | Benefits paid in calendar year |
| ubcalwk | Weeks on claim in calendar year |
| ubclmfs | Family supplement paid on claim |
| ubclmpd | Benefits paid on claim |
| ubclmwk | Weeks on claim |
| ubeiwbp | Weeks of past EI benefits |
| ubern | Modelled insurable weekly earnings |
| ubp1 | Week # of first payment |
| ubp1c | Week # of first payment (windowed) |
| ubp2 | Week # of start of second phase |
| ubp2c | Week # of start of second phase (windowed) |
| ubp3 | Week # of start of third phase |
| ubp3c | Week # of start of third phase (windowed) |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ubp5 | Week # of last other type of ui/ei payment |
| ubp5c | Week # of last other type of ui/ei payment (windowed) |
| ubp6 | Week # of last training payment |
| ubp6c | Week # of last training payment (windowed) |

vardef Define structure member as an SPSM variable

SUMMARY

The vardef function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.



SPSD/M 

Algorithm Guide

This guide is designed primarily to provide *SPSD/M* users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black box and glass box users.

September 21, 2001



Canada

Introduction

The Algorithm Guide provides SPSD/M users with a description of the specific personal tax and cash transfer programs which are simulated and the specific way in which this is done. An attempt is also made to guide and caution the user, where necessary, as to the interpretation of the results. Also included in this guide are descriptions of processing and utility algorithms which have a significant effect on the results. The guide is intended for both black box and glass box users.

The guide is organized into three main sections. After the first section (this Introduction), there is a section describing the algorithms organized into logical groupings. This is followed by an alphabetically-arranged encyclopaedic section that lists all algorithms in the SPSM.

These modules are referred to as functions. Function names are printed in lower case (e.g. `txinet`, `txcalc`). Sub-functions are defined within the function that calls them and are also shown in lower case (e.g. `uicl`, `gissub`). Both regular and local variables are shown as usual in lowercase (immicons). These local variables may not be used for reporting purposes unless modifications are made in glass box mode.

These functions tend to have a one-to-one correspondence with actual social and tax programs. In some cases however, two functions are required for one social program (Eg. the child care expense deduction is calculated in one function and allocated to a particular family member in another), or many programs may be simulated in one function (e.g. federal and provincial family allowances are both calculated by one routine).

Subject Reference

1 Algorithm by Program

1.1 Introduction

This guide is designed primarily to provide SPSPD/M users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black-box and glass-box users.

1.2 Pre-simulation Functions

The functions in this group are executed prior to the simulation of taxes and transfers. The database is first adjusted to the users specifications, by `adj`. This adjusted database will form the basis of all base/variant combinations executed in a single program run. Parameter edit checks and the calculation of derived parameters are performed next in `mpc`. This is done based on `.apr` parameters and rules embodied in the function. Finally, calls to the tax/transfer algorithms are made for each requested base and/or variant simulation as controlled by the `drv` function.

1.2.1 Adjust Database

Three functions perform certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database.

| | |
|-----------------------|--|
| <code>fmspopen</code> | Routines to read SPSPD file (.spd) |
| <code>fmxopen</code> | Routines for reading FAMEX (.fxv) file |
| <code>adj</code> | Perform SPSPD database adjustment |

1.2.2 Calculate Derived Parameters

The `mpc` function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters.

| | |
|------------------|---|
| <code>mpc</code> | Calculate derived model parameters and do edits |
|------------------|---|

1.2.3 Tax/Transfer Calculator

Two functions are responsible for invoking the algorithms which calculate all taxes and transfers.

| | |
|-------------------|------------------------------|
| <code>call</code> | Call tax/transfer calculator |
| <code>drv</code> | Tax/transfer calculator |

1.3 Government Cash Transfers

1.3.1 Unemployment Insurance Benefits

Unemployment Insurance benefits are calculated by a set of functions which mimic application of UI regulations to individual employment and claim histories. These functions are contained within the ui function

ui Compute UI benefits

1.3.2 Family Allowances

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

famod Compute family allowance

1.3.3 Federal Child Tax Benefit/Credit

This function is used to calculate either the federal Child Tax Credit program or the federal child tax benefit. Both programs are intended to provide benefits to help low and middle income families meet the costs of raising children under the age of 18.

txctc Compute child tax credit

ccept zero CCE for young kids if optimal

1.3.4 Federal Sales Tax Credits

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse.

txfstc Compute federal sales tax credit

1.3.5 Elderly Programs

1.3.5.1 Old Age Security

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. The SPSM calculates OAS based on the age of the individual and, for immigrants, the years since immigration. The clawback of OAS is performed in the txitax function.

oas Compute OAS for elderly

1.3.5.2 Guaranteed Income Supplement/Spouses Allowance

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable

monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested.

gis Compute GIS/SPA for elderly

1.3.5.3 Provincial GIS Supplementation Programs

The gist function calculates benefits for seven provincial GIS supplementation programs in six provinces; Nova Scotia, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. All modelled provincial senior's programs within SPSM are in this function.

gist Compute Provincial GIS top-ups for elderly

1.3.6 Social Assistance Benefits

This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here.

samod Compute social assistance or guarantees

1.4 Federal Income and Payroll Taxes

1.4.1 Calculate Net Income

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Taxable Dividends
- Taxable Capital Gains
- Total Income
- CPP/QPP Contributions (Deduction or Tax Credit)
- UI Contributions (Deduction or Tax Credit)
- Tuition Fees (Deduction or Tax Credit)
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

txinet Compute net income

1.4.2 Calculate Taxable Income

The process of computing taxable income is divided into two separate routines. Exemptions, deductions and tax credits which are not dependent upon information from other members of the family (e.g., the Basic Personal Exemption or Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

txitax Compute taxable income and individual credits

txhstr Compute family-related deductions or credits

1.4.3 Child Care Expense Allowance

The txceea function calculates the value of the child care expense deduction. The calculation may be optionally converted to a tax credit basis rather than a deduction.

txceea Compute child care expense allowance

1.4.4 Calculate Federal Tax

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Basic Federal Tax (including credit transfers)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement

txcalc Calculate federal income tax

1.5 Calculate Provincial Taxes

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax to a parallel of the federal system in Quebec. Most provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

1.5.1 All Provinces except Quebec

| | |
|--------|---|
| txprov | Compute provincial taxes |
| txnfld | Compute provincial taxes for Newfoundland |
| txpei | Compute provincial taxes for P.E.I. |
| txns | Compute provincial taxes for Nova Scotia |
| txnb | Compute provincial taxes for New Brunswick |
| txont | Compute provincial taxes for Ontario |
| txman | Compute provincial taxes for Manitoba |
| txsask | Compute provincial taxes for Saskatchewan |
| txalta | Compute provincial taxes for Alberta |
| txbc | Compute provincial taxes for British Columbia |

1.5.2 Quebec

| | |
|---------|--|
| txque | Compute provincial taxes for Quebec |
| txqinet | Compute net income (Quebec) |
| txqccea | Compute child care expense allowance (Quebec) |
| txqitax | Compute taxable income and individual credits (Quebec) |
| txqhstr | Compute family-related deductions or credits (Quebec) |
| txqcalc | Calculate income tax (Quebec) |

1.6 Calculate and Assign Commodity Taxes

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures at the spending unit level of analysis in the following function..

| | |
|---------|--|
| ctmod | Compute commodity taxes for individuals and households |
| txhhexp | Compute and pro-rate household taxes, rent, etc. |

1.7 Aggregation Routines

Two aggregation functions are used to calculate several reporting variables as aggregates of other modeled variables. The functions calculate all dollar denominated reporting variables up to the level of consumable income. In addition taxable filer status is determined.

| | |
|-------|----------------------------------|
| memo1 | Compute memo items for reporting |
| memo2 | Compute consumable income, etc. |

1.8 Glass Box Stub Routines

There are two empty functions in both the standard and alternate drivers (drv) that are available to

allow completely new tax or benefit programs to be developed by glass box users.

| | |
|-----|--|
| dem | Compute new taxable demogrants |
| gai | Compute new refundable credits or guarantees |

1.9 Auxiliary Functions

There are a number of auxiliary functions which are used by the functions containing the tax/transfer algorithms. These functions perform routine tasks required in simulating the tax/transfer system such as table look-ups and benefit reduction functions. The description of these functions is of use to anyone attempting to fully understand or modify the C-language source code for the tax/transfer algorithms.

| | |
|----------|--|
| classu | Compute user-defined reporting variables |
| isneg | Is argument negative ? |
| isnneg | Is argument non-negative? |
| isnzero | Is argument non-zero? |
| iszero | Is argument zero? |
| lkup1 | Table look-up with interpolation/extrapolation |
| lkup2 | Table look-up without interpolation |
| maxn | Find the maximum of two numbers |
| minn | Find the minimum of two numbers |
| nneg | Change negative numbers to zero |
| pmaddent | Define and add a parameter |
| randrnd | Randomly round a floating point number to an integer |
| round | Round to nearest integer |
| strn | Retrieve string by string number |
| taxbak1 | One level tax-back function |
| taxbak2 | Two level tax-back function |
| vardef | Define structure member as an SPSM variable |

Alphabetic Reference

adj

Perform SPSD database adjustment

SUMMARY

The `adj` function performs certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database. The function may currently be used to adjust the amount of RRSP contributions claimed. A brief description of the database adjustment in general is also included.

SPSM Implementation

The SPSD is based on surveys and administrative data collected for the 1988 calendar year. Adjustment of this data may be required for several reasons. The user may wish to use the incomes to represent the incomes in a more recent year such as 1994. As such the user would supply estimates of growth rates for income by source and expenditures from 1988 to 1994. The user may also wish to make adjustments for simulation purposes in the 1988 year. For example, known under-reporting of alcohol expenditures may be treated by scaling each household's alcohol expenses or a deduction item could be scaled down to zero to represent a restriction of a certain tax measure. Finally, the user may wish to adjust the weights of individuals and households to reflect alternate demographic assumptions.

The scaling of money items is performed in two functions inaccessible to the glass box user. Prior to the calculation of any taxes or transfers each dollar denominated database variable is multiplied by a single corresponding database adjustment parameter. There are two key exceptions to this. Employment income, comprising about 70% of total income is given more rigorous treatment due to its relative importance in the overall tax/transfer system. Employment income may be adjusted by industry specific growth rates. CPP/QPP income may be adjusted by differential rates according to age groups which allows for the phasing in of that program. Users should refer to the *Parameter Guide* in this manual for further details on specific adjustment parameters.

The `adj` function is a means for glass box users to affect the adjustment of the database in ways not currently possible. The user may add their own adjustment routines to augment or even offset current means of adjustment. For example if the user wished to grow employment income by age and sex they would set the existing employment parameter to one and enter a new algorithm in this function. One such specific database adjustment provision is currently available in black box mode and is used in the analysis of RRSP contributions.

This adjustment (which will change the value of the `idrrsp` variable) is designed to allow the user to simulate the increase in RRSP contribution limits in a rough fashion. It allows the user to increase the RRSP contributions of individuals who are near to the current

contribution limits. The facility is activated by setting the RRSPIFLAG parameter to 1. Two cases are distinguished, those who are not covered by a employer-contributed pension plan, and those who are.

If individuals had RRSP contributions but had no RPP contributions, and their RRSP contributions fell between RRSPSMIN and RRSPSMAX inclusive, their RRSP contributions will be increased by RRSPSINC.

If individuals had RPP contributions, then, for those individuals whose total pension contributions (RRSP plus RPP) fell between RRSPEMIN and RRSPEMAX, their RRSP contributions will be increased by RRSPEINC.

Relation to Other SPSM Routines

The `adj` function is called before `drv` and as such is only executed once for every program run. This means that database adjustments will apply to both the base and variant scenarios. The function is called after the other database adjustment routines.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-----------|---|
| DNINCFLAG | Disable no income flag for calculation |
| PROVMAP | Provincial remapping [prov] |
| RRSPEINC | Increment to rrsp if conditions & rpp>0 |
| RRSPEMAX | Maximum (rpp+rrsp) for increment if rpp>0 |
| RRSPEMIN | Minimum (rpp+rrsp) for increment if rpp>0 |
| RRSPIFLAG | RRSP increment activation flag |
| RRSPSINC | Increment to rrsp if conditions & rpp=0 |
| RRSPSMAX | Maximum (rrsp) for increment if rpp=0 |
| RRSPSMIN | Minimum (rrsp) for increment if rpp=0 |

INPUT VARIABLES:

| | |
|-------|---|
| hhnin | Number of individuals in household |
| idrpp | Registered pension plan contributions (207) |

OUTPUT VARIABLES:

| | |
|---------|---------------------------------|
| hdprov | Province |
| idninco | No income flag (SPSD variables) |
| idrrsp | RRSP calculated amount (208) |

SUMMARY

Stub function for use by glass box users who wish to modify database variables either before and/or after tax/transfer calculation. This function calls the standard driver -- drv.c.

SUMMARY

The ccept function controls multiple calls to the tax transfer calculator drv.

Program Description

There are three instances in which the entire calculation of the tax/transfer system for household is necessary. The ccept function controls such recalculations. Each case is discussed under separate headings below:

Pre-calculation of the child tax benefit.

The calculation of Employment Insurance depends in part upon an individual's Child Tax Benefit entitlement. However, Employment Insurance is calculated prior to the Child Tax Benefit. ccept is used to calculate a preliminary value for the child tax benefit which can then be used in the calculation of Employment Insurance. The final value for a family's child tax benefit may differ from the preliminary estimate used for this calculation of Employment Insurance.

Optimization of the Child Tax Credit/Child Tax Benefit

Beginning in 1988 the rules for calculating the child tax credit/child tax benefit and the child care expense credit were altered to ensure that middle income families could not receive the full benefits from both programs. In practice this is done by reducing maximum child tax credit benefits by 25% of claimed child care expenses. The resulting situation is that below a certain income level it is advantageous not to claim any child care expenses incurred. The ccept function can locate this level and thus maximize the combined benefits from the child care expense credit and the child tax credit/child tax benefit.

SPSM Implementation

ccept performs the re-calculations and optimizations in a specific sequence. The pre-calculation of the federal Child Tax Benefit for purposes of correctly calculating Employment Insurance is performed first. Next the optimization of the child care expense deduction and the federal Child Tax Benefit is performed. The SPSM implementation of each

type of optimization are described separately below:

Pre-calculation of the child tax benefit.

The first time drv is called Employment Insurance is calculated with a zero value for the federal Child Tax Benefit. This will result in no EI family supplement benefits being assigned. The first time ccept is called by drv, it first determines if a family is eligible for both EI and the Child Tax Benefit. If so, that household has its entire tax/transfer entitlements/liabilities re-calculated using the value for the federal child tax benefit calculated in the first pass.

Note that there is a circularity between the two programs in that the federal Child Tax Benefit is based, in part, on Unemployment Insurance benefits to the extent that they are included in the definition of net income which is used to clawback the child benefits.

Optimization of the Child Tax Credit/Child Tax Benefit

The default calculation first performed in txceca makes use of any child care expenses associated with the children in the family. In the ccept function cases subject to optimization are first identified as families having children aged 0-6 with associated child care expenses.

The complexities of the tax reform situation in Canada make it difficult to know how to optimize many of this type of case. Consequently, once these families have been identified, the entire tax/transfer system is recalculated, setting child care expenses for young children to zero. The value of consumable income for both runs is then compared. If the family benefits from this change, the scenario with no child care expenses is kept. Otherwise, the previous scenario is restored by again re-running the entire tax transfer system.

The algorithm is controlled by the parameter CCEZOPT, which is described in the [Parameter Guide](#).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----------|--|
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UITARGET | UI/EI target for the number of cases (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| hdageeld | Age of eldest in household |
| hdnkids | Number of children in household |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idninc | No income flag (SPSD variables) |
| iduirank | Predicted ranked likelihood of getting UI |
| imcce | Child care expenses claimed on behalf of child |
| immicons | Consumable income |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|---------|--|
| imcceni | Consumable income with CCE not zeroed |
| imccez | Is CCE zeroed? |
| imccezi | Consumable income with CCE zeroed |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |

classu Compute user-defined reporting variables

SUMMARY

The classu function is a stub routine which allows the glass-box user to compute and assign values to new or re-defined variables. Variables first must be defined appropriately in vsdu.c and vsu.h. Since this function is normally called by both the standard and alternate model drivers, assignments made in classu will be effective in both cases.

Users should note that classu should only be used when the user is unable to create the desired classification with the User Defined Variable Facility. Please see the [*User's Guide*](#) for more information on this alternative facility.

Note that classu is called at the end of drv so that variables defined in classu are not available for use in other tax/transfer algorithms. See the [*Programmer's Guide*](#) for more information.

ctmod Compute commodity taxes for individuals and households

SUMMARY

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to

observed family expenditures at the spending unit level of analysis. The resulting federal government taxes span 48 consumer expenditure (CE) categories while provincial government taxes have both CE category and provincial dimensions. Commodity taxes are also estimated for other levels of analysis such as economic families and individuals.

Program Description

The federal government has a variety of taxes which are levied on goods used in production and for final demand consumption. Some of the major federal tax types are: custom import duties, alcohol and tobacco excise taxes and excise duties, manufacturers sales tax, gasoline excise tax, air transportation tax, and energy use taxes. The provincial governments also levy taxes but with more of an emphasis on consumer goods. Major taxes include liquor commission mark-ups, gasoline taxes, tobacco taxes, and retail sales taxes.

An important characteristic of this tax system is the cascading effect. Tax cascading occurs when a tax rate is applied to the value of a commodity inclusive of another tax type. For example, when an individual makes a long distance call a federal telecommunications tax of 10% is applied to the price of the call. Provincial governments then levy their retail sales tax rates to the value of the call inclusive of the federal tax.

SPSM Implementation

Input/Output Estimation of Tax Rates

Tax costs associated with domestic production are passed to the domestic consumers is the fundamental I/O modeling assumption. For example, alcohol producers require raw materials such as grains, water, energy source etc. If these inputs are produced themselves in other industries, then their selling price may include a manufacturer's tax component. Through Input/Output (I/O) techniques we are able to associate the implicit tax share of the production process to the correct final demand good.

The macroeconomic I/O system is used to construct effective tax rates by tax type, final demand good, and by province. This enables the calculation of the tax burden implicit in each household's reported final demand expenditures.

The federal tax rates have been grouped into six tax types: custom import duties; excise duties; manufacturer's sales tax; excise taxes; other energy taxes; and federal sales tax. The federal sales tax type that has been included for user simulations is set to zero by default. The array of provincial tax rates has also been reduced to six tax types: profits on liquor commissions; liquor gallonage tax; gasoline tax; amusement tax; tobacco tax; retail sales tax.

The above rates are defined as the ratio of a particular tax to the expenditure net of all commodity taxes for a given good in a given province. Therefore, an additional input parameter rate is applied to the FAMEX observations to net out the commodity taxes implicit in the base year.

For a more complete description of the I/O methodology, calculation procedures, tax type composition, etc. see *Commodity Tax Model User's Guide*.

Notes Regarding Expenditure Adjustments

Prior to the execution of the ctmod function, two modifications of the FAMEX data have been performed by the SPSM.

The first is made necessary because of the way SNA and FAMEX treat the expenditures on motor vehicles as net expenditures. If the trade-in exceeds the value of the purchase, or a household sells a vehicle outright, then the expenditure category will contain a negative value. In this case the SPSM treats the net expenditure as an income item (net sale of durables) and it is incorporated into the income calculation. The expenditure category is then set to zero. This procedure is conducted in the two consumer expenditure categories where net sales can occur: New & used automobiles; Recreation, sporting goods, and camping equipment. This modification is not accessible to the user.

The second data modification involves correcting for under-coverage of some FAMEX expenditure components. For example, sales of alcohol and tobacco are monitored very carefully by government agencies and their data indicate roughly twice as much consumption of these two goods as reported on the FAMEX. Two other FAMEX categories report substantially lower consumption than other information sources would indicate. They are semi-durables and expenditures for restaurants & hotels. The GFFMX parameter in the .APR file enables the adjustment of raw FAMEX values to the levels of other sources. We provide users with factors to inflate expenditures to known 1984 levels.

Estimation of commodity taxes

The ctmod function initially calls the ctfx sub-function to calculate the taxes based on the expenditure patterns of FAMEX spending units. The ctmod function then computes the taxes for other levels of analysis such as individuals or economic families.

The FAMEX expenditure categories must be stripped of their original tax component before the commodity tax calculation can be performed. This is accomplished in the ctfx sub-function by applying the I/O computed CTTXRM parameter (database adjustment parameter) to the expenditure observations.

The effective commodity tax rates are then multiplied by the net expenditures to produce commodity tax levels for each spending unit. If the CTDFLAG is set to 0 then total federal level taxes by commodity and provincial level taxes by commodity and province are calculated. If CTDFLAG is set to 1 then the six detailed federal taxes and seven provincial taxes are generated. Provincial taxes applied are defined in the following input parameters:

- CTPAMU Provincial amusement tax
- CTPGAS Provincial gasoline tax
- CTPICT Provincial commodity taxes on industry
- CTPLGL Provincial liquor gallonage tax
- CTPPLQ Provincial profits on liquor commissions
- CTPRST Provincial retail sales tax
- CTPTOB Provincial tobacco tax

The model ensures that both options will produce identical results in the aggregate.

Commodity taxes are then allocated to individuals in the FAMEX spending unit via personal income shares in the ctmof function. The income of the household's head is derived by adding three variables from the FAMEX income concept not surveyed elsewhere to his/her SPSD income concept variables. These variables are: savings; other money receipts; and net sales of durables. The shares reflect the income distribution after this modification.

The CTOPT parameter controls which income concept is used in the simulation. If the parameter is set to 1 then the FAMEX income concept is used. This measure of income is not linked to other SPSD variables in any way. Therefore, if the user wishes to examine the implications to commodity tax outflows based upon changes in SPSD income variables (i.e. OAS, GIS, income tax changes) then this option should never be specified. Its use should be restricted to pure FAMEX analyses.

If CTOPT is set to 2 then the SPSD income concept is used. This income measure has been corrected for an income bias inherent in Survey of Consumer Finance (SCF) data using Department of Revenue Green Book tax data. This income adjustment is described in detail in the *Database Creation Guide*. The result is a substantial increase in household income for observations in the extreme upper tail.

The FAMEX data suffers from the same under-coverage as the SCF so the reported spending unit expenditure can be out of synch with the Green Book adjusted income. For example, the largest total expenditure observation is around \$150,000 while a large tax adjusted household income exceeds \$5,000,000.

Setting the CTOPT parameter to 2 scales the commodity tax calculated conditioned on FAMEX spending unit income by the ratio of the SPSD "shared" income concept to an equivalent FAMEX "shared" income concept. In this way tax outlays bear closer relation to the SPSD income levels. However, this leads to some outlay distortions for the extremely wealthy which are described in the Interpretation Section.

Interpretation

There are some other discrepancies between the system of national accounts (SNA) definition of consumer expenditure and that of FAMEX. Generally, SNA includes the entire personal sector whose components are households, self-employed professionals, and universities. FAMEX tracks only households and, therefore, tax levels by commodity are generally lower. For a detailed description of these differences see the *Commodity Tax Model User's Guide*

In the aggregate, differences between income SPSM income concept (CTOPT=2) and the FAMEX income concept (CTOPT=1) are almost negligible. Using 1984 base case parameters the FAMEX option produced a \$20.997 billion tax burden on Canadian families while the scaled option generated \$21.048 billion. These compare favorably with the SNA estimate of \$22.5 billion. However, the differences for the highest income households in great. The top three households show differences of over \$200,000. This implies some caution when interpreting commodity tax values for high income observations.

Relation to Other SPSM Routines

The ctmod function calls the ctfx sub-function in order to calculate spending unit commodity taxes. The ctmod function itself is called by the drv function. The ctmod function makes use of parameters derived in the mpc function. The mpc function also ensures that the ctmod function is not executed if the FAMEX data vector is not being read (i.e. if FXVFLAG=0). The calculation of commodity taxes is highly dependent on the parameters applied to the database expenditure items during the database adjustment phase of the simulator.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTDFLAG | Commodity tax detailed calculation flag |
| CTFCID | Federal custom import duties [com] |
| CTFEXD | Federal excise duties [com] |
| CTFEXT | Federal excise taxes [com] |
| CTFGST | Federal GST [com] |
| CTFLAG | Commodity tax activation flag |
| CTFMFG | Federal manufacturer's sales [com] |
| CTFOEN | Federal other energy taxes [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTLPROP | Local property taxes |
| CTNES | Expenditures NES |
| CTOPT | Commodity tax calculation method [1=FAMEX,2=SPSM] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| CTPTOT | Provincial total retail tax equivalent |
| CTSAVE | All positive savings |

INPUT VARIABLES:

| | |
|----------|--|
| ctnexp | Household expenditure net of taxes |
| ctothmon | Household money from other sources |
| cttxfc | Federal commodity taxes (total) |
| cttxpc | Provincial commodity taxes (total) |
| fxfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |

| | |
|----------|------------------------------------|
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hhnin | Number of individuals in household |
| idhhrh | Relationship to head of household |
| immdisp | Disposable income |

OUTPUT VARIABLES:

| | |
|----------|--|
| ctfcid | Federal custom import duties |
| ctfexd | Federal excise duties |
| ctfext | Federal excise taxes |
| ctfgst | Federal GST |
| ctfmfg | Federal manufacturer's sales tax |
| ctfoen | Federal other energy taxes |
| ctishrh | Shared income concept (FAMEX) |
| ctlprop | Local property taxes on owned dwellings |
| ctnes | Household expenditure not elsewhere specified |
| ctnexp | Household expenditure net of taxes |
| ctnexp_ | Household expenditure net of taxes [array] |
| ctnsna | Household expenditure net of taxes -SNA adjusted |
| ctnsna_ | Household expenditure net of taxes [array] -SNA adjusted |
| ctothmon | Household money from other sources |
| ctpamu | Provincial amusement tax |
| ctpgas | Provincial gasoline tax |
| ctplgl | Provincial liquor gallonage taxes |
| ctpplq | Provincial profits on liquor commissions |
| ctprov | Province for COMTAX calculations |
| ctprst | Provincial retail sales tax |
| ctptob | Provincial tobacco tax |
| ctsave | Household savings |
| ctseqhv | FAMEX record sequence number |
| cttxfc | Federal commodity taxes (total) |
| cttxfc_ | Federal commodity taxes [array] |
| cttxpc | Provincial commodity taxes (total) |
| cttxpc_ | Provincial commodity taxes [array] |
| imishri | Shared income concept (FAMEX & SPSD) |
| imninc | No income flag |
| imtxfc | Federal commodity taxes |
| imtxpc | Provincial commodity taxes |

dem Compute new taxable demogrants

SUMMARY

This is a stub function for use by glass box users who wish to incorporate a new program which interacts with the tax system (i.e. taxable benefits).

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|--------------------------|
| imiotg | Other taxable demogrants |
|--------|--------------------------|

| | |
|------------|-------------------------|
| drv | Tax/transfer calculator |
|------------|-------------------------|

SUMMARY

The calculation of taxes and cash transfers for any base or variant run is controlled by a function whose only task is to call all other individual tax/transfer algorithm functions. The sequence of calls is critical to the simulation due to the informational requirements of the tax/transfer functions. For example net income must be known before gis can be calculated. The following list gives the functions called by drv in the order in which they are called.

| Function | Description |
|----------|---|
| ui | Compute UI benefits |
| famod | Compute family allowance |
| oas | Compute OAS for elderly |
| dem | Stub routine for new pre-tax system programs |
| txinet | Compute net income (including payroll taxes) |
| gis | Compute GIS/SPA for elderly |
| senben | Compute senior benefit |
| gist | Compute Provincial GIS top-ups for elderly(GAINS-A, SIP, etc) |
| samod | Compute social assistance or guarantees |
| txitax | Compute taxable income |
| txhstr | Apply tax transfers between head and spouse |
| txcalc | Calculate federal income tax |
| txctc | Compute child tax credit |
| txprov | Compute provincial taxes and credits |
| txfstc | Compute federal sales tax credit |
| gai | Stub routine for new post-tax system programs |
| memo1 | Compute memo items for reporting |
| ctmod | Compute commodity taxes |
| memo2 | Compute consumable income, etc. |

ccept
Classu

Zero CCE for young children if optimal
Stub routine to compute user defined reporting variables

The calling order of the component functions of drv reflects the logical precedence between them.

- The first functions, ui, famod and oas, simulate programs whose benefits are determined by factors other than income and as such are called first.
- dem is a stub routine for glass box applications that require calculations to occur before entering the tax system routines.
- txinet calculates net income prior to certain transfers.
- gis calculates transfers to the elderly.
- senben calculates senior benefits.
- gist, txctc, and txfstc calculate income tested transfer programs.
- samod calculates social assistance or guaranteed income transfers.
- Federal and provincial taxes are calculated next in the next six functions with the tx prefix (txitax, txhstr, txcalc, txprov, txctc, and txfstc).
- gai is another stub routine that is intended for use by glass box users who wish to simulate options requiring information on all personal income taxes and cash transfers. For example users may use this function to simulate an income supplementation program.
- The memol and memo2 functions create aggregate variables for reporting.
- In the ctmod function, sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures.
- ccept optimizes income by maximizing the child care expense credit and the child tax credit.
- classu is a stub routine which allows the glass box user to compute and assign values to new or re-defined variables.

The functions called by drv call other functions and sub-functions in order to complete their calculations. The following page contains a complete list of the names of functions and sub-functions along with a short description in the order in which they are called by drv. Please refer to the specific function in this guide for a more detailed description. Sub-functions (in italic) can be found listed under the function which calls them. Thus for a complete understanding of the calculation of net income one would have to consult both the txinet and txceca functions.

As mentioned earlier, function names are printed in lower case, bold, courier font (E.g. txinet, txcalc) and correspond to a single C language source code file (E.g. txinet.c, txcalc.c). Sub-functions are defined within the function (file) that calls them and are shown in lower case, courier font, italic (e.g. uisqz, gissub). All multiple calls to the same sub-function have been shown here. All functions directly called by drv begin in the first column below, other function calls are indented.

In ccept all the functions are called a second time by drv to find if a family benefit of setting CCE to zero, if it is the case the result is kept, otherwise drv call again all the functions to reset the original values.

| | | |
|----|-------------------------|--|
| ui | uicl <i>m</i> | Compute UI benefits Simulate a UI claim |
|----|-------------------------|--|

| | | |
|--------|-----------------|---|
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| | <i>uicl</i> | Simulate a UI claim |
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| famod | | Compute family allowance |
| oas | | Compute OAS for elderly |
| dem | | Stub routine for new pre-tax system programs |
| txinet | | Compute net income |
| | <i>txccea</i> | Compute child care expense allowance |
| gis | | Compute GIS/SPA for elderly |
| | <i>gissub</i> | Compute income used to tax back GIS/SPA |
| senben | | Compute senior benefit |
| | <i>sbsub</i> | Compute income used to tax back Seniors Benefit |
| gist | | Compute Provincial GIS top-ups for elderly |
| | <i>txhhexp</i> | Compute and pro-rate household taxes, rent, etc. |
| samod | | Compute social assistance or guarantees |
| txitax | | Compute taxable income |
| txhstr | | Apply tax transfers between head and spouse |
| txcalc | | Calculate federal income tax |
| txprov | | Compute provincial taxes |
| | <i>txnfld</i> | Compute Newfoundland provincial taxes |
| | <i>txpei</i> | Compute PEI provincial taxes |
| | <i>txns</i> | Compute Nova Scotia provincial taxes |
| | <i>txnb</i> | Compute New Brunswick provincial taxes |
| | <i>txque</i> | Compute Quebec provincial taxes |

| | | | |
|--------|--------------|--------------|--|
| | txqinet | | Compute net income (Quebec) |
| | | txqccea | Compute child care expense allowance (Quebec) |
| | txqitax | | Compute taxable income (Quebec) |
| | txqhstr | | Apply tax transfers between head and spouse (Quebec) |
| | txqcalc | | Calculate Income Tax (Quebec) |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txont | | Compute Ontario provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txman | | Compute Manitoba provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txsask | | Compute Saskatchewan provincial taxes |
| | txalta | | Compute Alberta provincial taxes |
| | txbc | | Compute BC provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| txctc | | | Compute child tax credit |
| txfstc | | | Compute federal sales tax credit |
| gai | | | Stub routine for new post-tax system programs |
| memo1 | | | Compute memo items for reporting |
| ctmod | | | Compute commodity taxes |
| | <i>ctfx</i> | | Compute commodity taxes for FAMEX spending unit |
| | | <i>ctfxd</i> | Compute commodity taxes for FAMEX spending unit (detailed) |
| | | <i>ctfxs</i> | Compute commodity taxes for FAMEX spending unit (simple) |
| memo2 | | | Compute consumable income, etc. |
| cceopt | | | Zero CCE for young kids if optimal |
| | <i>pass2</i> | | recalculate UI with child benefits in place |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| classu | | | Compute User Defined Reporting Variables |

SUMMARY

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

Following 1997 reform, starting in 1998 in the model, the Quebec family allowance, the Quebec new born allocation and the Quebec availability allowance are now calculated only if QFATCOPT is set to 1, otherwise the Quebec Family Allowance Tax Credit is calculated in txqcalc.

Program Description

The federal Family Allowances program was designed to provide taxable benefits to help meet the costs of raising children under the age of 18 who are resident in Canada and are maintained by their parent(s) or guardian. At least one parent or guardian must be either a Canadian citizen or a permanent resident, visitor or holder of a Minister's Permit under the Immigration Act and have been legally admitted into Canada. The parent(s) or guardian must make application for benefits and their income must be subject to Canadian income tax. Benefits cease to be payable with regard to self-supporting children (i.e. children who begin to earn a taxable income).

Family allowance benefits are generally paid at a uniform rate across Canada. However, provinces may, within certain limits, vary the amount of Family Allowances that the federal government pays to their residents according to the age and/or number of children in a family. Alberta and Quebec are the only provinces that vary the rate. Alberta varies payment based on the age of the child while Quebec varies payment based on the number of children in the family and then adds a supplement based on the age of the child.

The province of Quebec maintains a separate but linked program under the Quebec Family Allowances Act which provides for benefits to the parent or guardian of an unmarried child under the age of 18 who is not a ward of the province. The applicant must have resided in Quebec for at least one month or be paying Quebec income tax. In 1984 benefits payable were not subject to Quebec income tax, however benefits paid with respect to children aged 16 and 17 were subject to federal tax. Persons in receipt of federal family allowances automatically receive the provincial benefits without application. This program also has a supplement for handicapped children; however, this is not modeled in the SPSM.

The Quebec Newborn Allowance was implemented in 1988 and is modeled in famod from that year. Benefits are paid per child and rise from \$500.00 for each of the first two children to \$3000.00 for each subsequent child.

An option permit the user to randomly increase the rank of first and second child in order to

reflect the rank distribution of child observed by the RRQ. The program end in October 1997 and is replaced by a Child tax allocation not modeled yet.

SPSM Implementation

The famod function calculates federal and provincial family allowances based on the age of children and number of children in a family. Residency requirements are deemed to have been met in all cases as is the requirement of non self-sufficiency. The function always allocates family allowances as income of the mother unless one is not present in the nuclear family. This temporary allocation is subsequently assigned to the spouse having the higher net income in txinet and txqinet. The function outputs values for federal(imffa) and provincial(impfa) family allowances as well as the value of taxable family allowances(imtfa) for use in other functions. The function loops through each nuclear family in a household.

The function first calculates federal and provincial family allowances for residents of Quebec. Counts of numbers of children by age group are calculated and used to index into two look-up tables for federal and provincial programs as well as to scale the federal age supplement. The values are then aggregated into two local variables, taxable family allowances and federal family allowances. Taxable family allowances are equal to the sum of federal benefits for each child (as determined by that child's rank in the family) plus the federal supplement for each child aged 12-17 plus the portion of Quebec family allowances paid with respect to children aged 16 and 17.

The calculation of Quebec allowances in famod includes the Quebec availability allowance from 1988 forward. It is paid as a supplement to the Quebec family allowances and is represented by the variable imqaafa. Quebec allowances also include the calculation of the Quebec Newborn Allowance, represented by the variable imqnbfa. This benefit is calculated on the following schedule for 1988:

| Child Number | Birth | Age 1 | Age 2 | Total |
|--------------|-------------|-------------|-------|-------|
| 1 | 500 | 0 | | 500 |
| 2 | 500 | 0 | | 500 |
| 3+ | 375/Quarter | 375/Quarter | | 3,000 |

Interpretation

Results obtained from the SPSM with respect to family allowance benefits differ from Health and Welfare Canada administrative data. Overall the SPSM reports 96.7% of the 1984 calendar year average health and welfare total dollars and 97.3% of children for whom benefits are received.

The SPSM has few children in part due to the non-coverage of Yukon, N.W.T., and native reservations, all of which have younger than average populations and larger than average family sizes (approximately 1.5% of children). A second source of underestimation is the special allowances for foster children and children in welfare agencies. The SPSM does not include these children or their benefits which account for .7% of total family allowances. Further, the SPSM does not take into account payments made outside Canada, although the effect of these on the total is insignificant (less than .1%).

The family allowance program requires parents of 'self-supporting' children to notify Health and Welfare Canada and have the benefits with respect to these children suspended. There are about 52,000 of such children aged 16 and 17 on the SPSD with respect to whom benefits are allocated. It is unknown how many of the parents of these children actually report their situation to Health and Welfare Canada. Lastly, no residency check is imposed on the parents and this will have an insignificant effect. It is assumed that the number of children turning age 18 during the calendar year is balanced by the number of new births. That is, full year family allowance benefits paid with respect to children born during 1984 will be overestimates to the same degree that an underestimate arises for benefits not given to 18 year olds who were 17 during calendar 1984.

Relation to Other SPSM Routines

The famod function is called by drv. The function outputs two variables that are used in txinet for deciding which parent will claim the family allowances for tax purposes: taxable family allowances(nftfa) and number of family allowance children(nfnfach).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AFAC1 | Alberta FA benefit per child aged 0 - 6 |
| AFAC2 | Alberta FA benefit per child aged 7 - 11 |
| AFAC3 | Alberta FA benefit per child aged 12- 15 |
| AFAC4 | Alberta FA benefit per child aged 16- 17 |
| FAFLAG | Family allowance flag |
| PFACFLAG | Use provincial configuration flag |
| QAAFA | Quebec availability allowance (supplement) [parity,\$] |
| QAAFAFLAG | Availability Allowance: Supplement to Quebec FA |
| QFAIFLAG | Quebec inclusion of federal family allowance in income flag |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFFSL | Federal family allowance: Quebec Configuration[parity,\$] |
| QFPSL | Quebec provincial family allowance [parity,\$] |
| QFS | Federal supplement per child 12-17 in Quebec configuration |
| QNBFA | Quebec newborn family allowance [parity,age] |
| QNBFAFLAG | Quebec newborn family allowance flag |
| QNBPOFLAG | Quebec newborn family allowance phase out flag |
| QNBPOPYR | Quebec newborn family allowance phase-out year proportion |
| QNBPOYR | Quebec newborn family allowance phase out year |
| QNRFLAG | Quebec newborn family random increase of child rank |
| STDFA | Standard federal family allowance per child |
| TARGETYEAR | Year of analysis |
| INPUT VARIABLES: | |
| hdprov | Province |
| hhnnf | Number of nuclear families in household |

| | |
|----------|---|
| idage | Age |
| idrand | Random numbers [array] |
| idsex | Sex |
| nfinch | First child in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|---------|---|
| imffa | Federal portion of family allowances |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| impfa | Provincial family allowance |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqnbfa | Quebec newborn Allowance |
| imqtfa | Quebec taxable family allowances |
| imtfa | Taxable family allowances |
| nfineld | Eldest person in nuclear family [pointer] |

fmfxopen Routines for reading FAMEX (.fxv) file

SUMMARY

The purpose of this maintenance function is to load the FAMEX variables and to grow them by the corresponding database adjustment parameter.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|---------------|--|
| CTCFALC | FAMEX reporting error adjustment: Alcohol [prov] |
| CTCFGAS | FAMEX reporting error adjustment: Gasoline [prov] |
| CTCFTOB | FAMEX reporting error adjustment: Tobacco [prov] |
| CTTXRM | Base year commodity tax removal factor [com x prov] |
| GFCQP | Adjustment Factor: CPP/QPP contributions |
| GFFABD | Adjustment Factor: Account balancing difference |
| GFFMX | Adjustment Factor: consumer expenditure categories |
| [commodity] | |
| GFFOMR | Adjustment Factor: Other money receipts |
| GFGVPEN | Adjustment Factor: Government pension plan contributions |
| GFINTAX | Adjustment Factor: Income taxes |
| GFIPAC | Adjustment Factor: Life insurance premiums and annuity |
| contributions | |
| GFNCAL | Adjustment Factor: Net change in assets and liabilities |
| GFNES | Adjustment Factor: Not elsewhere stated |

| | |
|------------|---|
| GFPRTAX | Adjustment Factor: Property tax |
| GFPVPEN | Adjustment Factor: Private pension plan contributions |
| GFRECOM | Adjustment Factor: Real estate commissions |
| GFRFEES | Adjustment Factor: Registration and license fees |
| GFRRSPT | Adjustment Factor: Total RRSP contributions (FAMEX) |
| GFTPTAX | Adjustment Factor: Transfer of property taxes |
| GFUIC | Adjustment Factor: UI contributions |
| KEEPNEGEXP | Retain negative expenditures in FAMEX |
| DBVERSION | Version of the database (x100) |
| INPFV | Name of FAMEX vector file (in) [string] |
| INSPD | Name of SPSD file (in) [string] |

INPUT VARIABLES:

| | |
|----------|--|
| fhbfver | SPSD/M binary format version (x100) |
| fhdbver | SPSD/M database/year version (x100) |
| fhfiltyp | File type (extension) [string] |
| fhnum | Number of numbers in the file |
| frclhvh | Cloning factor for FAMEX exp. vector |
| frcpp | Cpp - qpp contributions |
| frfabd | Account balancing difference |
| frfomr | Other money receipts |
| frgvp | Gvt pension plan contributions |
| frintax | Income taxes |
| frio | Expenditure on the 40 I/O categories [array] |
| fripac | Life ins prems and annuity contributions |
| frncal | Net change in assets and liabilities |
| frnes | Not elsewhere stated |
| frprtax | Property tax |
| frpvpen | Private pension plan contributions |
| frrecom | Real estate commissions |
| frifees | Registration and license fees |
| frrgvlot | Ratio of spending on government lotteries |
| frrrspt | Total RRSP contributions (FAMEX) |
| frtptax | Transfer of Property taxes |
| fruc | UI contributions |
| hdprov | Province |

OUTPUT VARIABLES:

| | |
|----------|---|
| fhhash | Hashed code of header information |
| fxclhvh | FAMEX cloning factor |
| fxcpp | Cpp - qpp contributions |
| xfabd | Account balancing difference |
| xfomr | Other money receipts |
| fxgvp | Gvt pension plan contributions |
| fxintax | Income taxes |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxncal | Net change in assets and liabilities |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |
| fxrecom | Real estate commissions |
| fxrifees | Registration and license fees |
| fxrgvlot | Ratio of spending on government lotteries |
| fxrrspt | Total RRSP contributions (FAMEX) |

| | |
|----------|---|
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| fxuic | UI contributions |
| hdfrstfx | First household in FAMEX group flag |
| hdlastfx | Last household in FAMEX group flag |
| hdwgtfx | Sum of household weight for FAMEX group |

fmspopen Routines to read SPSD file (.spd)

SUMMARY

The purpose of this maintenance function is to load the SPSD variables and to grow them by the corresponding database adjustment parameter. In addition the method of conversion for converted variables is applied. The logic for differential growth of CPP is also applied in this function. The actual code in this function is proprietary and is not released with the SPSD/M product.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|-----------|--|
| GFADDDDED | Growth Factor: Additional deductions from net income (256) |
| GFALEXP | Growth Factor: Other allowable employment expenses (229) |
| GFCAPGEX | Growth Factor: Capital gains exemptions (254) |
| GFCARRY | Growth Factor: Carrying charges (221) |
| GFC CET | Growth Factor: Child care expenses associated with child |
| GFC CETT | Growth Factor: Child care expenses (Limit A, Form T778) |
| GFCGLESS | Growth Factor: TCG Less Cap Gains Ded on Cap Prop Gifts |
| GFCCHARIT | Growth Factor: Charitable donations (340) |
| GFCLOSS | Growth Factor: Allowable other years capital loss (253) |
| GFCPP65 | Growth Factor: CPP for age 65 |
| GFCPP66 | Growth Factor: CPP for age 66 |
| GFCPP67 | Growth Factor: CPP for age 67 |
| GFCPP68 | Growth Factor: CPP for age 68 |
| GFCPP69 | Growth Factor: CPP for age 69 |
| GFCPP70 | Growth Factor: CPP for age 70 |
| GFCPP71 | Growth Factor: CPP for age 71 |
| GFCPP72 | Growth Factor: CPP for age 72 |
| GFCPP73 | Growth Factor: CPP for age 73 |
| GFCPP74 | Growth Factor: CPP for age 74 |
| GFCPP75 | Growth Factor: CPP for age 75 |
| GFCPPG75 | Growth Factor: CPP for age > 75 |
| GFCPPL65 | Growth Factor: CPP for age < 65 |

GFDALIMO Growth Factor: Alimony paid (220)
 GFDISOTH Growth Factor: Disability amount for dependants (318)
 GFDISSLF Growth Factor: Disability amount for self (316)
 GFDUES Growth Factor: Union and professional dues (212)
 GFEMPLO Growth Factor: Employee home relocation loan dedn (248)
 GFEXPLOR Growth Factor: Exploration and development expenses (224)
 GFFDSFT Growth Factor: Foreign tax credit applied to surtax (511)
 GFFORAVG Growth Factor: Forward averaging amount withdrawal (237)
 GFFORINC Growth Factor: Net foreign income (508)
 GFFORTX Growth Factor: Foreign tax paid (507)
 GFGIFTS Growth Factor: Gifts to Canada/provinces/culture (342)
 GFGSTREB Growth Factor: GST rebate (457)
 GFHOMSTU Growth Factor: College residence/resident homeowner
 assistance (558)
 GFIALIMO Growth Factor: Alimony Income
 GFICAPG Growth Factor: Capital gains (actual) (127 * 1.5)
 GFIDIV Growth Factor: Dividend income (actual) (120 / 1.5)
 GFIEMP Growth Factor: Employment income [province,sex]
 GFIIINT Growth Factor: Interest income (121)
 GFIILOSS Growth Factor: Business investment losses (217)
 GFINOINV Growth Factor: Other government income (non-taxable)
 GFINOTH Growth Factor: Other money income (non-taxable)
 GFIOINV Growth Factor: Other investment income with net rental
 GFIPENS Growth Factor: Pension income (115)
 GFISA Growth Factor: Social assistance income
 GFISEFM Growth Factor: Self-employed income - farming
 GFISENF Growth Factor: Self-employed income - non-farming
 GFITC Growth Factor: Federal investment tax credits (412)
 GFITOGV Growth Factor: Other government income (taxable)
 GFITOTH Growth Factor: Other non-government income (taxable)
 GFITRRSP Growth Factor: Taxable RRSP withdrawals
 GFIVETP Growth Factor: Veterans Pensions
 GFIIWORKC Growth Factor: Worker's compensation
 GFLABTXG Growth Factor: Labour funds tax credit (414)
 GFMEDGRO Growth Factor: Medical expenses, gross (330)
 GFMINCAR Growth Factor: Minimum tax carryover (504)
 GFMOVEXP Growth Factor: Imputed moving expenses (219)
 GFMSCHPD Growth Factor: Manitoba school taxes paid
 GFNCLOS Growth Factor: Allowable other years non-capital loss (252)
 GFNORTH Growth Factor: Northern deductions (255)
 GFOTHDED Growth Factor: Other deductions from total income (232)
 GFOTHPE Growth Factor: Other dependant exemptions (305)
 GFPARTLO Growth Factor: Limited partnership losses (251)
 GFPOLCON Growth Factor: Federal political contributions (409)
 GFPROPTX Growth Factor: Net property taxes paid (556)
 GFPRVFTC Growth Factor: Provincial foreign tax credit (Form T2036)
 GFPRVPOL Growth Factor: Provincial political contributions (565)
 GFRENTPD Growth Factor: Total rental payments (555)
 GFRPP Growth Factor: Registered pension plan contributions (207)
 GFRRSP Growth Factor: RRSP contributions (208)
 GFSAPRED Growth Factor: Predicted benefits from Social Assistance
 GFSCFCQP Growth Factor: SCF CPP
 GFSCFCTC Growth Factor: Child tax credit
 GFSCFFTC Growth Factor: Federal tax credit
 GFSCFINT Growth Factor: SCF interest income
 GFSCFOAS Growth Factor: Old age security
 GFSCFPTC Growth Factor: SCF provincial tax credits

GFSCFSA Growth Factor: SCF social assistance
 GFSCFUIB Growth Factor: Unemployment insurance benefits
 GFSTKDED Growth Factor: Stock option deduction (249)
 GFTUITN Growth Factor: Tuition fees (320)
 GFUIPRED Growth Factor: Predicted benefits from UI
 IEMPADJ Adjustment Factor: Employment income [employment income
 breaks,province]
 IEMPBRK Adjustment Factor: Income breaks for income
 adjustment[employment income breaks]
 IMPCQPOPT Imputation method, CQP [1=none 2=rank]
 IMPINTOPT Imputation method, Interest [1=none 2=imputed]
 IMPSAOPT Imputation method, SA [1=none 2=rank]
 IMPUIBOPT Imputation method, UI [1=none 2=rank]
 PURR Ratio current:base unemployment rate [prov]
 UIBASEYRMAX Maximum insurable earnings for base year
 UITARGYRMAX Maximum insurable earnings for target year
 FXVFLAG Read FAMEX expenditure vector file
 INSPSD Name of SPSD file (in) [string]
 WGTFLAG Read weight file

INPUT VARIABLES:

fhbfver SPSD/M binary format version (x100)
 fhdbver SPSD/M database/year version (x100)
 fhfiltyp File type (extension) [string]
 fhnhh Number of households in the file
 hrclohh Number of SCF clones
 hrevmv Expenditure vector matching variable
 hrprov Province
 hrtenur Tenure
 hrurb Size of urban area
 idage Age
 idccqp Converted CPP/CQP benefit
 idcintim Converted interest income (imputed)
 idcsa Converted social assistance
 idsex Sex
 irage Age
 irccqp Converted CPP/CQP
 ircfpub SCF CF publication flag
 ircfrh Relation to census family head
 ircfseq Census family sub-sequence number
 ircintim Converted interest income (imputed)
 ircluflg Common law union flag
 ircsa Converted social assistance
 ircuib Converted UI benefit
 iredlev Educational level
 irefpub SCF EF publication flag
 irefrh Relation to economic family head
 irefseq Economic family sub-sequence number
 irestat Educational status
 irhhrh Relation to household head
 irieflag Institutionalized elderly flag
 irimmi Years since immigrant arrival
 irind Industry
 irinseq Individual sub-sequence number
 irlfst Labour force status
 irlyfp Full or part-time last year
 irlystr Stretches of unemployment last year

| | |
|------------|-------------------------------------|
| irlyun | Weeks unemployed last year |
| irlyww | Weeks worked last year |
| irmarst | Marital status |
| irnonlf | Main activity for non-lf persons |
| irocc | Occupation |
| irrklyun | Raking foundation: weeks worked |
| irrklyww | Raking foundation: weeks unemployed |
| irscfflg | SCF high-income preservation flag |
| irschtp | School type |
| irsex | Sex |
| irsynthi | Synthetic high income person |
| m0val | Money item value |
| m1val | Money item value |
| m2val | Money item value |
| m3val | Money item value |
| urbtyp | Claim type |
| urdivwk | New EI Variable |
| ureff | Base year effective weekly benefit |
| urern | Base year insurable weekly earnings |
| urexhas | Exhaustee flag |
| urgotpa | |
| urhrwk | New EI Variable |
| urmtyp | Claim type |
| urnere | New EI Variable |
| urothbr | New EI Variable |
| urothwk | New EI Variable |
| urrpeat | Repeat claim flag |
| urstart | Week claim established |
| urtpcng | Type change flag |
| urtrnbr | Training benefit weekly rate |
| urtrnwk | Weeks of training benefits |
| uruer | Local unemployment rate (x10) |
| urweeks | Claim weeks of benefits |
| urwork | Weeks of work prior to claim |
| ury1 | |
| ury2 | |
| ury3 | |
| ury4 | |
| ury5 | |
| wrwgt | Household weight (float) |
| CANCELFLAG | Cancellation request flag |
| DBVERSION | Version of the database (x100) |
| WGTTOT | Sum of weights on tax file |

OUTPUT VARIABLES:

| | |
|---------|---|
| fhash | Hashed code of header information |
| hdclohh | Number of SCF clones |
| hdevmv | Expenditure Vector Matching Variable |
| hdnpers | Number of persons in household |
| hdprov | Province |
| hdseqhh | Household sequence number |
| hdtenur | Tenure |
| hdurb | Size of urban area |
| hdwgthh | Household weight |
| hhnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idalexp | Other allowable employment expenses (229) |
| idcapgex | Capital gains exemptions (254) |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idccqp | Converted CPP/CQP benefit |
| idcfpub | SCF CF publication flag |
| idcfrh | Relationship to census family head |
| idcfseq | Census family sub-sequence number |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idcintim | Converted interest income (imputed) |
| idcross | Allowable other years capital loss (253) |
| idcluflg | Common-Law union flag |
| idcsa | Converted social assistance |
| idcuib | Converted UI benefit |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idedlev | Educational level |
| ideducm | Eligible months of education allowance |
| idefpub | SCF EF publication flag |
| idefrh | Relationship to economic family head |
| idefseq | Economic family sub-sequence number |
| idemplo | Employee home relocation loan dedn (248) |
| idestat | Educational status |
| idexplor | Exploration and development expenses (224) |
| idext | Extra numbers [array] |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idgstreb | GST rebate (457) |
| idhhrh | Relationship to head of household |
| idhomstu | College res/resdnt homeowner assist (558) |
| idialimo | Alimony income received |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idimmi | Years since immigration |
| idind | Industry |
| idinogv | Other government income (non-taxable) |
| idinoth | Other money income (non-taxable) |
| idinseq | Individual sub-sequence number |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisa | Social assistance income |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| iditogv | Other government income (taxable) |

| | |
|-----------|--|
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idivetp | Veterans pensions and allowances |
| idiworkc | Workers compensation benefits |
| idlabtxg | Gross Labour funds bought (413) |
| idlfst | Labour force status |
| idlyfp | Last year full/Part time |
| idlystr | Last year stretches unemployed |
| idlyun | Weeks unemployed |
| idlyww | Weeks worked |
| idmarst | Marital status |
| idmedgro | Medical expenses, gross (330) |
| idmincar | Minimum tax carryover (504) |
| idmovexp | Imputed moving expenses (219) |
| idmschpd | Manitoba school taxes paid |
| idnage | Age |
| idnclos | Allowable other years non-capital loss (252) |
| idninco | No income flag (SPSD variables) |
| idnonlf | Major non-LF activity |
| idnorth | Northern deductions (255) |
| idocc | Occupation |
| idothded | Other deductions from total income (232) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idproptx | Net property taxes paid (556) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrentpd | Total rental payments (555) |
| idrkllyun | Raking foundation: weeks unemployed |
| idrkllyww | Raking foundation: weeks worked |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| idscfcqp | CPP/QPP income (SCF) |
| idscfctc | Child tax credit |
| idscfflg | SCF high-income preservation flag |
| idscfftc | Federal tax credit |
| idscfint | Interest income (SCF) |
| idscfoas | Old age security |
| idscfptc | Provincial tax credits as reported on SCF |
| idscfsa | Social assistance income (SCF) |
| idscfuib | Unemployment insurance benefits |
| idschtp | School type |
| idsex | Sex |
| idstkded | Stock option deduction (249) |
| idsynthi | Synthetic high income person |
| idtuitn | Tuition fees (320) |
| iduipred | Predicted amount of UI received |
| iduirank | Predicted ranked likelihood of getting UI |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucexhas | Exhaustee flag |
| ucgotpa | Received paternity benefits |

| | |
|----------|--|
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucuero | Local unemployment rate (x10)-original value |
| ucweeks | Weeks of benefits |
| ucworkwk | Weeks of work prior to claim |
| ucy1 | Weeks on UI in first year before claim |
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

gai Compute new refundable credits or guarantees

SUMMARY

This is a stub function for use by glass-box users who wish to incorporate a new program that does not affect current programs in the tax system (i.e. a new refundable tax credit). It is called by drv after all taxes have been calculated.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|------------------------|
| imiosa | Other SA or guarantees |
|--------|------------------------|

SUMMARY

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested. The SPSM gis function is based on the age of the individual and the years since immigration as well as family net income and family type. The function can calculate GIS, SPA, Extended SPA, and Widowed SPA benefits. The functions contain one sub-function, gissub, which calculates the income on which GIS/SPA benefits are tested.

The GIS/SPA benefits are zeroed out if the Seniors Benefit is turned on. When activated, the Seniors Benefit takes precedence over OAS/GIS. Persons age 60 or over in May 1996 may elect to receive OAS/GIS rather than the seniors benefits if their benefits are higher.

Program Description

The Guaranteed Income Supplement is a monthly, non-taxable, income tested benefit paid to residents of Canada who are in receipt of a basic Old Age Security pension. Recipients must re-apply annually. The Guaranteed Income Supplement is not payable outside of Canada for periods of longer than six months. Income testing is based on net income as defined for income tax purposes with the exception of Old Age Security benefits. In the case of a married couple, including common-law, the combined income of the pensioner and his or her spouse is taken into account. Where the individual or couple have an income above a specified amount, the Guaranteed Income Supplement is reduced at a rate of either \$1 for every \$2 of income, or \$1 for every \$4 of income, dependent upon the individuals' marital status and the benefit status of their spouses (if present).

The Guaranteed Income Supplement was established in 1966 to provide monthly benefits to OAS pensioners born on or before December 31, 1910, whose income is below a specified amount. For 1967, the monthly benefit was \$40 and set at 40 percent of the OAS pension thereafter. The Guaranteed Income Supplement has been changed on various occasions, the most important of which were as follows: 1970, which extended GIS to all OAS beneficiaries who met the income criterion; 1972, provided for annual indexation of GIS based on the CPI; 1973, changed indexation to quarterly from annual; 1977, provided the payment of GIS to partial OAS recipients; 1984, provided an increase in maximum GIS benefits to recipients of partial OAS pensions in the amount of the difference between full and partial OAS benefits.

The Spouse's Allowance is a monthly benefit designed to recognize the difficult circumstances faced by those couples living on the pension of only one spouse, and by many widowed persons. The Allowance is payable to the 60 to 64 year old spouse of an Old Age Security pensioner as well as to any low-income widow or widower age 60 to 64, providing the potential recipient has been a resident of Canada for at least 10 years after reaching age 18. This benefit is income-tested based upon the combined income of both the beneficiary

and his/her spouse and must be re-applied for annually. Benefits are not considered as income for income tax purposes and are not payable outside Canada for periods of more than six months.

The Spouse's Allowance came into effect October 1, 1975 and provided for the payment of benefits to persons aged 60 to 64 inclusive who are married to and living with an OAS pensioner. The amount was set at a sum equal to the monthly OAS pension plus the maximum monthly GIS at the married rate. Significant changes to the Spouse's Allowance were made in 1977 with the provision for partial Spouse's Allowance using the same criterion as for OAS; 1979, the extension of the Spouse's Allowance to include surviving spouses of deceased Old Age Security pensioners; 1985, with the provision for Spouse's Allowance to be paid to all widows/widowers age 60 to 64 regardless of deceased spouse's prior pension status.

The GIS, and SPA programs have been designed with the overall income of elderly Canadians in mind and ensure that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. Because the programs are interrelated, a better understanding is facilitated by discussing them together across the five different family types listed below and discussed in turn. These categories define the basic structure of the SPSM implementation of these programs. In these descriptions pensioner is understood to mean a recipient of either full or partial OAS benefits.

| GIS/SPA Type | Family Status |
|---|---|
| 1. Single Pensioner: | Unattached Individual, OAS Pensioner |
| 2. Widowed Pensioner: | Unattached Individual, Age 60-64, Widowed |
| 3. Married 2 Pensioner: | Married Couple, Both OAS pensioners |
| 4. Married pensioner with SPA spouse: | Married Couple, OAS Pensioner with SPA recipient |
| 5. Married pensioner with non-pensioner spouse: | Married couple, 1 OAS pensioner, spouse ineligible for OAS or SPA |

Single Pensioner

If an individual is receiving a full Old Age Security Pension he or she may be eligible for the federal Guaranteed Income Supplement (GIS). GIS is an income tested benefit payable to OAS beneficiaries with little or no income beyond to the basic OAS benefit. In the case where a beneficiary of a full OAS pension has no additional income or income of up to a maximum of \$24 per year, his/her GIS benefit will be the maximum. For every two dollars of income in excess of \$24 annually, the GIS benefit is reduced by one dollar until the benefit is reduced to zero.

In the case where the beneficiary is eligible for only partial OAS benefits, but has little or no other income (again, to a maximum of \$24 per year), supplementary GIS is available. Supplementary GIS makes up the difference between the partial OAS benefit that the beneficiary is receiving and full OAS benefits. Thus, a beneficiary with 20 years of residence in Canada would receive 30/40 of a full OAS pension and supplementary GIS benefits up to an amount equivalent to 10/40 of a full OAS pension. This ensures that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. In addition to the partial OAS pension and the supplementary GIS benefits, an individual may also receive the regular GIS benefit. Both the regular and the supplementary GIS benefits are income tested and reduced at a rate of one dollar for every two dollars of income in excess of \$24 per year.

Widowed pensioner

The Spouse's Allowance is an income-tested benefit payable to individuals who are between 60 and 65 years of age and are spouses of Old Age Security beneficiaries. In order to qualify for this benefit, the applicant must meet the same residence requirements set out for the basic Old Age Security Pension. The guarantee for the benefit is equivalent to the sum of the full basic Old Age Security Pension plus the Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of the beneficiary's monthly income or the couple's combined monthly income until the OAS-equivalent is reduced to zero. At that point the GIS portion reduces at the rate of \$1 for every \$4 of combined income until benefits are reduced to zero.

If an individual receiving Spouse's Allowance becomes a widow or widower, they are then eligible for an Extended Spouse's Allowance until they reach the age of 65 at which time they will become eligible for a basic Old Age Security Pension and the Guaranteed Income Supplement. The amount of the Extended Spouse's Allowance is somewhat higher than the regular Spouse's Allowance to account for the fact that the beneficiary is now in a single income family.

In addition to the regular and Extended Spouse's Allowances, benefits exist for widows and widowers between 60 and 65 years of age whose spouse died prior to becoming a pensioner. The Widowed Spouse's Allowance pays benefits at the same rate as the Extended Spouse's Allowance. Both the Extended and Widowed Spouse's Allowances are reduced by \$3 for every \$4 of monthly income until the OAS-equivalent portion is reduced to zero and then by \$1 for every additional \$2 of monthly income until the GIS-equivalent portion is reduced to

zero.

The Spouse's Allowance is not considered as income for income tax purposes but may, however, affect taxes indirectly via the spousal exemption amount.

Married Couple, Both Pensioners

GIS eligibility for couples is first based upon receipt of OAS. If the applicant is not eligible for OAS, then he or she is not eligible for GIS. Once eligibility for GIS has been established, then the rate of recovery or rate at which GIS is reduced because of additional income, must be established. For two pensioner couples, where both are OAS beneficiaries, GIS is reduced by one dollar for every four dollars of the couple's combined monthly income in excess of \$48 per year. In 1984, the maximum regular GIS payable to a married beneficiary was less than that payable to a single beneficiary. As in the case of a single beneficiary receiving only partial OAS benefits, a supplementary GIS benefit is available which makes up the difference between partial and full OAS benefits.

Married Pensioner with SPA Spouse

GIS is payable to the pensioner at the same rate as is paid to an individual in married couple where both spouses are pensioners. The amount of SPA benefit is equivalent to the combination of the full basic Old Age Security Pension and Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of combined monthly income (75%) until the OAS-equivalent is reduced to zero. At that point both the remaining portion of the Spouse's Allowance, and the pensioner's Guaranteed Income Supplement are each reduced by \$1 for every additional \$4 (50%) of the couple's combined monthly income.

The benefits payable to a pensioner with a given income could vary depending on whether the couple had applied for SPA; the benefit being higher for single pensioner couples. To ensure benefits are equal in these cases the SPA couple's benefits begin to be reduced at the effective rate of 25%, \$1 for each \$4 of family income after the crossover point. This is done by holding the pensioner's benefits fixed from the crossover point until the SPA benefits are reduced to zero; then the pensioners benefits continue to be reduced at the same married rate (see following figure).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

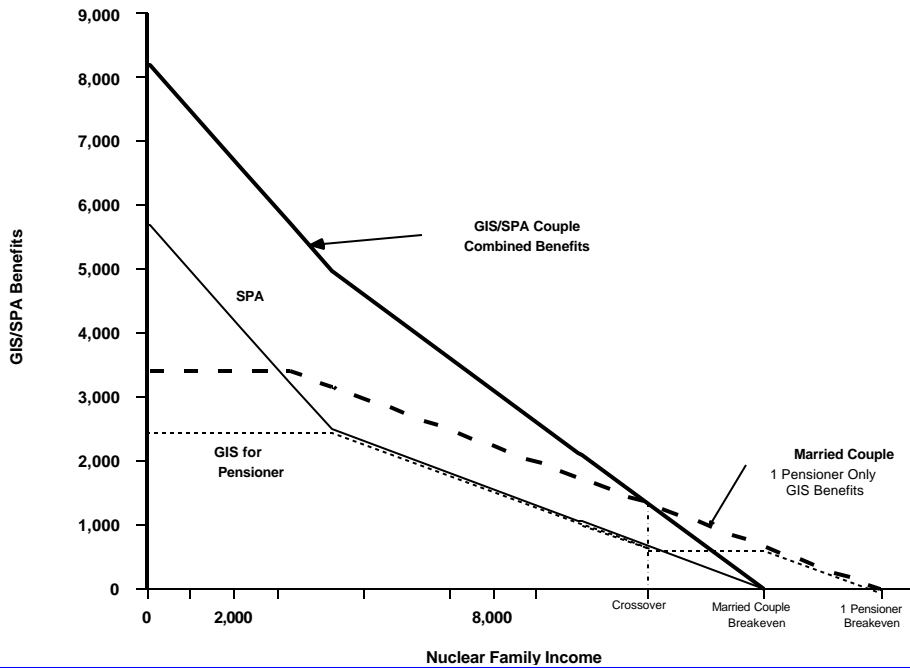


Figure 2 GIS/SPA Benefits for Married Pensioner with Non-Pensioner Spouse

Married Pensioner with Non-Pensioner Spouse

In the case of a pensioner whose spouse is under 60 years of age or is a recent immigrant, and therefore not eligible for OAS, GIS or SPA, the pensioner receives GIS at the higher single rate and benefits are reduced \$1 for every \$4 of the couple's combined monthly income with the first reduction being made only when their combined monthly income exceeds an amount equivalent to basic OAS plus \$4 per month. (see figure above)

SPSM Implementation

The gis function determines benefits based on the age of the individual, the years since immigration as reported at the time of the SCF survey in April 1985, combined family income, and family type. The function makes use of the imoasres, imoaspar variables created in the oas function to determine residential eligibility.

The function initially performs some screenings and pointer assignments for efficiency, and then makes a call to the gissub function to determine the previous years income, which will be used when calculating GIS/SPA benefits. This sub-function adds together all the components of total income listed below and multiplies them by a deflator PYINC to estimate the value of the previous year's income.

| | |
|----------------------|--|
| Net Income = PYINC * | Deflator To Simulate Previous Years Income |
| imicapgt | Taxable Capital Gains |
| + imidivt | Dividends Received |
| + idiint | Investment Income |

| | |
|-----------|--------------------------------------|
| + idiemp | Employment Income |
| + idisenf | Non-Farm Self Employment Income |
| + idisefm | Farm Self Employment Income |
| + idioinv | Other Investment Income |
| + iditoh | Other Income |
| + idicqp | CPP/QPP Benefits |
| + idipens | Private Pension Income |
| + iditogv | Other Taxable Government Transfers |
| + imiuib | Unemployment Insurance Benefits |
| - imalexp | Other allowable Employment Expenses |
| - imcqpc | CPP/QPP Contributions |
| - imuic | Unemployment Insurance Contributions |

Benefits are then calculated in each of the five groups discussed above. Every individual is assigned a value for the variables imoldtyp and ingistyp which define the type of pensioner couple and are used in the gist function.

The GIS supplement for the OAS shortfall for immigrants is calculated conditional on the setting of GISOASFLAG in all cases except the SPA recipient in a married couple. This should be set to one in years 1984 and later. No adjustment is made to account for the first quarter in 1984 for which no shortfall adjustment was made.

Take-up rates for GIS and SPA benefits are optionally applied depending on the value of the GISTURFLAG parameter. The rates are applied to individuals and to one spouse of a married couple. The algorithm assumes that the take-up rate look-up table margins are all dollar denominated GIS or SPA benefit levels.

Relation to Other SPSM Routines

GIS and SPA depends on the input parameters for basic GIS/SPA benefits and various variables calculated in the oas function. The function also makes use of parameters derived in the mpc function. The mpc function also ensures that GIS is not calculated without OAS being calculated first. The calculation of OAS and other modeled variables occurs prior to and effects the calculation of GIS and related GIS 'top-up' programs in the gist function. The gist function is called after txprov (calculation of provincial income taxes) by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-------|-----------------------------------|
| BESPA | Basic GIS portion of extended SPA |
| BGISM | Basic GIS - married |

| | |
|----------------|---|
| BGISS | Basic GIS - single |
| BOAS | Basic OAS |
| ESPAT | Extended SPA take-up rate by benefit level [benefit,rate] |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISCT | GIS take-up rate: pensioner couple by benefit level |
| [benefit,rate] | |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISOASFLAG | 1984 GIS top-up to OAS residence shortfall flag |
| GISOT | GIS take-up rate: one pensioner couple by benefit level |
| [benefit,rate] | |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| GISRRS | Basic GIS reduction rate: single pensioners |
| GISST | GIS take-up rate: single pensioner by benefit level |
| [benefit,rate] | |
| GISTURFLAG | GIS take-up flag: apply 5 take-up tables |
| PYINC | Deflator to calculate previous year income |
| SPAOSRR | OAS portion of SPA taxback rate |
| SPARL | SPA reduction point: one married/ widowed |
| SPAT | SPA take-up rate by benefit level [benefit,rate] |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |

INPUT VARIABLES:

| | |
|----------|--|
| hhnfnf | Number of nuclear families in household |
| idage | Age |
| idicqp | CPP/QPP income (114) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmarst | Marital status |
| idrand | Random numbers [array] |
| imalexp | Allowable employment expenses |
| imcqpcc | CPP/QPP contributions |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imioas | OAS benefits |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |
| imuic | UIC contributions |
| nfageeld | Age of eldest in nuclear family |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imigis | GIS benefits |

| | |
|----------|--------------------------------|
| imispa | Spouse's allowance |
| imninc | No income flag |
| imoldtyp | Type of GIS/SPA nuclear family |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |

gist Compute Provincial GIS top-ups for elderly

SUMMARY

The gist function calculates benefits for eight provincial GIS supplementation programs in eight provinces; Newfoundland, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. The function requires that both OAS and GIS be calculated first. All provincial senior's programs within SPSM are in this function. Please note that the provincial programs here are not exhaustive, but all major benefits are covered.

Program Description

Eight provinces provide cash benefits to pensioners in receipt of federal OAS, GIS, and in some cases, SPA benefits. The eight programs differ in terms of the level of benefits payable, eligibility requirements, etc. Each program listed below is modeled and documented independently.

| | |
|------------------|--|
| Newfoundland | Low-income Seniors Benefit |
| Nova Scotia | Special Social Assistance |
| New Brunswick | Low-income Seniors Benefit |
| Ontario | Guaranteed Annual Income System (GAINS-A) |
| Ontario | Sales Tax Grant Program |
| Ontario | Property Tax Grant Program |
| Manitoba | Supplement for Pensioners (55+) |
| Saskatchewan | Income Plan (SIP) |
| Alberta | Assured Income Plan AAIP |
| Alberta | Alberta Seniors Benefit |
| Alberta | Widow's Pension |
| British Columbia | GAIN for Seniors Supplement (Guaranteed Available Income for Need) |

Newfoundland Low-Income Seniors Benefit

A benefit is given to seniors (aged 65 and over) with annual family income less than NFSBTD. The maximum benefit NFSBBAS is reduced by NFSBRR for each dollar of family income over NFSBTD.

Nova Scotia Special Social Assistance

Up to 1991, all residents of the province of Nova Scotia who are in receipt of GIS in March

of a given year were eligible for Special Social Assistance. Application for benefits had to be made each year. SPA recipients were not eligible. One lump-sum payment was made yearly in one of four amounts scaled to the proportional GIS of the recipient as follows:

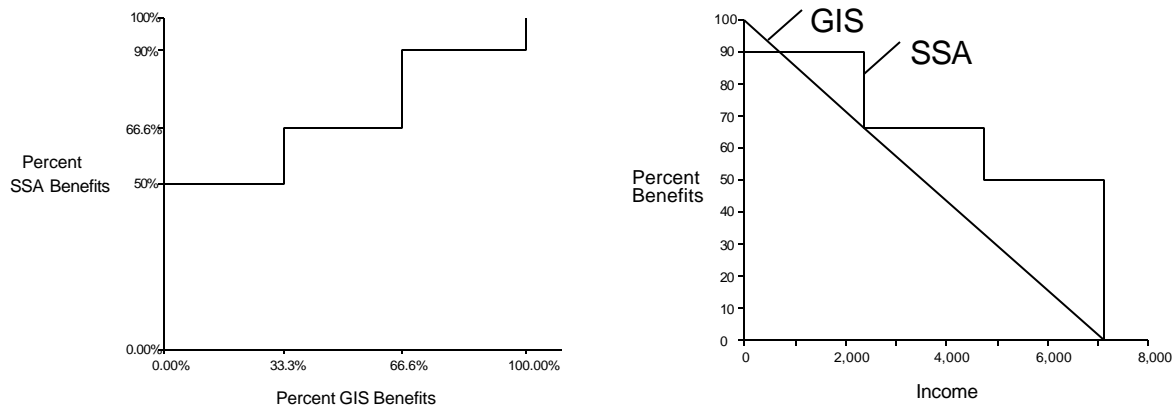


Figure 3. Nova Scotia Special Social Assistance

So, for example, a pensioner receiving maximum GIS benefits would have received maximum SSA benefits and a pensioner receiving 80% of maximum GIS benefits would have received 90% of maximum SSA benefits.

New Brunswick Low-Income Seniors Benefit

A benefit is given to seniors who receive GIS. If both spouses received GIS, the benefit is given to the spouse with the lower net income.

Ontario Guaranteed Annual Income System (GAINS-A)

GAINS-A provides a monthly benefit to Ontario residents in receipt of GIS who meet certain income and residence requirements. A person must have lived in Ontario for the year prior to applying for GAINS-A or for at least 20 years after turning 18 years of age. GIS recipients need not apply since their eligibility is reviewed automatically. SPA recipients are not eligible. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

Ontario Sales Tax Grant Program

The sales tax grant has been a flat \$50 per person over age 65 from 1984 to 1989. The maximum value of the sales tax grant is stored in the ONTSTG parameter. The variable impstg is used to store individual sales tax grants calculated by the model.

Ontario Property Tax Grant Program

The property tax grant is payable to seniors who are head of their household. The amount of the grant varies by tenure and actual costs. For years 1984 to 1989 renters receive 20% of their rental costs up to a maximum of \$500. Homeowners receive the maximum benefit. The fraction of rental costs allowed is contained in the ONTFPTG parameter while the

maximum benefit is stored in the parameter ONTPPTG. Calculated benefits are stored in the variable impptg.

Calculated benefits for both the sales tax grants and the property tax grants are also added to the variable imigist.

Manitoba Supplement for Pensioners (MSP, 55+)

The MSP provides quarterly benefits to Manitoba residents who are in receipt of certain levels of GIS and SPA benefits, including extended and widowed SPA recipients. MSP also provides benefits to persons aged 55 and over who are not in receipt of OAS benefits but whose income falls in a specified range and is derived at least 50% from pension sources. Eligibility is renewed automatically for GIS and SPA recipients, but non-GIS/SPA pensioners 55 years of age and over must apply.

In the case of GIS/SPA recipients there are two levels of benefits, single and married. An SPA recipient is treated as a single pensioner. Benefits are reduced at the same rate as GIS based on family income. Non GIS/SPA pensioners are treated in exactly the same manner except for couples benefits are reduced based on individual annual income.

Saskatchewan Income Plan

SIP provides monthly benefits to Saskatchewan residents in receipt of GIS and whose incomes don't exceed specified levels. SPA recipients are not eligible for SIP benefits. There are two levels of benefits, single and married. There are three different reduction rates. Unattached Individuals and Married Couples where both are GIS pensioners SIP benefits are reduced by \$1 for each \$1 reduction in GIS. For a pensioner whose spouse is not eligible for OAS/GIS/SPA the benefit is reduced by \$3 for each \$1 reduction in GIS benefits. The pensioner spouse of an SPA recipient has their benefit reduced by \$1 for each \$3 reduction in their spouse's SPA. There are monthly minimum benefits at both single and married levels.

Alberta Assured Income Plan

AAIP benefits are payable monthly to all Alberta residents who are in receipt of GIS benefits or who became eligible for the extended SPA prior to May 1983. Regular SPA recipients are ineligible. Since May 1983 all extended SPA recipients are referred to the Alberta Widow's pension. Application is not required. There is one individual benefit which is reduced by 50¢ for each \$1 reduction in GIS benefits to a minimum of \$10 monthly.

Alberta Seniors Benefit

Starting in 1994, the AAIP was replaced by the Alberta Seniors Benefit. When ALTASOPT is set to 2, the Alberta Seniors Benefit is calculated. Seniors are split into six categories:

- single seniors who rent their home,
- single seniors who own their home,
- seniors married to non-seniors who rent their home,
- seniors married to non-seniors who own their home,
- two senior couples who rent their home,

and two senior couples who own their home

When ASBSSOPT is set to 2, seniors married to non-seniors are treated in the same manner as two senior couples. Benefits and reduction rates vary by these categories (ASBBASIC, ASBRENT, ASBSS, ASBNSS, ASBRR). Maximum benefits are phased out using non-deductible income which is defined as last year's total income (imitot) minus OAS benefits (imioas), registered pension plan contributions (idrpp), RRSP contributions (idrrsp), and ASBEMP times idiemp.

For persons who do not qualify for OAS because of residency requirements, a proportion of the total benefit is assigned depending on marital status and household tenure (ASBNOAS). For these persons, BOAS is deducted from their non-deductible income. When ASBSSOPT is set to 1, a two senior couple in which one of the seniors does not meet the OAS eligibility requirement is treated as 1 senior couple.

Alberta Widowed Pension

The Alberta Widow's pension provides monthly benefits to widows and widowers aged 55 to 64 years who reside in Alberta. Yearly Application must be made. Maximum benefits are reduced by \$1 for each \$1 of previous year's non-exempt annual income. Extended SPA recipients may apply however their SPA benefits are included in their income when calculating entitlement.

British Columbia GAIN for Seniors Supplement

GAIN provides a monthly benefit to British Columbia residents in receipt of GIS or SPA who meet certain income and residence requirements. GIS/SPA recipients need not apply since their eligibility is reviewed automatically. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

SPSM Implementation

The user is invited to read the source code in order to examine the implementation of these programs. A subsequent update will include a written description of the implementation of these programs.

Interpretation

In general the problems of coverage, including take-up, discussed in the interpretation of OAS and GIS are also present here. Specifically there are no tests made for residential eligibility applied on Ontario GAINS-A. Currently double counting occurs for the benefits for Manitoba residents under the age of 65. This is because the calculated income is reported in one variable (imigist) and reported income from the survey is reported in another (imisa). There are plans to fix the problem; however, the dollar amounts are small in any case.

Relation to Other SPSM Routines

Provincial GIS supplement programs depend on various program specific input parameters as

well as variables calculated in the oas and gis functions. The mpc function ensures that provincial GIS supplements are not calculated without GIS being calculated first. The calculation of OAS and GIS occurs prior to and effects the calculation GIS 'top-up' programs in the gist function. The gist function is called after gis by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALTAMIN | Alberta GIS supplement minimum annual benefit |
| ALTASC | Alberta GIS supplement maximum annual benefit |
| ALTASOPT | Alberta seniors option [1=GIST,2=new seniors benefit 1994] |
| ALTAWP | Alberta widow's pension maximum annual benefit |
| ASBBASIC | Alberta seniors benefit annual basic benefit |
| ASBEMP | Alberta seniors benefit employment inclusion rate |
| ASBNOAS | Alberta seniors benefit reduction if no OAS [senior type] |
| ASBNSS | Alberta seniors benefit non-senior spouse supplement |
| ASBRENT | Alberta seniors benefit renter supplement |
| ASBRR | Alberta seniors benefit reduction rate [senior type] |
| ASBSS | Alberta seniors benefit senior spouse supplement |
| ASBSSOPT | Alberta seniors benefit 1 senior couple option [1=model separately,2=model as senior couples] |
| BCC | British Columbia GIS supplement: married pensioners |
| BCS | British Columbia GIS supplement: single pensioners |
| BOAS | Basic OAS |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISTFLAG | Provincial GIS top-up flag |
| MANC | Manitoba GIS supplement: married pensioners |
| MANCNPF | Manitoba GIS supplement reduction point: married |
| MANS | Manitoba GIS supplement: single pensioners |
| MANSNPF | Manitoba GIS supplement reduction point: single |
| NBSB | New Brunswick Low-Income Seniors' Benefit |
| NBSBSPA | N.B. Low-Income Seniors' Benefit - SPA eligibility |
| NFSBBAS | NFLD Low-Income Seniors' Benefit base amount |
| NFSBRR | NFLD Low-Income Seniors' Benefit reduction rate |
| NFSBTD | NFLD Low-Income Seniors' Benefit turndown |
| NS13 | Nova Scotia GIS supplement for 1/3 GIS |
| NS23 | Nova Scotia GIS supplement for 2/3 GIS |
| NSLT13 | Nova Scotia GIS supplement for less than 1/3 GIS |
| NSMAX | Nova Scotia maximum GIS supplement level |
| ONTC | Ontario GIS supplement: married pensioners |
| ONTFPTG | Ontario property tax grant (fraction of rent) |
| ONTPTG | Ontario property tax grant for seniors |
| ONTS | Ontario GIS supplement: single pensioners |
| ONTSTG | Ontario sales tax grant for seniors |
| PYINC | Deflator to calculate previous year income |
| SASKC | Saskatchewan GIS supplement: married pensioners |
| SASKMINC | Saskatchewan GIS supplement minimum benefits: married |

| | |
|------------|--|
| SASKMINS | Saskatchewan GIS supplement minimum benefits: single |
| SASKRR1 | Saskatchewan GIS supplement reduction rate: regular |
| SASKRR2 | Saskatchewan GIS supplement reduction rate: 1 GIS |
| SASKRR3 | Saskatchewan GIS supplement reduction rate: SPA |
| SASKS | Saskatchewan GIS supplement: single pensioners |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|--|
| hdageeld | Age of eldest in household |
| hdprov | Province |
| hdtenur | Tenure |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawls |
| idmarst | Marital status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imalexp | Allowable employment expenses |
| imcqqpc | CPP/QPP contributions |
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imicapgt | Capital gains (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoasres | Partial OAS fraction |
| imrentpd | Imputed rent paid |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|---------|---|
| imiasb | Alberta seniors benefit |
| imigist | GIS provincial top-up |
| imninc | No income flag |
| impptg | Provincial property tax grant for seniors |
| impstg | Provincial sales tax grant for seniors |

isneg Is argument negative ?

SUMMARY

```
int isneg(var);
```

```
NUMBER var
```

The `isneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a negative value. If the argument is zero or positive, a value of zero is returned. Note that, unlike a function, the `isneg` macro cannot take an expression as an argument. The expression `isneg(var)` is functionally equivalent to an expression of the form `(var < 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnneg Is argument non-negative?

SUMMARY

```
int isnneg(var);
```

```
NUMBER var;
```

The `isnneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-negative value. If the argument is negative, a value of zero is returned. Note that, unlike a function, the `isnneg` macro cannot take an expression as an argument. The expression `isnneg(var)` is functionally equivalent to an expression of the form `(var > 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnzero Is argument non-zero?

SUMMARY

```
int isnzero(var);
```

```
NUMBER var;
```

The `isnzero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-zero value. If the argument is zero, a value of zero is returned. Note that, unlike a function, the `isnzero` macro cannot take an expression as an argument.

The expression `iszero(var)` is functionally equivalent to an expression of the form `(var != 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

iszero Is argument zero?

SUMMARY

```
int iszero(var);
```

```
NUMBER var;
```

The `iszero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains the value zero. If the argument is non-zero, a value of zero is returned. Note that, unlike a function, the `iszero` macro cannot take an expression as an argument. The expression `iszero(var)` is functionally equivalent to an expression of the form `(var == 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

lkup1 Table look-up with interpolation/extrapolation

SUMMARY

```
NUMBER lkup1(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The `lkup1` function is used to perform table look-ups with interpolation. Expressed another way, `lkup1` evaluates continuous piecewise linear functions.

The first argument (`tbl`) is the address of an SPSM look-up table, which is an $n \times 3$ array of floating point numbers. The first two columns of `tbl` contain the (X,Y) pairs that define the piece-wise linear function. The third column of `tbl` contains the slope of the segment that starts at the (X,Y) pair. SPSM look-up tables are defined in parameter input files, and come in two varieties, as perceived by the user. One variety allows the user to specify the (X,Y) pairs, and computes the slopes automatically. The other variety allows the user to specify all the X values, the first Y value, and the slopes, and computes the remaining Y values automatically. In both cases the internal representation of the lookup table is identical and is the same as that expected by the `lkup1` function.

The second argument of `lkup1` is an integer giving the number of rows in `tbl`. Generally this value is another member of the same parameter structure in which the `tbl` is defined.

The third argument of lkup1 is the X value whose corresponding Y value is to be determined. lkup1 returns the corresponding Y value.

lkup2 Table look-up without interpolation

SUMMARY

```
NUMBER lkup2(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The lkup2 function is used to perform table look-ups without interpolation. Expressed another way, lkup2 evaluates step functions.

The first argument (tbl) is the address of an SPSM look-up table, which is an n x 3 array of floating point numbers. The first two columns of tbl contain the (X,Y) pairs that define the left-most point of each step in the step function. The third column of tbl contains the slope of the segment that starts at the (X,Y) pair, but the lkup2 function only makes use of the (X,Y) pairs in the look-up table. The slopes, though always present in look-up tables, are not used.

The second argument of lkup2 is an integer giving the number of rows in tbl. Generally this value is another member of the same parameter structure in which the tbl is defined.

The third argument of lkup2 is the X value whose corresponding Y value is to be determined. lkup2 returns the corresponding Y value.

maxn Find the maximum of two numbers

SUMMARY

```
NUMBER maxn(x, y);
```

```
NUMBER x;  
NUMBER y;
```

The maxn function returns the value of the larger of its two input arguments.

memo1 Compute memo items for reporting

SUMMARY

The memo1 function is used to calculate several reporting variables as aggregates of other

modeled variables. The function calculates all dollar denominated reporting variables up to the level of disposable income. In addition taxable filer status is determined.

SPSM Implementation

The `memo1` function operates at the individual level of analysis and skips individuals with no income. The algorithm first assigns filer status as relevant/non-relevant and taxable/non-taxable based on taxes paid and credits received. The function then calculates several reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|---|
| <code>imiemp =</code> | <code>idiemp;</code> |
| <code>imiself =</code> | <code>idisenf + idisefm;</code> |
| <code>imfoth =</code> | <code>iditogv + idinogv;</code> |
| <code>impoth =</code> | <code>ZERO;</code> |
| <code>imicqp =</code> | <code>idicqp;</code> |
| <code>immemp =</code> | <code>idiemp + idisenf + idisefm;</code> |
| <code>imminv =</code> | <code>idiint + ididiv + idicapg + idioinv;</code> |
| <code>immoth =</code> | <code>idipens + iditoth + idinoth;</code> |
| <code>immmkt =</code> | <code>immemp + imminv + immoth;</code> |
| <code>imftran =</code> | <code>imffa + imioas + imiotg + imigis + imispa + imctc + imfcben + imicqp + imfoth + imiuib + imfstc + imqtar + imfsa + imiosa + imfortc;</code> |
| <code>imctcben =</code> | <code>imctc + imfcben;</code> |
| <code>imfothtr =</code> | <code>imfoth + imfortc;</code> |
| <code>imfnewpg =</code> | <code>imiotg + imiosa;</code> |
| <code>imigispa =</code> | <code>imigis + imispa;</code> |
| <code>impfp =</code> | <code>impfa + imqaafa + imqnbfa + imiafetc + imnbcben + imibcfb + imoccea + imqfatc + imscb + imses + imnscb + imibceib;</code> |
| <code>imptran =</code> | <code>impfp + imigist + imptc + impfa + importc + iminsda;</code> |
| <code>immtran =</code> | <code>imptran + imftran;</code> |
| <code>immtot =</code> | <code>immmkt + immtran;</code> |
| <code>imftax =</code> | <code>imuic + imcqppc + imrepay + imtxf;</code> |
| <code>imptax =</code> | <code>imtxp;</code> |
| <code>immtax =</code> | <code>imftax + imptax;</code> |
| <code>immdisp =</code> | <code>immtot - immtax;</code> |
| <code>immicons =</code> | <code>immdisp; (initial assignment, may be re-assigned in memo2)</code> |

Relation to Other SPSM Routines

The `memo1` function is called by `drv` immediately after the income tax and cash transfer algorithms have executed. It is called just before the execution of the commodity tax model (`ctmod`) which makes use of some of the aggregated output variables. The `memo2` function follows `ctmod` to add information to the reporting variables calculated in the `memo1` function.

CROSS REFERENCE

| Function | Description |
|-----------------------|---|
| INPUT VARIABLES: | |
| <code>hhnin</code> | Number of individuals in household |
| <code>idialimo</code> | Alimony income received |
| <code>idicapg</code> | Capital gains (actual) |
| <code>idicqp</code> | CPP/QPP income (114) |
| <code>ididiv</code> | Dividend income (actual) |
| <code>idiemp</code> | Wages & salaries |
| <code>idiint</code> | Interest income (121) |
| <code>idinogv</code> | Other government income (non-taxable) |
| <code>idinoth</code> | Other money income (non-taxable) |
| <code>idioinv</code> | Other investment income with net rental |
| <code>idipens</code> | Pension income (115) |
| <code>idisefm</code> | Self-employed income - farming |
| <code>idisenf</code> | Self-employed income - non-farming |
| <code>iditogv</code> | Other government income (taxable) |
| <code>iditoth</code> | Other non-government income (taxable) |
| <code>idivetp</code> | Veterans pensions and allowances |
| <code>idiworkc</code> | Workers compensation benefits |
| <code>imbft</code> | Basic federal tax |
| <code>imcqqpc</code> | CPP/QPP contributions |
| <code>imctc</code> | Child tax credit |
| <code>imfcben</code> | Total Federal Child Benefits |
| <code>imffa</code> | Federal portion of family allowances |
| <code>imfortc</code> | Federal other refundable tax credits |
| <code>imfsa</code> | Federal social assistance |
| <code>imfstc</code> | Federal sales tax credit |
| <code>imheatrl</code> | Federal relief for heating expenses |
| <code>imiafetc</code> | Alberta Family Employment Tax Credit Benefits |
| <code>imibceib</code> | B.C. Earned Income Benefit |
| <code>imibcfb</code> | B.C. Family Bonus |
| <code>imigis</code> | GIS benefits |
| <code>imigist</code> | GIS provincial top-up |
| <code>iminet</code> | Net income |
| <code>iminsda</code> | NS Direct Assistance Program |
| <code>imioas</code> | OAS benefits |
| <code>imiosa</code> | Other SA or guarantees |
| <code>imiotg</code> | Other taxable demogrants |
| <code>imispa</code> | Spouse's allowance |

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imnbcben | Total NB child tax Benefits |
| imnccb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnscb | Nova Scotia Child Benefit |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| impfa | Provincial family allowance |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| importc | Other refundable provincial tax credits |
| impsa | Provincial social assistance |
| imptc | Refundable provincial tax credits |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqnbfa | Quebec newborn Allowance |
| imqtar | Quebec tax abatement (refundable) |
| imrepay | Social Benefits Repayments |
| imscb | Saskatchewan Child Benefit |
| imses | Saskatchewan Employment Supplement |
| imtxf | Federal income tax payable |
| imtxp | Provincial income tax payable |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|---|
| imctcben | Federal child tax credit and child benefits |
| imfiler | Taxable filer status |
| imfnewpg | Federal new programs |
| imfoth | Federal other government income |
| imfothtr | Federal other trans income and ref. credits |
| imftax | Federal taxes |
| imftran | Federal transfer income |
| imicqp | CPP/QPP payable |
| imiemp | Wages and salaries |
| imigispa | GIS and spouse's allowance |
| imiself | Total self-employment income |
| immdisp | Disposable income |
| immemp | All employment income |
| immicons | Consumable income |
| imminv | Investment income |
| immmkt | Market income |
| immoth | Other income |
| immtax | All taxes |
| immtot | Total income |
| immtran | All transfer income |
| impalltc | All refundable provincial tax credits |
| impfp | Provincial family programs |
| impoth | Provincial other government income |
| imptax | Provincial taxes |
| imptran | Provincial transfer income |

SUMMARY

The `memo2` function is used to calculate several reporting variables as aggregates of other modeled variables. The function calculates all dollar denominated reporting variables up to the level of consumable income.

SPSM Implementation

The `memo2` function operates at the individual level of analysis and skips individuals with no income. Aspects of the function are not executed if the commodity tax model has not been run (`CTMOD=0`). The function first adjusts several reporting variables calculated in `memo1` as follows.

| Reporting Variable | Formula |
|-------------------------|--|
| <code>imftax =</code> | <code>imftax + imtxfc</code> |
| <code>imptax =</code> | <code>imptax + imtxpc</code> |
| <code>immtax =</code> | <code>immtax + imtxfc + imtxpc</code> |
| <code>immicons =</code> | <code>immdisp - imtxfc - imtxpc</code> |

The function next calculates additional reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|--------------------------------------|
| <code>imnettr =</code> | <code>immtran - immtax</code> |
| <code>imothrep =</code> | <code>imrepay - imuibr</code> |
| <code>imqta =</code> | <code>imqtaa + imqtar</code> |
| <code>imfedbal =</code> | <code>imftax - imftran</code> |
| <code>imprvbal =</code> | <code>imptax - imptran</code> |
| <code>impovinc =</code> | <code>immtot - imctc - imfstc</code> |

Relation to Other SPSM Routines

The `memo2` function is called by `drv` immediately after the commodity tax algorithms (`ctmod`) have executed. The function adds information to the reporting variables calculated in the `memo1` function.

Please refer to the [Variable Guide](#) for detailed descriptions of the variables listed above.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

CTFLAG Commodity tax activation flag

INPUT VARIABLES:

hhnin Number of individuals in household
imftran Federal transfer income
immdisp Disposable income
immtot Total income
immtran All transfer income
imninc No income flag
imptran Provincial transfer income
imqtaa Quebec tax abatement (applied)
imqtar Quebec tax abatement (refundable)
imrepay Social Benefits Repayments
imtxfc Federal commodity taxes
imtxpc Provincial commodity taxes
imuibr UI benefit recovery

OUTPUT VARIABLES:

efin First person in economic family [pointer]
idef Person's economic family [pointer]
imfedbal Federal taxes less transfers
imftax Federal taxes
immicons Consumable income
immtax All taxes
imnettr Net transfers to person
imothrep Other federal repayments
impovinc Income for low income measurement
imprvbal Provincial taxes less transfers
imptax Provincial taxes
imqta Quebec tax abatement (total)

minn Find the minimum of two numbers

SUMMARY

NUMBER minn(x,y);

NUMBER x;

NUMBER y;

The minn function returns the value of the smaller of its two input arguments.

mpc Calculate derived model parameters and do edits

SUMMARY

The mpc function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters. The function currently calculates derived parameters for

use in the commodity tax (`ctmod`) function, the Guaranteed Income Supplement (`gis`) function, and the head/spouse transfer (`txhstr`) function. Performing the calculations in `mpc` increases the efficiency of the program by avoiding multiple calculations for every household. Edit checks are performed for aspects of the commodity tax model and the old age income system. Please refer to the appropriate section in the [Algorithm Guide](#) for details of the specific social and tax programs.

SPSM Implementation

Calculation of Derived Parameters

Two derived parameters for use in the `ctmod` are calculated: a total federal government effective commodity tax rate (CTFTOT) and a total provincial government effective rate (CTPTOT). The federal rate is calculated by adding together the six detailed federal rates produced by the Input/Output model: CTFCID, CTFEXT, CTFMFG, CTFEXT, CTFOEN, and CTFGST. The aggregate provincial rate is calculated in the identical fashion, summing up the 6 provincial rates: CTPRST, CTPLGL, CTPPLQ, CTPTOB, CTPGAS, and CTPAMU.

These parameters are used to ensure equivalent results between the detailed and non-detailed commodity tax model options. When the detailed option is turned off (i.e. the CTDFLAG parameter is set to zero), commodity tax revenues are produced by multiplying the two aggregate rates by the total expenditure of each household. This requires a fraction of the operations for each household when compared to the detailed method.

A single derived parameter, UIBRA, is calculated for use in the `txitax` function. This parameter contains the individual's UIC repayment base amount and is derived from two further parameters: UIBAF, the UI benefit recovery base amount factor, and UIERNMAX, the dollar value of maximum insurable earnings. Please refer to section in this manual for further information on the `txitax` function.

Three derived parameters are calculated for use in the `gis` function. The income breakeven points for GIS/SPA couples and married 1 pensioner couples are calculated here as GISBE1 and GISBE2 respectively. The breakeven points represent the level of family income at which combined GIS/SPA benefits are reduced to zero based on combined family income. They in turn are used to calculate an income crossover point (SPAXO) for the two types of pensioner couples (see following Chart).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

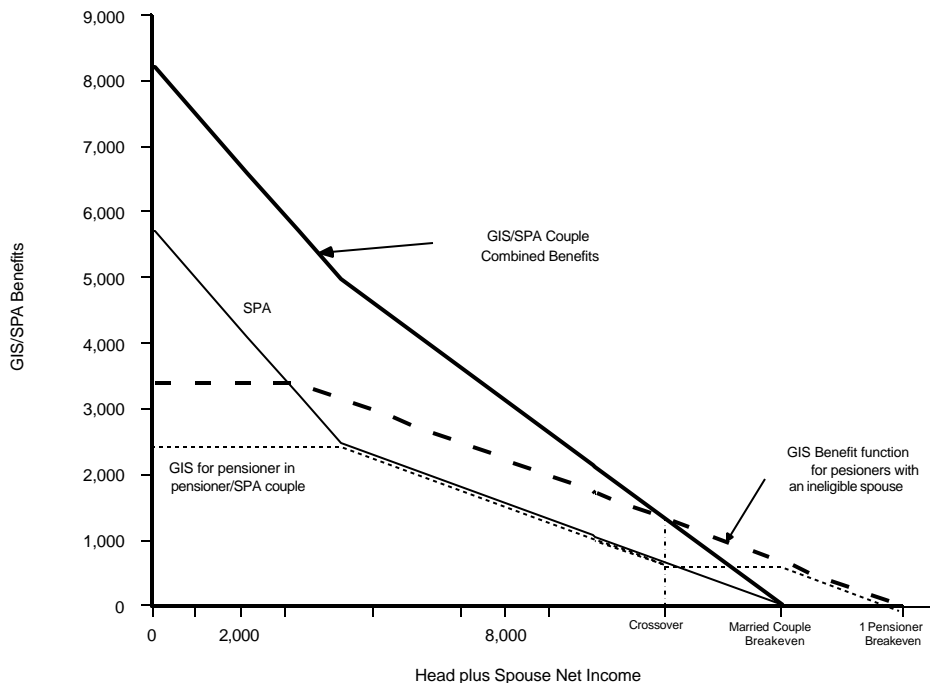


Figure 1 GIS/SPA Benefits for One OAS Pensioner Couples

GISBE1 represents the level of family income at which the GIS benefits of a pensioner married to a non pensioner have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "1 Pensioner Breakeven". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{GISBE1} = \text{BGISS} / \text{GISRRM} + \text{BOAS} + \text{GISRLS}$$

GISBE2 represents the level of family income at which the combined GIS and SPA benefits of a pensioner married to a SPA recipient have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "Married Couple Breakeven".

$$\text{GISBE2} = (\text{BGISM} * 2) / (\text{GISRRM} * 2) + \text{BOAS} / \text{SPA} + \text{OASRR} + \text{GISRLM}$$

SPAXO represents the level of family income at which the dollar benefits for GIS to a single pensioner married to a non-pensioner spouse exactly equal the combined GIS/SPA dollar benefits payable to a GIS/SPA married couple. On the figure above this is the point on the X axis labelled "Crossover". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{SPAXO} = 2 * \text{GISBE2} - \text{GISBE1}$$

Please refer to the Guaranteed Income Supplement Section of this guide for further details on the use of these derived parameters.

For all of the parameters described above users may refer to the [Parameter Guide](#) for further information.

Edit Checks

Three parameter edit checks are currently implemented in the `mpc` function.

- A check is made to ensure that the tax credit rate parameter `FNTCR` is non-zero. If zero, an error message is issued but processing continues.
- A similar check is made to ensure that the tax credit rate is non-zero. Error handling is also the same as above.
- If the `CTFLAG` parameter is set to 1 (thereby specifying that commodity taxes will be calculated) and the `FXVFLAG` parameter is set to 0 (indicating no FAMEX expenditure data is to be read) then an error message will result and `CTFLAG` will be reset to 0 and no commodity taxes will be calculated.
- If the OAS algorithm is switched off (`OASFLAG=0`) and the GIS algorithm is switched on (`GISFLAG=1`) GIS benefits will be incorrectly calculated as they depend on variables calculated in the `oas` function. If this condition is met an error message will result and `GISFLAG` will be set to 0 and consequently no GIS benefits will be calculated.
- If the GIS algorithm is switched off (`GISFLAG=0`) and the provincial GIS supplement algorithm is switched on (`GISTFLAG=1`) provincial GIS supplement benefits will be incorrectly calculated as they depend on variables calculated in the `gis` function. If this condition is met an error message will result and `GISTFLAG` will be set to 0 and consequently no provincial GIS supplement benefits will be calculated.

Relation to Other SPSM Routines

The `mpc` function is called before `drv` and as such is only executed once for every program run. The function currently calculates parameters and performs edits which can effect a number of functions directly; the `ctmod` function, the `gis` function, the `gist` function, the `txitax` function, and the head/spouse transfer `txhstr` function.

CROSS REFERENCE

| Function | Description |
|----------------------|------------------------------------|
| INPUT PARAMETERS: | |
| <code>FXVFLAG</code> | Read FAMEX expenditure vector file |
| <code>BGISM</code> | Basic GIS - married |
| <code>BGISS</code> | Basic GIS - single |
| <code>BOAS</code> | Basic OAS |
| <code>CTFCID</code> | Federal custom import duties [com] |
| <code>CTFEXD</code> | Federal excise duties [com] |
| <code>CTFEXT</code> | Federal excise taxes [com] |
| <code>CTFGST</code> | Federal GST [com] |
| <code>CTFMFG</code> | Federal manufacturer's sales [com] |

| | |
|-----------|---|
| CTFOEN | Federal other energy taxes [com] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| OASFLAG | Old age security flag |
| QNTCR | Quebec nominal tax credit rate |
| SPAOSRR | OAS portion of SPA taxback rate |
| UIBAF | UI benefit recovery base amount factor (UI and EI) |
| UIBAFNR | UI EI benefit recovery base amount factor for non-repeaters |
| (EI only) | |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIERNMAX | Maximum insurable earnings (UI and EI) |

OUTPUT PARAMETERS:

| | |
|----------|--|
| CTFLAG | Commodity tax activation flag |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| GISBE1 | Breakeven for GIS one pensioner couple |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISTFLAG | Provincial GIS top-up flag |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |

nneg Change negative numbers to zero

SUMMARY

NUMBER nneg(arg);

NUMBER arg;

The nneg function returns either zero or the value of arg, whichever is larger. In other words, nneg changes negative values to zero, leaving positive values unchanged.

SUMMARY

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. Benefits are either full or partial depending on a person's history of residency in Canada. The program is not income tested. The SPSM oas function is based on the age of the individual and, for immigrants, the years since immigration as reported at the time of the SCF survey in April 1985.

The Seniors Benefit program was added to the model based on the description provided with the 1996 Federal Budget. The Seniors Benefit will replace the OAS/GIS benefits in 2001. It will be a tax-free; income tested benefit which will be determined on the basis of the incomes from both spouses. The maximum benefits will be \$120 more than the maximum OAS/GIS for 2001. These rates are fully indexed for inflation.

People aged 60 or over on December 31, 1995 will be able to choose to move to the Seniors Benefit or keep the existing OAS/GIS payments. The SPA program remains in place but is enriched by \$120.

Program Description

As amended in 1957 and 1965 the OAS program provides full benefits to persons born in Canada or those having immigrated to Canada more than 10 years before their 65th birthday with no provisions for partial benefits. In June 1977 the program was modified to provide partial benefits to immigrants having resided in Canada for between 10 to 39 years at the time of their 65th birthday. These individuals are eligible for benefits in proportion to the number of years in Canada at age 65 divided by 40. Note that years of eligibility do not increase after the year of the beneficiary's 65th birthday. Thus an immigrant of twenty years at his/her 65th birthday would be eligible for 20/40 or 50% of full OAS benefits. Persons having immigrated to Canada less than ten years prior to their 65th birthday were ineligible for OAS until 1987. In that year the OAS program was modified to allow for immigrants from certain countries having reciprocal arrangements with Canada to use years of residency in the country of emigration to count towards meeting the minimum 10 years residency requirement. However, in these cases it is only the years of residence in Canada which are used to determine the rate of partial benefits.

SPSM Implementation

The oas function determines benefits based on the age of the individual and the years since immigration as reported at the time of the SCF survey in April 1985. Because OAS provides an individually determined benefit the simulation operates at the level of a household assigning benefits to all eligible individuals. The model first adjusts years since immigration in two ways:

1. It determines the years since immigration at the time of the potential beneficiary's 65th

birthday. This is done by subtracting the difference between the individual's age and 65 years from the reported years since immigration. [immi = immi - (idage-65)]

2. It adjusts the immigration status of persons who were eligible for Full OAS under the original program specifications but would qualify for only partial benefits since 1977. This is done by setting the years since immigration to 40 for persons having 10 or more years since immigration at the time of their 65th birthday if that birthday was in 1977 or earlier. [immi =40 if(immi >=10 and TARGETYEAR- idage <= 12)]

Notice that the years since immigration for any given individual after adjustment number 1 will remain the same regardless of the year for which the simulation is being run. For example an immigrant of 38 years, age 73, would have an adjusted years since immigration of 30 years, (immi = (38-(73-65)=30). Because of adjustment 2 above that individual would receive full OAS benefits in simulations run for 1984 but would receive 75% partial benefits in simulations run for 1988. In other words, a pensioner who is 73 years old in 1984 would have been 65 years old in 1976; the year before partial benefits were introduced. However a 73 year old in 1988 would have been age 65 in 1980; after partial benefits were introduced.

The model next determines if full eligibility requirements have been met for benefits and if so the full year equivalent of maximum OAS benefits are assigned (see BOAS in the Parameter Guide). Next, persons ineligible for OAS are screened out. Lastly, the model assigns partial benefits to persons with an adjusted years since immigration of between 10 and 39 years.

With the new Senior Benefit program, first, the seniors benefit (senben.c) is calculated. Then ccept calls drv again, and the benefit is zeroed out and OAS/GIS is calculated instead. For persons who lost under this change, drv is called a third time with the seniors benefit package.

Interpretation

The results of the model are not directly comparable with and thus will not match administrative OAS expenditure figures. The discrepancy arises due to administrative irregularities as well as survey data deficiencies.

There are five major sources of underestimation by the oas function. The benefits of persons having received benefits during 1984, yet who had died before the date of the survey, will not be accounted for in the SPSD/M. The survey coverage excludes native Canadians on reservations as well as persons living in the Yukon and North West Territories; thus the OAS benefits of these persons are excluded from SPSM totals. Published figures include payments to persons not residing in Canada as well as retroactive lump-sum payments for late applicants. A further provision not accounted for in this algorithm is the use of years of residence in another country to meet minimum residency requirements. This will not affect the model results if run in years before 1988. The effect is small in any case.

Due to the discrepancy between reported age on the SCF and actual age in 1984 overestimation of aggregate OAS benefits for persons aged 65 and 66 arises. For example 25% of those reporting their age as 65 in March of 1985, and thus receiving full OAS

Benefits in SPSM, would actually have been born between January and March 1985 (assuming births are distributed approximately evenly by month). As such they would have actually received no OAS. Furthermore, the other 75% of the 65 year olds and 17% of 66 year olds would have actually received OAS for only part of 1984. Currently, the SPSM makes no stochastic adjustments for such cases.

Relation to Other SPSM Routines

OAS depends on the input parameters for basic OAS benefits and years since immigration. The calculation of OAS and other modeled variables occurs prior to and affects the calculation of net income and related GIS and GIS 'top-up' programs. The modeled benefits are reported in net income, elderly income, disposable income, transfer income, total income, consumable income. The oas function is called before txinet (calculation of individual net income) by drv.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|------------|-----------------------|
| BOAS | Basic OAS |
| OASFLAG | Old age security flag |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| hdageeld | Age of eldest in household |
| hdseqhh | Household sequence number |
| hhnin | Number of individuals in household |
| idage | Age |
| idimmi | Years since immigration |

OUTPUT VARIABLES:

| | |
|----------|----------------------------|
| imioas | OAS benefits |
| imninc | No income flag |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |

| | |
|-----------------|----------------------------|
| pmaddent | Define and add a parameter |
|-----------------|----------------------------|

SUMMARY

The pmaddent function is used to define a new parameter to the SPSM parameter manipulation facilities. Please see the [Programmer's Guide](#) for more information.

randrnd Randomly round a floating point number to an integer

SUMMARY

The `randrnd()` function can be used to round fractional quantities to integer values in such a way that the sum of the values will remain (virtually) unchanged. Conventional rounding techniques do not have this property. For example, say that we have a set of 1000 numbers, each of which has the value 0.1. The sum of this set of numbers is 100.0. If we round each member of this set to the nearest integer, the sum of values would become 0.0. If we rounded randomly up or down, the sum would be 500. Neither of these rounding processes preserve the original sum. What we wish to do is to round 100 of the values up to 1.0 and 900 of the numbers down to 0.0. The `randrnd()` function simplifies this process.

The first argument to `randrnd()` is the value which is to be integerized, while the second is a uniformly distributed random number between 0.0 and 1.0 used to perform the rounding. The second argument is normally one of the built-in random number streams created by the SPSM Random Number Facility (see the [Users' Guide](#) for more details on this facility). The result of `randrnd()` is an unbiased, randomly rounded integerized value. In the following example, the variable `intval` has the value 2.0 for 30% of the time and 3.0 for 70% of the time.

```
intval = randrnd(2.7, idrand0);
```

The `randrnd()` function can be used to simplify operations such as the production of alternate weight files. For a specific example, see the description of the `bldwgt.exe` utility found in the *SPSM Tools Users Manual*.

The `vardef` function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.

round Round to nearest integer

SUMMARY

```
NUMBER round(arg);
```

```
NUMBER arg;
```

The `round` function converts its argument to the nearest whole number.

SUMMARY

Social assistance payments are not currently calculated by the SPSM. Data requirements are too great for a detailed micro-simulation. For example, the database contains no information on the holding or recent sale of liquid or fixed assets. This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here. It is also intended as a function in which algorithms for social assistance or other guarantees can be developed by glass box users.

Program Description

There are a number of federal, provincial and municipal programs which provide some form of social assistance payments to various target groups. The SPSM simulates six GIS supplementation programs (see the description of the gist function) which are classified with the other social assistance programs by the SCF. In fact the SCF records benefits received from over 30 provincial and municipal social assistance programs under one title of which six are simulated by the SPSM. This algorithm is designed to ensure no double counting of provincial GIS supplement program benefits occurs between simulated social assistance (imisa) and the provincial GIS supplement programs (imigist).

SPSM Implementation

If the function is deactivated with SAFLAG, no social assistance benefits are reported for any individual. If the function is turned on the database values of reported Social Assistance payments is used as the reported value of social assistance for all persons under the age of 65. For persons aged 65 and over there are three possible means of calculating social assistance which are controlled by the SAELDOPT parameter. These options are as follows.

- Social assistance is set to zero for all persons aged 65 and over.
- For individuals over age 64 who received simulated Provincial GIS supplementation benefits Social Assistance benefits are set to zero. If no Provincial GIS supplement is assigned to an individual over age 64, the simulated social assistance reported by the SPSM is the same as the reported value on the database.
- For all individuals over the age of 64 the value of simulated social assistance is set to the positive difference between reported and simulated social assistance.

In addition to performing the calculations for Social Assistance, samod computes the splitting of payments between the Federal and Provincial governments. This splitting corresponds to the federal/provincial cost sharing agreements in the Canada Assistance Plan.

The payment splitting is controlled by the parameter SAFS which is the federal proportional share of SA benefits. This parameter is available to be changed in black box mode and will determine the value of the variable imfsa which represents the value of the federal share. The provincial share of SA benefits is calculated as the difference between total SA benefits and the calculated federal amount and is represented by the variable impsa.

Relation to Other SPSM Routines

The samod function is called by drv after the calculation of provincial GIS supplements in gist.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|--|
| SAELDOPT | SA for elderly calculation method [1=~SA,2=GIST->~SA,3=diff] |
| SAFLAG | Social assistance flag |
| SAFS | Federal share of social assistance [prov] |
| SAPFLAG | Social assistance predicted value flag |
| SATARGET | Social assistance target for predicted SA |
| SFAOUT | Proportion of social assistance to eliminate |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hhncf | Number of census families in household |
| idage | Age |
| idisa | Social assistance income |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| imigist | GIS provincial top-up |

OUTPUT VARIABLES:

| | |
|--------|--|
| imfsa | Federal social assistance |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |
| impsa | Provincial social assistance |

SUMMARY

The strn function is used by the SPSM to print prompts and error messages in a language-independent way. The argument to the function identifies which string is to be retrieved. strn retrieves the string from a language-specific database of strings into an internally-maintained buffer and returns a pointer to the retrieved string. This function is not intended to be used by the SPSM user, and is documented here for reference purposes only.

taxbk1

One level tax-back function

SUMMARY

```
NUMBER taxbk1(inc, exmpt, lvl1, rr1);

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level of benefit                       */
NUMBER rr1;          /* reduction rate for tax-back           */
```

The taxbk1 function is used to reduce a benefit at a fixed rate based on income in excess of a specified exemption level. If the benefit (*lvl1) is reduced to zero, taxbk1 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the income in excess of the break-even income for the benefit.

taxbk2

Two level tax-back function

SUMMARY

```
NUMBER taxbk2(inc, exmpt, lvl1, rr1, lvl2, rr2)

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back     */
NUMBER *lvl1;        /* level (#1) of benefit                */
NUMBER rr1;          /* reduction rate (#1) for tax-back     */
NUMBER *lvl2;        /* level (#2) of benefit                */
NUMBER rr2;          /* reduction rate (#2) for tax-back     */
```

The taxbk2 function is used to reduce a two-tiered benefit at a fixed rates based on income in excess of a specified exemption level. The first tier benefit (*lvl1) is first reduced at rate rr1 based on income (inc) in excess of the specified threshold (exmpt). If the first tier benefit is reduced to zero, the second tier of benefit (*lvl2) is reduced at rate rr2 based on remaining income. If the second tier benefit (*lvl2) is reduced to zero, taxbk2 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the

income in excess of the break-even income for the benefit.

SUMMARY

Program Description

Calculation of the Alberta taxes.

When ATXFLG is off, Basic Alberta Tax (imbpt) is a proportion (APTF) of Basic Federal Tax (imbft). A tax reduction is calculated as a basic amount (ATRBC) minus a proportion (ATRF) of Basic Alberta Tax (imbpt). Alberta Tax Payable (imtxp) is calculated as Basic Alberta Tax (imbpt) minus the tax reductions.

The 2000 budget stated that Alberta would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (ATXFLG), a provincial tax table (APTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (APNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (ABXM) |
| impatxc | Age amount tax credit | (AAXM, AAXRR, AAXTD, AAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (AMXM, AMXMT, AEMXM, AEMXMT) |
| impcgtc | Caregiver tax credit | (ACGTC, ACGTCFLG, ACGTCTC, ACGTCTD, ACGTCTK) |
| impchrtc | Charitable donations | (ACHATL1, ACHATR1, ACHATR2) |
| impcppte | CPP/QPP contribution | |
| impdistc | Disability tax credit | (AMAXDX) |
| impdtxc | Dividend tax credit | (ADTCR) |
| impedtxc | Education tax credit | (AEDXPM, AMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (AYPNDL) |
| imptutxc | Tuition Tax credit | (AMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using AAMTOPT.

Calculation of the Alberta Family Employment Tax Credit.

When the parameter AFETCFLAG is set to 1, the value of imiafetc variable is calculated as a percentage (AFETCBR) of nuclear family employment income above a threshold (AFETCCI) to a maximum dollar level which is calculated as AFETCBPC times the number of eligible children (nfnkids) up to a maximum number of children of AFETCNC. The maximum benefit is reduced by a percentage (AFETCRR) of nuclear family net income in excess of the threshold AFETCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AAMTOPT | Alta alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| AAMTPCTF | Alta amt rate as pct of additional fed tax due to minimum tax |
| AAMTPCTM | Alta amt rate as pct of federal minimum tax amount |
| AAMTTX | Alta amt rate as tax on adjusted income |
| AAXM | Alta Age Amount |
| AAXPI | Alta Age Amount phase in rate for 1994 and beyond |
| AAXRR | Alta Age Amount credit reduction rate |
| AAXTD | Alta Age Amount net income turndown |
| ABXM | Alta Basic Personal Exemption/amount |
| ACGTC | Alta Caregiver Tax Credit |
| ACGTCTFLG | Alta Caregiver Tax Credit activation flag |
| ACGTCTC | Alta Caregiver tax credit take-up rate by age of elderly [age,rate] |
| ACGTCTD | Alta Caregiver Tax Credit Turn Down Income |
| ACGTCTK | Alta Caregiver tax credit take-up rate by income level [employment income,rate] |
| ACHATL1 | Alta Charitable Donations amount level 1 |
| ACHATR1 | Alta Charitable Donations tax credit rate 1 |
| ACHATR2 | Alta Charitable Donations tax credit rate 2 |
| ADTCR | Alta dividend tax credit rate |
| AEDXPM | Alta Education Amount per month |
| AEMXM | Alta equivalent to married amount |
| AEMXMT | Alta equivalent to married turndown level |
| AFETCBPC | Alberta Family Employment Tax Credit Benefit Per Child |
| AFETCBR | Alberta Family Employment Tax Credit Benefit Rate |
| AFETCCI | Alberta Family Employment Tax Credit Benefit Cut-in Level |
| AFETCFLAG | Alberta Family Employment Tax Credit Activation Flag |
| AFETCNC | Alberta Family Employment Tax Credit Maximum Number of Children |
| AFETCRR | Alberta Family Employment Tax Credit Reduction Rate |
| AFETCTD | Alberta Family Employment Tax Credit Turndown Level |
| AFTAX | Alberta flat surtax rate on taxable income |
| AHEATFLG | Alberta Energy Tax Refund activation flag |
| AHEATREB | Alberta Energy Tax Refund amount |

| | |
|---------|--|
| AMAXDX | Alta Maximum Disability deduction/amount |
| AMAXET | Alta maximum on transfer of education and tuition amount |
| AMXM | Alta married amount |
| AMXMT | Alta married amount turndown level |
| APNTCR | Alta provincial non-refundable tax credit rate |
| APTC | Alberta political contribution table [total donations, donation allowed] |
| APTCBEN | Maximum Alberta political tax credit allowed |
| APTF | Alberta provincial tax fraction |
| APTX | Alta tax table [taxable income, basic provincial tax] |
| ASCI | Alberta surtax cut-in |
| ASF | Alberta surtax fraction |
| ATRBC | Alberta tax reduction basic claim |
| ATRF | Alberta tax reduction fraction |
| ATXFLG | Alta tax on taxable income activation flag |
| AYPNDL | Alta Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |

| | |
|-----------|--|
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| imiafetc | Alberta Family Employment Tax Credit Benefits |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txbc Compute provincial taxes for British Columbia

SUMMARY

When CTXFLG is turned off, the Basic British Columbia Tax (imbpt) is a proportion (CPTF)

of Basic Federal Tax (imbft). British Columbia Tax Payable (imtxp) is the Basic Tax plus the BC Surtax plus the BC Health Care Maintenance Surtax.

The BC Surtax is a proportion (CSF) of Basic BC Tax (imbpt) exceeding the surtax level (CSCI).

The 2000 budget announced that British Columbia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (CTXFLG), a provincial tax table (CPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (CPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (CBXM) |
| impatxc | Age amount tax credit | (CAXM, CAXRR, CAXTD, CAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (CMXM, CMXMT, CEMXM, CEMXMT) |
| impcgtc | Caregiver tax credit | (CCGTC, CCGTCFLG, CCGTCTC, CCGTCTD, CCGTCTK) |
| impchrtc | Charitable donations | (CCHATL1, CCHATR1, CCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (CMAXDX) |
| impdtxc | Dividend tax credit | (CDTCR) |
| impedtxc | Education tax credit | (CEDXPM, CMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (CYPNDL) |
| imptutxc | Tuition Tax credit | (CMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using CAMTOPT.

The British Columbia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The BC provincial credit is modelled as CLVCRT times the gross amount up to CLVCMAX. The credit cannot be more than provincial taxes (imtxp).

B.C. Family Bonus

Total benefits received under the British Columbia Family Bonus program commencing in July 1996.

When the parameter BCFBFLAG is set to one the value of this variable is calculated as BCFBBAS times the number of children in the nuclear family (nfnkids) reduced by a proportion of head plus spouse net income (iminet + imisa) above the turndown of BCFBTD. This proportion for families with one child is BCFBRRS and for multiple child families is BCFBRR. The value calculated in this manner is multiplied times the parameter BCFBPI.

B.C. Family Bonus benefits (imibcfb) are assigned to the mother if present, or if not to the head of the nuclear family.

The calculation of the B.C. Family Bonus was changed to include the level of the National Child Supplement beginning in 1998. The flag BCFBIFS was added to turn on or off the inclusion of the National Child Supplement in the calculation of the B.C. Family Bonus.

The British Columbia Earned Income Benefit which was also introduced in 1998, was added to the code. When BCEIBFLG is assigned a value of 1, the calculation of the British Columbia Earned Income Benefit is activated, depending on the presence of children in the family. For families with lower incomes, the benefit starts to be phased in at BCEIBPI, and reaches its maximum at incomes of BCBEMX. The slope of the phase in is therefore calculated as the maximum working income supplement a family can receive divided by (BCBEMX – BCEIBPI).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BCBEIS1 | B.C. Earned Income Benefit for first child |
| BCBEIS2 | B.C. Earned Income Benefit for second child |
| BCBEIS3 | B.C. Earned Income Benefit for each additional child |
| BCBEITD | B.C. Earned Income Benefit Turndown |
| BCBEMX | B.C. Earned Income Benefit Income Reduction |
| BCBERR1 | B.C. EIB reduction rate for families with 1 child |
| BCBERR2 | B.C. EIB reduction rate for families with 2 children |
| BCBERR3 | B.C. EIB reduction rate for families with 3+ children |
| BCEIBFLG | Activate B.C. Earned Income Benefit Program |
| BCEIBPI | B.C. Earned Income Benefit Income Phase In |
| BCFBBAS | B.C. Family Bonus amount per child |
| BCFBFLAG | Activate B.C. Family Bonus Program |
| BCFBIFS | Activate B.C. Family Bonus to include Federal NCS |
| BCFBNCS1 | B.C. Family Bonus National Child Supplement for first child |
| BCFBNCS2 | B.C. Family Bonus National Child Supplement for second child |
| BCFBNCS3 | B.C. Family Bonus National Child Supplement for each additional child |

| | |
|-------------------------------------|---|
| BCFBNCSSRR1 child | B.C. Family Bonus NCS reduction rate for families with 1 child |
| BCFBNCSSRR2 children | B.C. Family Bonus NCS reduction rate for families with 2 children |
| BCFBNCSSRR3 children | B.C. Family Bonus NCS reduction rate for families with 3+ children |
| BCFBNCSTD | B.C. Family Bonus National Child Supplement Turndown |
| BCFBPI | B.C. Family Bonus phase-in |
| BCFBRR | B.C. Family Bonus multiple child reduction rate |
| BCFBRRS | B.C. Family Bonus single child reduction rate |
| BCFBTD | B.C. Family Bonus Turndown |
| CAMTOPT adj inc, 4=% min amt) | B.C. alternative minimum tax option (1=none, 2=% fed, 3=fed) |
| CAMTPCTF tax | B.C. amt rate as pct of additional fed tax due to minimum tax |
| CAMTPCTM | B.C. amt rate as pct of federal minimum tax amount |
| CAMTTX | B.C. amt rate as tax on adjusted income |
| CAXM | B.C. Age Amount |
| CAXPI | B.C. Age Amount phase in rate for 1994 and beyond |
| CAXRR | B.C. Age Amount credit reduction rate |
| CAXTD | B.C. Age Amount net income turndown |
| CBXM | B.C. Basic Personal Exemption/amount |
| CCGTC | B.C. Caregiver Tax Credit |
| CCGTCFLG | B.C. Caregiver Tax Credit activation flag |
| CCGTCTC [age,rate] | B.C. Caregiver tax credit take-up rate by age of elderly |
| CCGTCTD | B.C. Caregiver Tax Credit Turn Down Income |
| CCGTCTK [employment income,rate] | B.C. Caregiver tax credit take-up rate by income level |
| CCHATL1 | B.C. Charitable Donations amount level 1 |
| CCHATR1 | B.C. Charitable Donations tax credit rate 1 |
| CCHATR2 | B.C. Charitable Donations tax credit rate 2 |
| CDTCR | B.C. dividend tax credit rate |
| CEDXPM | B.C. Education Amount per month |
| CEMXM | B.C. equivalent to married amount |
| CEMXMT | B.C. equivalent to married turndown level |
| CHEATFAM | British Columbia Refundable Energy Credit for families |
| CHEATFLG | British Columbia Refundable Energy Credit activation flag |
| CHEATSNG | British Columbia Refundable Energy Credit for singles |
| CLVCMAX | Maximum B.C. labour-sponsored funds tax credit allowed |
| CLVCRT credit | Percent of B.C. labour-sponsored funds cost allowed as credit |
| CMAXDX | B.C. Maximum Disability deduction/amount |
| CMAXET | B.C. maximum on transfer of education and tuition amount |
| CMXM | B.C. married amount |
| CMXMT | B.C. married amount turndown level |
| CPNTRC | B.C. provincial non-refundable tax credit rate |
| CPTCBEN | Maximum B.C. political tax credit allowed |
| CPTCT allowed] | B.C. political contribution table [total donations, donation allowed] |
| CPTF | British Columbia provincial tax fraction |
| CPTX | B.C. tax table [taxable income,basic provincial tax] |
| CRFLAG | British Columbia rental reduction flag |
| CRTRB | British Columbia renter tax reduction basic credit |
| CRTRD dependants | British Columbia renter tax reduction credit for other dependants |

| | |
|----------|---|
| CRTRP | British Columbia renter tax reduction proportion of rent allowed |
| CRTRPN | British Columbia renter tax reduction proportion of net income |
| CRTRS | British Columbia renter tax reduction credit for spouse |
| CRTRT | B.C. renter tax reduction base amount turndown [dependants, amount] |
| CSCI | British Columbia surtax first cut-in level |
| CSCI2 | British Columbia surtax second cut-in level |
| CSDC | British Columbia provincial surtax dependant credit |
| CSF | British Columbia surtax first level rate |
| CSF2 | British Columbia surtax second level rate |
| CSTC | British Columbia stc amount |
| CSTCFLAG | British Columbia sales tax credit flag |
| CSTCR | British Columbia stc reduction rate |
| CSTHINC | British Columbia family head income threshold (stc) |
| CSTKINC | British Columbia kid income threshold top-up (stc) |
| CSTSINC | British Columbia spousal income threshold top-up (stc) |
| CTCINC | CTC family income scaling factor |
| CTXFLG | B.C. tax on taxable income activation flag |
| CYPNDL | B.C. Pension Income Deduction Amount |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |

| | |
|----------|---|
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchclm | Number of dependent children claimed |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imibceib | B.C. Earned Income Benefit |
| imibcfb | B.C. Family Bonus |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |

| | |
|----------|--|
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txcalc Calculate federal income tax

SUMMARY

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Federal Labour Sponsored Venture Capital Tax credit
- Basic Federal Tax (including tax credits transfers from dependants or spouse)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement
- Federal refundable medical expense supplement
- Caregiver Tax Credit

Federal Dividend Tax Credit

If the filer declared dividends from taxable Canadian corporations, he or she is eligible to claim the Dividend Tax Credit which amounts to a fixed proportion of taxable dividends. This credit is non-refundable, i.e., it may be used to reduce Basic Federal Tax, but an unused portion is not refunded.

SPSM Implementation

The Federal Dividend Tax Credit (imfdtxc) is calculated as a proportion (FDTCR) of Net Taxable Dividends (imidivt). The amount is added to Total Non-transferable Tax Credits (imtaxcr) which is applied to reduce Basic Federal Tax (imbft).

Federal Dividend Tax Credit

The Labour-sponsored venture capital funds tax credit is modeled from the imputed gross amount purchased (idlbtxg). The credit (imlbtxc) is equal to FLVCRT times the gross

amount (idlabt_{xg}) up to a maximum (FLVCMAX). The rate is provincially based.

Basic Federal Tax

Basic Federal Tax is defined as Federal Tax Payable on Taxable Income minus certain tax credits.

SPSM Implementation

Basic Federal Tax (imbft) is calculated the same way whether or not the tax credits proposed by the White Paper are applied. First, Federal Tax Payable on Taxable Income (imfedtax) is calculated using the interpolating lookup function lkup1 to determine taxes payable on Taxable Income (imitax) from the table FTX.

Dependants are treated separately from the head and spouse since the rules applying to the transfer of deductions from dependant to parent differ from those applying to the transfer of deductions from the spouse.

Transfers from Dependant to Parent

In calculating the dependant's Basic Federal Tax, the following nontransferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Age Tax Credit (imatxc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Federal Dividend Tax Credit (imfdtxc)
- Medical Expense Tax Credit (immedatc)
- Pension Income Tax Credit (impentxc)
- UI Contributions Tax Credit (imuictc)

A dependant may transfer an unused portion of certain tax credits to a supporting parent. Since a limit may be imposed on the amount of the combined Education Tax Credit and Tuition Tax Credit, these are treated separately from the Disability Tax Credit.

If a dependant requires all transferable tax credits to further reduce Basic Federal Tax, i.e., Basic Federal Tax (imbft) exceeds Total Transferable Tax Credits, then the tax credits are subtracted from imbft and no transfer occurs.

If the dependant's Total Transferable Tax Credits (txcrt) exceeds Basic Federal Tax, imbft is reduced to zero and the amount potentially transferable to a supporting parent is calculated as the amount of Disability Tax Credit (imdisatc) not required to reduce Basic Federal Tax plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imttxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

The total amount of tax credits transferable from all dependants is accumulated in the variable ctxcrt which is subsequently used to reduce Basic Federal Tax for the parent with the higher Net Income (iminet).

These algorithms do not allow the partitioning of the dependant's tax credits between both supporting parents and, therefore, in some cases, the total taxes paid by the family may not be minimized.

Transfers From Spouse

In calculating the Basic Federal Tax of the head and spouse, the following non-transferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Tax Credit for Dependant Children (imctxcs)
- Federal Dividend Tax Credit (imfdtxc)
- Married Tax Credit (immartxc)
- Medical Expense Tax Credit (immedatc)
- UI Contributions Tax Credit (imuictc)

An unused portion of certain transferable tax credits may be transferred from the spouse. The transferable tax credits are:

- Age Tax Credit (imatxc)
- Disability Tax Credit (imdisatc)
- Pension Income Tax Credit (impentxc)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)

Since a limit may be imposed on the amount of the combined Education and Tuition Tax Credits, these are treated separately from the others.

If the filer requires all Transferable Tax Credits (txcrt) to reduce Basic Federal Tax (i.e., imbft exceeds txcrt) then the tax credits are subtracted from Basic Federal Tax and no transfer occurs.

If the filer's Transferable Tax Credits (txcrt) exceed Basic Federal Tax, then imbft is reduced to zero and the remainder of the Potentially Transferable Tax Credits (ttxcrt) is calculated as the sum of:

- Disability Tax Credit (imdisatc)
- Age Tax Credit (imatxc)
- Pension Income Tax Credit (impentxc)

which is not required to reduce Basic Federal Tax to zero plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imtxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

Although this value is calculated for both head and spouse, the one with the higher Net Income (iminet) actually receives the transfer. The amount transferred from the spouse is stored in the variable imstxcrt. The amount transferred from all dependants is stored in imctxcrt.

Federal Surtax

In 1985 a Federal Surtax was introduced as an additional tax based on Basic Federal Tax payable.

SPSM Implementation

The model allows for two surtax levels and two surtax rates. The total Federal Surtax (imfsur) is calculated as:

- a proportion (FSURR1) of Basic Federal Tax exceeding Surtax Level 1 (FSURL1), plus
- a proportion (FSURR2) of Basic Federal Tax exceeding Surtax Level 2 (FSURL2), minus
- the amount of the additional Federal Foreign Tax Credit from 1986 forward (represented by variable (idfdsft)).

The result is then added to Federal Taxes (imftax) (minus certain federal tax credits) to derive Federal Taxes Payable (imtxf).

Federal Surtax Reduction

The Federal Surtax reduction (imfsurtr) announced in the 1998 federal budget is calculated. The maximum value that the reduction may reach is FSURTRMX. The reduction is reduced by a proportion (FSURTRRR) of basic federal tax (imbft) which exceeds a certain level (FSURTRRL). This reduction is then subtracted from the federal surtax (imfsur).

Federal Taxes Payable

Federal Taxes Payable (imtxf) is defined as Federal Tax (imftax) plus the Federal Surtax (see above) minus the following tax credits:

- Federal Other Tax Credits
- Federal Political Contribution Tax Credit (imfptc), and

Alternate Minimum Tax

In 1986, a minimum tax on individuals was introduced with the intention of increasing the tax liability of those high income individuals who use the tax incentives provided by the current law to structure their affairs so as to pay little or no tax.

The Alternative Minimum Tax requires the calculation of an adjusted taxable income disallowing certain deductions, a list of which follows, which are added back to taxable income.

- Pension Income Deduction
- Interest and Dividend Income Deduction
- Disability Deduction Transferred from Dependant
- Education Deduction Transferred from Dependant
- Deductions Transferred from Spouse
- Employee Home Relocation Loan Deduction
- Stock Option and Shares Deduction
- Contribution to Deferred Income Plans (RPP and RRSP contributions)
- non-taxable portion of capital gains
- capital cost allowance on MURBS and Canadian Films

The grossed-up portion of taxable dividends and Allowable Business Investment Loss are subtracted from taxable income.

The minimum tax is then calculated as a proportion of this adjusted taxable income exceeding the exemption level.

SPSM Implementation

If the Minimum Tax Rate (AMTTX) is not set to zero, the minimum tax algorithms are executed.

The first step recalculates an adjusted taxable income for minimum tax purposes (imamtinc) by adding the following items to imitax:

- RPP Contributions (idrpp) when AMTRPFLG is set to 1
- RRSP Contributions (idrrsp) when AMTRPFLG is set to 1
- Other Deductions from Total Income (idothded, representing Capital Cost Allowances)
- the non-taxable portion of Capital Gains (idicapg * (AMTINCRT - CAPGIR))
- exploration and development expenses (idexplor)
- employee home relocation loan deduction (idemplo)
- stock option and shares deduction when AMTSTK is set to 1
- limited partnership losses (idpartlo)
- allowable other years non-capital losses (idnclos)

The taxable portion of dividends (imidivt) times AMTDIV, net non-deductible capital losses, the allowable portion of business investment losses (imiloss) times the applicable rates defined as $((AMTINCRT - CAPGIR)/CAPGIR)$ and the basic exemption (AMTEX) are subtracted from this value.

The Basic Minimum Tax (amtbf) is calculated as a proportion (AMTTX) of Adjusted Taxable Income (imamtinc).

The second step in this process adjusts the Basic Minimum Tax (amtbf) to account for allowable tax credits. This requires subtracting the following tax credits from Basic Minimum Tax:

- Basic Tax Credit (imbtc)
- Spouse or Equivalent Tax Credit (immartxc)
- Age Tax Credit (imatxc)
- Tax Credit for Dependant Children (imctxcs)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)
- Medical Expense Tax Credit (immedatc)
- Charitable Donations Tax Credit (imchartc)
- Disability Tax Credit (imdisatc) for self
- Other Dependent Tax Credit (imothpe)
- CPP/QPP Contribution Tax Credit (imcppctc)
- UI Contribution Tax Credit (imuictc)
- Basic Personal Amount Supplement (imbtcsc)
- Caregiver Tax Credit (imcgtc)

If the value of the Basic Minimum Tax (amtbf) exceeds Basic Federal Tax (imbft), Federal Tax Payable (imtxf) is recalculated as Basic Minimum Tax (amtbf) plus any federal surtaxes on amtbf. The federal surtax is calculated in the same manner as on Basic Federal Tax, previously described.

The database does not contain sufficient detail to accurately represent some of the deductions specified in the regulations concerning the calculation of the Minimum Tax. The Disability Deduction and Education Deduction transferred from dependants are not differentiable from those deductions claimed on behalf of the filer. The variable idothded (Other Deduction's from Total Income) includes Capital Cost Allowances on MURBS and Canadian Films but it also contains amounts for moving expenses and alimony payments. It is difficult to estimate the impact of these inaccuracies except to say that they are likely small compared to the large amounts of income and other deductions for the high income persons for whom the Minimum Tax is intended.

Quebec Tax Abatement

The Quebec Tax Abatement is a refundable credit on federal taxes provided to Quebec residents in lieu of direct cost-sharing by the federal government under the federal-provincial fiscal arrangements. It reduces the federal income tax payable by Quebec residents and may provide a refund. The abatement amounts to 16.5% of Basic Federal Tax.

SPSM Implementation

If the filer resides in Quebec, the full Quebec Tax Abatement (qta) is calculated as a proportion (QTAP) of Basic Federal Tax (imbft). This is divided into two portions for

accounting purposes:

- imqtaa is the Quebec Tax Abatement Applied to reduce federal taxes
- imqtar is the Quebec Tax Abatement Refunded

If the Quebec Tax abatement exceeds the Federal Tax payable then a refund is made for the balance of the abatement (imqtar) and the amount of Federal tax payable is reduced by the amount of the abatement. Users may wish to note that this abatement refund was an interesting side effect of the Federal Tax reduction in effect prior to 1986 (see notes in this section).

Federal Refundable Medical Expense Supplement

SPSM Implementation

The refundable medical expense supplement (immedref) was added to imfortc. The program is only available to persons aged 18 and over who have earnings over MEDREMIN and who had allowable medical expenses (immeda). The maximum supplement is calculated as the minimum of MEDRRATE times the allowable medical expenses and MEDRMAX. The benefit is reduced by MEDRRR times the family income over the turndown which is the sum of the basic exemption (BXM), the married exemption (MXM) and the maximum disability amount (MAXDX).

Caregiver Tax Credit

The calculation of the Caregiver Tax Credit (imcgtc) is activated by the flag CGTCFLG. The credit reduces federal taxes and started in 1998. The base level of the credit is CGTC. A take-up rate CGTCTC based on age of the potential parent assigns individuals with idefrh =3 as a parent according to SCF 1994 data. Users have access to a take-up rate CGTCTK based on employment income to select the appropriate number of beneficiaries.

The benefit, imcgtc, is reduced for each dollar of net income, iminet, in excess of CGTCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AMTDIV | Alternative minimum tax: percentage of taxable dividends |
| AMTEX | Alternate minimum tax: exemption level |
| AMTFORTX | Alternative minimum tax: Foreign Income Tax Rate |
| AMTINCRT | Alternative minimum tax: Inclusion Rate |
| AMTNEGTI | Alternative minimum tax: Allow Negative Taxable Income Flag |
| AMTPRVDF | Alternative minimum tax: prov. tax difference |
| definition[prov] | |
| AMTRPFLG | RRSP/RPP included in Alternate minimum tax (1=included) |
| AMTSTK | Alternative minimum tax: Stock Option Proportion |

| | |
|------------|---|
| AMTTX | Alternate minimum tax rate |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CGTC | Caregiver Tax Credit |
| CGTCFLG | Caregiver Tax Credit activation flag |
| CGTCTC | Caregiver tax credit take-up rate by age of elderly [age,rate] |
| CGTCTD | Caregiver Tax Credit Turn Down Income |
| CGTCTK | Caregiver tax credit take-up rate by income level [employment income,rate] |
| FDTCR | Federal dividend tax credit rate |
| FLVCMAX | Maximum labour-sponsored funds tax credit allowed |
| FLVCRT | Percent of labour-sponsored funds cost allowed as credit [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| FPTC | Federal political contribution table [total donations,donation allowed] |
| FPTCBEN | Maximum federal political tax credit allowed |
| FSURL1 | Federal surtax level 1 |
| FSURL2 | Federal surtax level 2 |
| FSURR1 | Federal surtax rate 1 |
| FSURR2 | Federal surtax rate 2 |
| FSURTRMX | Maximum federal surtax reduction |
| FSURTRRL | Federal surtax reduction reduction level |
| FSURTRRR | Federal surtax reduction reduction rate |
| FTX | Federal tax table [taxable income,basic federal tax] |
| GSTREBFLAG | Database variable(gstreb) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MAXET | Maximum on transfer of education and tuition amount |
| MEDREMIN | Minimum earnings for refundable medical expense supplement |
| MEDRMX | Maximum expenses allowed for medical expense supplement |
| MEDRRATE | Proportion of expenses allowed for medical expense supplement |
| MEDRRR | Reduction rate for the medical expense supplement |
| MXM | Married exemption/amount |
| QTAP | Quebec tax abatement proportion of basic federal tax |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |

| | |
|----------|--|
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgstreb | GST rebate (457) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnclos | Allowable other years non-capital loss (252) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imbtcs | Basic personal tax credit supplement |
| imcapgx | Modelled capital gains deduction (254) |
| imchartc | Charitable donations tax credit |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imctxcs | Dependent children tax credits |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |
| imtutxc | Tuition tax credit |
| imuic | UIC contributions |
| imuictc | UIC contributions tax credit |

OUTPUT VARIABLES:

| | |
|----------|---|
| imamtdf | Difference due to minimum tax |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |

| | |
|----------|---|
| imatxcrt | Total tax credits applied |
| imbft | Basic federal tax |
| imcgtc | Caregiver Tax Credit Level |
| imcgtcp | Dependant caregiver tax credit amount |
| imctxcrt | Tax credits transferred from children |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imfdtxc | Federal dividend tax credit |
| imfedtax | Federal tax before tax credits |
| imfortc | Federal other refundable tax credits |
| imfortxc | Federal foreign tax credit (509) |
| imfptc | Federal Political Contribution Tax Credit |
| imfsur | Federal surtax |
| imfsurtr | Federal surtax reduction |
| imlabtxc | Federal labour-sponsored funds tax credit |
| immedref | Refundable medical expense supplement (452) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imoftca | Other federal tax credits applied (416) |
| imqtaa | Quebec tax abatement (applied) |
| imqtar | Quebec tax abatement (refundable) |
| imstxcrt | Tax credits transferred from spouse |
| imtaxcr | Total tax credits |
| imttxcrt | Total tax credits transferred |
| imtxf | Federal income tax payable |

txccea Compute child care expense allowance

SUMMARY

The txccea function calculates the value of the child care expense deduction.

Description of tax measure

Child care expenses are amounts paid for child care services to allow the parent or "supporting person" to:

- a) earn income from employment or self-employment, (this does not include a period of unemployment) or
- b) take an occupational training course for which the person received an adult training allowance, or
- c) carry on research or similar work for which the person received a grant.
- d) go to school full-time

A filer is eligible to claim child care expenses if:

- a) there is no other supporting person
- b) there is a supporting person with a higher net income (excluding child care expenses) than the filer
- c) there is a supporting person with a net income lower than the filer but
 - i. the filer and supporting person were separated for at least 3 months, or

- ii. the supporting person was in full-time attendance at a designated educational institution, or
- iii. the supporting person was infirm or in prison for at least 2 weeks.

A combination of limitations is applied to the amount claimable:

1. Two-thirds of earned income, and
2. a fixed amount per eligible child up to a fixed maximum is applied if the net income of the filer is less than that of a supporting person (conditions (a) and (b) above).

Under condition (c) above, i.e., the income of the supporting person is lower than that of the filer, the following additional limitation applies:

3. fixed weekly amount per child up to a maximum, multiplied by the number of weeks of separation, attendance at an educational institution, infirmity or imprisonment.

In 1982, the Child Care Expense Deduction was always taken by the mother of the child if she was present. Since then, the deduction or tax credit is normally allocated to the spouse with the lower net income, exclusive of the child care expense deduction, unless that person is separated, in school, infirm or in prison.

SPSM Implementation

The amount of Child Care Expenses Allowed is derived from income tax records during the database creation process (see the *Database Creation Guide*). This value represents the amount allowed according to the base year regulations. Though this amount may be grown or diminished by a fixed factor (GFC CET), the rules described above cannot be easily altered in the current version of SPSM.

The parameter CCEROPT determines which spouse in a two-parent family claims the Child Care Expense Deduction. If CCEROPT is given a value of 1, the deduction is always taken by the mother. With a value of 2, the deduction is taken by the parent with the lower Net Income (iminet).

The condition for a temporarily absent, lower income spouse (condition c. above) is not checked.

On the database, only one spouse of a two-parent family will have been attributed a value for Child Care Expense Deduction Allowed. The assignment of this value is done before we have complete information about the relative net incomes and may therefore be given to an inappropriate person. The model uses the current value of Net Income (iminet) to re-allocate the deduction if necessary.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| CCEAEMPF | CCEA fraction of employment income (Limit `B') |
| CCEALIM | CCEA overall limit |
| CCEAOAGE | CCEA Maximum eligible age for oldest child |
| CCEAOLD | CCEA old child limit |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| CCEAYNG | CCEA young child limit |
| CCEROPT | Child care expense deduction recipient [1=mother,2=lower income] |
| CCESFLAG | CCE full-time student flag |
| CCESOLD | CCEA old child limit for full-time students |
| CCESYNG | CCEA young child limit for full-time students |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| INPUT VARIABLES: | |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| ideducm | Eligible months of education allowance |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idsex | Sex |
| imccez | Is CCE zeroed? |
| imisa | Social assistance (or replacement program) |
| OUTPUT VARIABLES: | |
| imcce | Child care expenses allowed |
| imcce | Child care expenses claimed on behalf of child |
| imdedft | Deductions from total income |
| iminet | Net income |
| imninc | No income flag |

SUMMARY

The federal Child Tax Credit and the Child Tax Benefit provide benefits to help low and middle income families meet the costs of raising children under the age of 18. The txctc function calculates benefits from the federal Child Tax Credit (CTC) program based upon the number of children in a family and the net income of the family. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

The level of benefits varies with the number of children.

Program Description

The federal Child Tax Credit provides benefits to help low and middle income families meet the costs of raising children under the age of 18. It was implemented in 1979 and is administered by Revenue Canada, Taxation, through the income tax system.

Any person who receives Family Allowances is eligible to apply for the Child Tax Credit. The credit is available on behalf of a child for whom Family Allowances were paid for in the month of January following a given taxation year. An eligible person who voluntarily refrains from receiving Family Allowances may still claim the Child Tax Credit. The CTC must be applied for by filing an income tax return regardless of the income of the eligible parent or guardian. A foster parent in receipt of Special Allowances is not eligible for the CTC. Canadian residents living outside Canada, but paying Canadian taxes may apply for the credit.

The amount of the CTC is determined by the number of eligible children and the family's income. Family income is defined as the net income (as defined for income tax purposes) of both parents, whether married or not (provided they are living together), or the net income of a single parent. The net income of any other person who is claiming a personal exemption for a dependent child (whether or not the person lives with the claimant of the CTC) must also be included in family income. For families with taxable incomes the refundable credit to which they are entitled reduces the tax which must be paid; families whose taxes are less than the credit, or who pay no taxes at all receive a non-taxable lump sum payment.

The maximum annual credit is payable if net family annual income is less than a specified level of income called a benefit reduction level or turndown. Families with net incomes above this turndown are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum CTC for eligible parent(s) is zero. In 1993, the CTC was replaced by the Child Tax Benefit. This program is comprised of two parts: the basic Child Tax Benefit, and the Earnings supplement (also called the Working income supplement). The basic child tax benefit consists of \$1,020 per child, plus \$75 for the third child and subsequent children. There is an additional \$213

for each child under 7 with no child care expenses. The benefit is reduced at family incomes over \$25,921 at a 5% rate (or 2.5% if only 1 child).

The Working Income Supplement was a maximum of \$500 per family. It started at earnings of \$3,750, reached the maximum at earnings of \$10,000, and was then reduced, reaching \$0 at family incomes of \$25,921.

In 1997, the Working Income Supplement was enriched. Instead of \$500 per family, the benefit was \$605 for the first child, \$405 for the second child, and \$330 for the third and subsequent children. It was phased in at family earnings of \$3,750, reached a maximum at \$10,000, and was phased out starting at family incomes of \$20,921. The reduction rates were 12.1% for families with 1 child, 20.2% for families with 2 children, and 26.8% for families with 3 or more children.

In 1998, the program was renamed the Canada Child Tax Benefit (CCTB). The basic benefit has the same level and structure of the Child Tax Benefit. The Working Income Supplement was replaced by the CCTB National Child Benefit Supplement. It is no longer dependent on earnings, and therefore is not phased in. Otherwise, it follows the same rules as the 1997 Working Income Supplement.

SPSM Implementation

The `txctc` function calculates the federal Child Tax Credit based on the number of children in a family and the net income of the family. Residency requirements are deemed to have been met in all cases. The function always allocates the Child Tax Credit to the mother unless one is not present in the nuclear family. The function only outputs a value for the federal child tax credit and this reflects the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txctc` function operates at the nuclear family level. It first calculates a local variable for the family's net income by adding the eldest member's net income and that of their spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are then obtained by multiplying the number of children in the nuclear family by the maximum benefit per child (`nfkids * CTCPC`). The maximum CTC is then reduced at the specified reduction rate (`CTCRR`) applied to family net income in excess of the CTC turndown (`CTCTD`). This reduction is performed using the `taxbak1` function. Finally the federal Child Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

When the `FCBEIE` flag is turned on, the Working Income Supplement has a different rate according to the number of children in the household, `FCBEIS1`, `FCBEIS2`, `FCBEIS3` and is also reduced at varying rates, `FCBERR1`, `FCBERR2`, `FCBERR3`. The enriched WIS is phased in starting at family incomes `FCBECI` and reaches its maximum at `FCBEMX`. The phase in rate is linear and depends again on the number of children in the family.

There was also a fix for the Quebec child tax benefits. The benefits (`QCBC3`) are now being assigned to the third and each additional child in a family.

Interpretation

Results obtained from the SPSM with respect to Child Tax Credit benefits differ from Revenue Canada administrative data. Overall the SPSM reports 101.9% more 1984 tax year benefits than does Revenue Canada for provincial Canada. However, the number of children for which the credit is paid is 99.6% of Revenue Canada's figures. One would expect the number of children on the SPSD to be low due to the non-coverage of persons residing on reservations and outside Canada. Thus there would seem to be a small deficit on the SPSD in the net income of families with eligible children.

Relation to Other SPSM Routines

The txctc function is called by drv. The function outputs one dollar value variable that is used in memo1 for reporting purposes.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| ACBC1 | Alberta Child benefit per child aged 0 - 6 |
| ACBC2 | Alberta Child benefit per child aged 7 - 11 |
| ACBC3 | Alberta Child benefit per child aged 12- 15 |
| ACBC4 | Alberta Child benefit per child aged 16- 17 |
| CTCERF | CTC child care expense reduction fraction |
| CTCINC | CTC family income scaling factor |
| CTCOPT | Child tax credit option |
| CTCPC | Child tax credit per child |
| CTCREF | CTC post-reform rules flag |
| CTCRR | Child tax credit reduction rate |
| CTCSUP | CTC young child supplement |
| CTCTD | Family income child tax credit turndown |
| CTCTUR | CTC take up rate table [benefit,rate] |
| FCBBAS | Basic child benefit (per child) |
| FCBECI | Child benefits earning supplement cut-in level |
| FCBEIE | Flag for WIS dependent on number of children |
| FCBEIS | Child benefits earned income supplement |
| FCBEIS1 | Enriched WIS for first child |
| FCBEIS2 | Enriched WIS for second child |
| FCBEIS3 | Enriched WIS for each additional child |
| FCBEMX | Earnings where WIS phase-in is at maximum |
| FCBERR | Child benefits earning supplement reduction rate |
| FCBERR1 | WIS reduction rate for families with 1 child |
| FCBERR2 | WIS reduction rate for families with 2 children |
| FCBERR3 | WIS reduction rate for families with 3+ children |
| FCBESR | Child benefits earned income supplement rate |
| FCBETD | Child benefits earning supplement turndown level |
| FCBLRG | Supplement for 3rd and subsequent kids |
| FCBRR | Multi-children family income reduction rate |

| | |
|-------------|---|
| FCBRRS | Single-child family income reduction rate |
| FCBTD | Federal child benefits family income turndown |
| FCBYNG | Supplement for children under age 7 |
| FCBYNGR | Child care expense reduction rate |
| PYINC | Deflator to calculate previous year income |
| QCBC1 | Quebec Child benefit for 1st child |
| QCBC2 | Quebec Child benefit for 2nd child |
| QCBC3 | Quebec Child benefit for 3rd child |
| QCBCFLG | Quebec Child benefit flag for Quebec calculation |
| methodology | |
| QCBCS | Quebec Child benefit supplement child aged 12- 17 |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idrand | Random numbers [array] |
| idsex | Sex |
| imcce | Child care expenses claimed on behalf of child |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--|
| imctc | Child tax credit |
| imfcben | Total Federal Child Benefits |
| imfcbenb | Total Federal Child Benefits Base |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imninc | No income flag |

txfstc Compute federal sales tax credit

SUMMARY

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales

Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

Program Description

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. It was implemented for the 1986 and subsequent tax years and is administered by Revenue Canada, Taxation, through the income tax system.

Upon application, through the filing of an income tax return, the federal sales tax credit is available to any individual who at the end of the year was married, had a child, or was over 18 years of age. Eligible individuals may claim the credit for themselves, their qualified relations, and one spouse. Individuals who are not subject to tax in Canada or who were confined to a prison or similar institution for a period of over six months in the year for which a claim is made may not claim the credit. A married couple may make only one claim.

Maximum family benefits are a function of the type and number of individuals in the family as well as the net income of the family. There are three individual credit maximums; one for the filer; one for a spouse with whom the filer resided at the end of the year; and one for any other person under the age of 18 at the end of the year who was a child of the individual or their spouse or was a person in respect of whom the individual or his spouse has claimed a personal deduction. Family net income is the net income, for tax purposes, of the head of the family and their spouse if present.

The maximum annual credit is payable if net family annual income is less than a specified level of income (called turndowns, exemptions, or benefit reduction levels). Families with net incomes above this reduction point are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum STC is zero. In 1986 the maximum credit was \$50 per adult and \$25 per dependent child, the reduction point was \$15,000 and the reduction rate was 5%. So, for example, a family with a spouse and two eligible children and a net income of \$17,000 would receive a tax credit of \$100.00. (The 1986 credit becomes zero for families of this type with a net income at or above \$18,000.)

SPSM Implementation

The `txfstc` function calculates the federal Sales Tax Credit based on the number, age, and type of persons in a family and the net income of the family. The function always allocates the Sales Tax Credit to the spouse with the higher net income in the nuclear family. The function outputs values for the federal Sales Tax Credit and these reflect the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txfstc` function operates at the nuclear family level. It first increments two local variables based on information on the eldest member of the nuclear family; one for the family's net income by adding the eldest member's net income; and one for the maximum family benefits by adding the maximum entitlement for a filer. The program next increments both local

variables for the spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are incremented last by multiplying the number of children in the nuclear family by the maximum benefit per child ($nfnkids * FSTCC$). The maximum STC is then reduced at the specified reduction rate (FSTCR) applied to family net income in excess of the STC reduction point (FSTCL). This reduction is performed using the `taxbak1` function. Finally the federal Sales Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

The federal sales tax credit is claimable at age 19. Parents may claim additional amounts for children aged 18 and younger. When calculating the GST credit, the income concept used is the previous year's incomes. The GST credit for a given year, say 1992, would represent the amounts paid from July 1992 to July 1993.

Interpretation

Results obtained from the SPSM with respect to Sales Tax Credit benefits have no valid Revenue Canada administrative data with which to compare the results. In general, the SPSM should be slightly low due to certain coverage issues. Further analysis will be required to correctly estimate who in a married couple is claiming the benefit. Take-up issues may also be relevant.

Relief for Heating Expenses

When `HEATRLFLG` is turned on, persons will receive a transfer from the federal government for the relief of heating expenses (`imheatrl`). In order to receive it, a person has to have received a GST credit (`imfstc`). Qualifying persons who live with a spouse or children receive `HEATFAM` and others receive `HEATSNG`.

Note that, as indicated in the federal economic statement 2000, in order to receive a check in 2001 a person had to qualify for the GST credit in January 2001 or June 2000. In the SPSM this is the modeled GST credit for 2000 (we assume that the entire check is given in June), based on 1999 income. In order to simplify the code, we used receipt of the 2001 GST credit as a proxy for receipt of the 2000 GST credit. Given the fact that there was no change in the rules governing the GST credit in these two years, this should have a small effect.

Relation to Other SPSM Routines

The `txfstc` function is called by `drv`. The function outputs one variable that is used in `memo1` for reporting purposes. The function makes use of (calls) the `taxbak1` function.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| FSTCC | Federal sales tax credit amount for dependant |
| FSTCF | Federal sales tax credit amount for filer |
| FSTCL | Federal sales tax credit reduction level |
| FSTCR | Federal sales tax credit reduction rate |
| FSTCS | Federal sales tax credit amount for spouse |
| GSTAC | GST additional credit amount |
| GSTAR | GST additional credit rate of net income |
| GSTASPFLAG | Maximum GST additional credit for single parents flag |
| GSTAXM | GST additional credit exemption |
| GSTCTUNC | GST credit take up by number of children |
| GSTFLAG | GST credit activation flag |
| HEATFAM | Federal relief for heating expenses for families |
| HEATRLFLG | Federal relief for heating expenses activation flag |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| INPUT VARIABLES: | |
| cfageeld | Age of eldest in census family |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idrand | Random numbers [array] |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| OUTPUT VARIABLES: | |
| imfstc | Federal sales tax credit |
| imheatrl | Federal relief for heating expenses |
| imninc | No income flag |

SUMMARY

When IMSHTOPT is set to 1, imputation of provincial paid rents and property taxes are calculated based on Greenbook data, when set to .2 they are based on FAMEX. The rent and property tax are imputed to head's of census families and census family spouses reporting positive net income.

CROSS REFERENCE**Function Description**

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| IMSHTOPT | Paid rent and property tax imputation option |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| fxio | I/O expenditure categories [array] |
| fxprtax | Property tax |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hnnin | Number of individuals in household |
| idcfrh | Relationship to census family head |
| idhhrh | Relationship to head of household |
| idproptx | Net property taxes paid (556) |
| idrentpd | Total rental payments (555) |

OUTPUT VARIABLES:

| | |
|----------|---------------------------|
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |

SUMMARY

This function calculates exemptions or tax credits for dependants as well as performing transfers of deductions between spouses. The algorithms included in this function are:

- calculate and allocate Tax Credits for Wholly Dependant Children
- calculate and allocate Spouse (or Married) Tax Credit
- calculate Spouse (or Married) Equivalent Tax Credit
- calculate Deductions Transferred from Spouse

Calculate and Allocate Tax Credits for Wholly Dependant Children

Before 1988, filers with dependant children were eligible to claim a personal exemption based upon the age and net income of the child. The exemption was calculated as a fixed amount (adjusted annually) minus a proportion of the child's income exceeding the reduction level. The amounts varied with the age of the child. Children under 18 years of age were treated differently from children 18 and over. This claim could be split between supporting parents or grandparents.

The June 1987 White Paper on Tax Reform proposed the conversion of the exemption on behalf of children under 18 into a tax credit and the elimination of the exemption for children 18 and over.

SPSM Implementation

(Note: this paragraph needs to be rewritten.) The amount of the tax credit on behalf of dependants under 18 is calculated by subtracting a proportion (YCTCR) of the child's Net Income (iminet) which exceeds the Reduction Level (YCTCT) from the Maximum Young Child Tax Credit (YCTC).

The amounts for all children are accumulated in ctxct which may later be adjusted by the calculation of the Spouse Equivalent Tax Credit. If a spouse is present, the one with the higher Net Income iminet receives the full amount of the tax credit for all dependent children (imctxcs) which is used to reduce Basic Federal Tax imbft in the function txcalc.

There is no tax credit for dependent children 18 and over. The model has no provision for a tax credit for infirm dependants aged 18 and over.

The model does not partition exemptions for wholly dependant children between spouses as is allowed in tax regulations. If it were partitioned, certain families would pay slightly lower taxes.

Spouse Tax Credit

Persons legally married during the taxation year are eligible to claim a non-refundable Spouse Tax Credit. The tax credit amounts to a fixed amount reduced by a proportion of the spouse's net income exceeding a specified level. Net income for this purpose includes the spouse's GIS/SPA benefits.

SPSM Implementation

The Spouse Tax Credit (immartxc) amounts to a fixed value (MXM) reduced by the amount of the spouse's Net Income (imdepmi) exceeding the reduction level (MXMT). This is

calculated only for the spouse with the higher Net Income.

The Spouse Tax Credit (`immartxc`) is used to reduce Basic Federal Tax in the function `txcalc`.

Although the regulations allow special considerations for persons who changed marital status during the taxation year, they are not implemented in the model.

Equivalent-to- Spouse Tax Credit

Filers who are single, divorced, separated or widowed and supported a relative related by blood, marriage or adoption are eligible to claim that relative for the Equivalent-to-Spouse Tax Credit, amounting to a fixed value reduced by a proportion of the relative's net income exceeding a reduction level.

SPSM Implementation

The SPSM calculates the Equivalent-to-Spouse Tax Credit on behalf of dependant children, not other relatives who may be eligible. If a non-claimable dependant is present, he or she is chosen to be claimed for the credit. If there is no such dependant, then the one with the lowest Net Income (`iminet`) is claimed.

The credit is calculated as a fixed amount (`EMXM`) reduced by the amount of the dependant's Net Income (`imdepni`) exceeding the reduction level (`EMXMT`). If the credit is being claimed on behalf of a dependant who is also eligible for the Wholly Dependant Child Tax Credit, the amount claimed for that dependant is subtracted from the total Wholly Dependant Child Tax Credit and the total number of children claimed is reduced by one.

The Spouse Equivalent Tax Credit is added to Total Nontransferable Tax Credits (`imtaxcr`) which is subtracted from Basic Federal Tax (`imbft`) in the function `txcalc`.

Calculate supplement to the basic personal tax credit

The supplement to the basic personal tax credit announced in the 1998 federal budget is calculated by reducing the maximum supplement (`BXMS`) by a proportion (`BXMSRR`) of taxable income above the level of the basic exemption (`BXM`) plus the maximum supplement (`BXMS`). The supplement is added to the basic personal tax credit (`imbtc`). Persons who claim the married amount or equivalent-to-spouse amount get an additional supplement. This program was cancelled in the 1999 federal budget.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|------------------|---------------------------------|
| <code>BXM</code> | Basic personal exemption/amount |
|------------------|---------------------------------|

| | |
|--------|--|
| BXMS | Basic personal exemption supplement |
| BXMSPI | Basic personal exemption supplement phase in |
| BXMSRR | Basic personal exemption supplement reduction rate |
| EMXM | Married equivalent exemption/amount |
| EMXMT | Married equivalent exemption/amount turndown level |
| FNTCR | Federal non-refundable tax credit rate |
| MXM | Married exemption/amount |
| MXMT | Married exemption/amount turndown level |
| YCXM1 | Dependent child amount (1st child) |
| YCXM2 | Dependent child amount (2nd child) |
| YCXM3 | Dependent child amount (3rd ,etc.) |
| YCXMT | Dependent child exemption/amount turndown level |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imbtcs | Basic personal tax credit supplement |
| imcchc | Child's non-refundable credit |
| imcemc | Child's equivalent to married credit |
| imchclm | Number of dependent children claimed |
| imctxcs | Dependent children tax credits |
| imdepni | Dependant's net income |
| immartxc | Married tax credit claimed |

txinet Compute net income

SUMMARY

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures which are discussed in order in terms of the description of the tax measure and its SPSM implementation.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Calculate Taxable Dividends
- Calculate Taxable Capital Gains
- Calculate Total Income
- CPP/QPP Contributions Tax Credit

- Unemployment Insurance Contributions Tax Credit
- Tuition Fees Tax Credit
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

Program Description

Other Allowable Employment Expenses

Certain special employment expenses not claimable elsewhere are allowed.

According to the 1984 definition, these expenses include:

- employee's expenses for travel, office and wages to assistants,
- commission sales employees may claim certain expenses paid to earn their income,
- transport employees may deduct the cost of meals and lodging while away from home, and
- power saw operators may claim expenses incurred in operating the power saw.

This is a special deduction from employment income and is not available to most employees.

SPSM Implementation

The value for Other Allowable Employment Expenses (idalexp) already exists on the database. This value is derived from actual taxation statistics. For more details, please see the *Database Creation Guide*. This value is multiplied by the parameter ALEXPP (Proportion of Other Allowable Expenses to Use as a Deduction) to obtain imalexp, the modeled amount for Other Allowable Expenses.

Calculate Taxable Capital Gains

Capital Gains arise when an individual sells a property for more than it originally cost. If a property is sold for less than it cost, a capital loss may be claimable.

Only a portion of Capital Gains received are considered taxable. Similarly only a portion of capital losses may be claimed as a loss. The value of idicapg represents the actual amount of the Capital Gain or Loss Allowed. Losses, in 1984, were limited to \$2,000. This represents the lower limit of the variable idicapg. Modeled Taxable Capital Gains or Losses imicapgt are calculated by multiplying idicapg by the Capital Gains Inclusion Rate (CAPGIR).

Calculate Taxable Dividends

To avoid double taxation of dividends earned in Canadian business, the dividends from taxable Canadian corporations are treated differently from other sources of income. Before taxation, these dividends are "grossed-up" or increased to an amount which approximates the underlying corporate tax already paid on these earnings. A Dividend Tax Credit is paid based on the grossed-up amount and approximated the corporate taxes already paid.

The gross-up tax credit system ensures that income earned by Canadian corporations and then distributed in the form of dividends bears the same amount of total tax as if the income were earned directly by the shareholders.

SPSM Implementation

Total Dividends Received is represented on the database by the variable `idivid`. The taxable amount (`imidivt`) which is added to total income is calculated by multiplying `idivid` by the Federal Dividend Gross-up Rate (FDGUR).

Calculation of Total Income

At this point, the SPSM is able to calculate a first approximation of total income for tax purposes. This is not a final value since Family Allowances cannot be allocated to the mother or father until the Net Income of both is known. This temporary value of Total Income (`itot`) is the sum of:

| | |
|------------------------|--|
| <code>idiemp:</code> | Earnings From Employment |
| <code>idisenf:</code> | Self-employment Earnings (Non-farm), optionally scaled by the parameter <code>FACTISENF</code> |
| <code>idisefm:</code> | Self-employment Earnings (Farm) |
| <code>idiint:</code> | Interest Income |
| <code>idioinv:</code> | Other Investment Income |
| <code>idicqp:</code> | CPP/QPP Benefits Received |
| <code>iditogv:</code> | Other Taxable Government Income |
| <code>idipens:</code> | Pension Income |
| <code>iditoth:</code> | Other Taxable Income |
| <code>imiuib:</code> | Modeled Unemployment Insurance Benefits Received |
| <code>imiotg:</code> | Modeled New Taxable Demogrants |
| <code>imioas:</code> | Modeled OAS Benefits |
| <code>imidivt:</code> | Modeled Taxable Amount of Dividends |
| <code>imicapgt:</code> | Modeled Taxable Capital Gains and Losses |

Calculate CPP/QPP Contribution Tax Credit

All Canadians aged 18 to 64 and in the labour force are covered by either the Canada Pension Plan (CPP) or the Quebec Pension Plan (QPP). The pension plans provide retirement benefits as well as survivor benefits for a widow or dependant when the contributor dies prematurely, a death benefit and disability benefits. The plans are publicly funded, based on contributions from all employed persons aged 18 to 70 with pensionable earnings.

Contributions to the Canada and Quebec Pension Plans are based on employment income and are usually made through payroll deductions. Self-employed persons make their contribution through the tax system, the amount of the contribution is added to federal taxes payable.

The amount contributed is not subject to taxation and is therefore either deducted from total income or treated as a tax credit.

In most cases, an employee and his or her employer will contribute the same amount to the employee's pension plan. Self-employed persons contribute a twice the rate of employees.

Although employees have their CPP/QPP contribution deducted from their paycheck, refunds for overpayment are made through the personal income tax system.

SPSM Implementation

CPP/QPP Contributions are calculated separately on employment and self-employment earnings. Employment earnings subject to contribution are calculated by subtracting the amount of exemptable earnings (CPPXM) from Earnings from Employment (*idiemp*). This amount cannot exceed the Maximum Earnings Subject to Contribution (YMPE minus CPPXM). Earnings Subject to Contribution are then multiplied by the CPP/QPP contribution rate (WSCF) to derive the amount of the contribution (*wscon*).

Contributions from self-employment earnings (*secon*) is a proportion (SECF) of Earnings from Employment (*idiemp*) plus Earnings from Self-employment (*idisenf* + *idisefm*) that are in excess of the Annual Exemption Level (CPPXM) and less than the year's Maximum Pensionable Earnings Level, less a multiple (WSCM) of contributions made on Earnings from Employment (*wscon*). WSCM is the ratio of the contribution rate on earnings from self-employment to the rate on earnings from employment.

The total CPP/QPP Contribution is the sum of the Contribution Payable on Earnings from Employment (*wscon*) plus the Contribution Payable on Earnings from Self-employment (*secon*).

There is no information in the database concerning the actual amount deducted through payroll deductions; therefore, refunds for overpayment cannot be calculated.

The CPP/QPP Contribution tax credit (*imcppctc*) is calculated as a proportion (FNTCR) of the total contributions (*imcqppc*). The tax credit is applied in the function *txcalc*.

When CPPSEDEDFLG is turned on, a fraction (CPPSEDFRC) of a person's contributions to

the CPP/QPP in regards to their self employment earnings are treated as an exemption (imcppse) and is added to imdedft. The rest, along with the contributions on wages and salaries, can still be claimed as a tax credit (imcppct).

Unemployment Insurance Contributions

Unemployment Insurance is intended to provide short-term financial support to the unemployed. It also provides benefits for those suffering from extended sickness, for women leaving the labour force temporarily because of pregnancy and childbirth, and supplementary benefits to unemployed fishermen and to persons undertaking manpower training courses. The program is given its mandate by the Unemployment Insurance Act (1971). The act covers nearly all members of the labour force except self-employed persons and those who earn less than the minimum insurable earnings. The program is funded by employee and employer contributions as well as additional revenue from the consolidated revenue fund.

Contributions are calculated as a proportion of weekly earnings. Only earnings above the minimum insurable earnings and less than the maximum insurable earnings are subject to contribution.

Unemployment Insurance premiums are deducted from the employee's paycheck by the employer. Reimbursements for overpayment are made through the tax system. The amount contributed is not subject to tax. Before 1988, UI contributions were deducted from total income. The June 1987 White Paper on Tax Reform proposed the conversion of this deduction into a non-refundable tax credit.

Two major Employment Insurance Reforms were added, the difference in contributions, and the benefits repayable.

SPSM Implementation

The database contains no detail on an individual's weekly distribution of earnings throughout the year. Weekly earnings are estimated by dividing the annual Earnings from Employment (idiemp) by the Number of Weeks Worked (idlyww). This assumes that the earnings were evenly distributed throughout the year. It also assumes that the earner worked at least 20 hours during each week.

If average weekly earnings are less than $UIMINPCT * UIERNMAX$, no UI contributions are made. Otherwise, the annual UI Contribution (imuic) are calculated as a proportion (UIPF) of average weekly earnings not exceeding the Maximum Weekly Earnings Subject to Contribution (UIERNMAX), multiplied by the number of weeks worked.

The UI Contribution Tax Credit (imuictc) is calculated as a proportion (FNTCR) of the contributions. This tax credit is later applied to reduce Basic Federal Tax in the function txcalc.

When Employment Insurance is activated (UIEIOPT = 2), then the EI contributions (imuic) are calculated using the UI contribution rate on earnings (UIPF) with no weekly maximums and no exemptions for low income. The EI contribution refund (imuicrf) is then calculated

and subtracted from the contributions.

The method of calculating UI/EI benefit recovery (imuiibr) is also changed when UIEIOPT is activated. When UIEIREPOPT is set to 1, it now depends on the amount of previous weeks of EI received. If employment insurance benefits (imiuib) have been received and net income is in excess of: (a) UIBRA for persons with previous EI receipt, or (b) UIBRANR for persons with little previous benefits or for persons not on regular EI claims; UIEIRPR is applied to the lower of (a) total EI benefits and (b) the excess net income up to a maximum percent of their total benefits (UIEIBRP), to calculate the repayment.

When UIEIREPOPT is set to 2, sickness, maternity, and parental benefits are exempt from benefit repayment. Persons who claim EI for the first time are also exempt from benefit repayments. For the rest, the repayment is equal to the UIEIRPR times the minimum of net income in excess of UIBRANR and EI benefits.

See UIEIRPR, UIBRANR, UIEIBRP, UIBRA, and UIEINRT for more details.

Tuition Fees

Tuition fees paid to an educational institution may be claimed as a tax credit by the student or may be transferred to a spouse or supporting parent.

SPSM Implementation

A value for Tuition Deduction Allowed in the base year (idtuitn) exists on the database. This value is imputed from income tax records (see the [*Database Creation Guide*](#)). To calculate the Tuition Tax Credit, idtuitn, is multiplied by the Federal Non-Refundable Tax Credit Rate FNTCR and the result (imtutxc) is later applied as a tax credit in the function txcalc.

Assign Taxable Family Allowance

For tax purposes, Family Allowances are attributed to the person who claims a personal exemption (or post-reform, a tax credit) for the child. The model assumes that the exemptions are allocated to the spouse with the higher net income (iminet, excluding FA) if present. This is the spouse who would benefit most from claiming the children and, therefore, this is the one who also must claim Taxable Family Allowances.

Calculate Net Income

Net Income (iminet) is calculated as Total Income (imitot) minus All Deductions from Total Income (imdedft). imdedft is the sum of:

| | |
|----------|--|
| idrpp: | Registered Pension Plan Contributions |
| idrrsp: | Registered Retirement Savings Plan Contributions |
| iddues: | Union and Professional Dues |
| imiloss: | Allowable Business Investment Loss |

idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions
imuic: optionally, UI Contributions
idtuitn: optionally, Tuition Fees
imcceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txceca)

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALEXPP | Proportion of other allowable employment expenses to use as deduction |
| CAPGIR | Capital gains inclusion rate |
| CPP60T64 | CPP/QPP Contributions Take up (60 - 64) by earnings with CPP income |
| CPPGT64 | CPP/QPP Contributions Take up (over 64) by earnings with CPP income |
| CPPLT60 | CPP/QPP Contributions Take up (under 60) by earnings with CPP income |
| CPPSEDEDFLG | CPP/QPP contribution deduction for self-employed earnings flag |
| CPPSEDFRC | CPP/QPP contribution deduction fraction for self-employed earnings |
| CPPXM | CPP/QPP exemptible earnings |
| FACTISENF | Scale-up factor for non-farm self-employment income |
| FARR | Family allowance repayment rate |
| FATBPI | Family allowance take-back phase in |
| FATD | Family allowance turndown income |
| FDGUR | Federal dividend gross-up rate |
| FNTCR | Federal non-refundable tax credit rate |
| NETOASFLG | Net the clawback from Old Age Security |
| OASRR | OAS reduction rate |
| OASTBPI | OAS take-back phase in |
| OASTD | OAS turndown income |
| REPNETFLAG | Social program repayments reduce net income flag |
| SECF | CPP/QPP contribution rate on self-employment earnings |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |
| UIBRP | UI benefit recovery portion (UI only) |

| | |
|------------|--|
| UIEIBRP | Maximum clawback under EI reform [Past Wks ben][Rate] (EI only) |
| UIEINRT | UI EI Non repeater level for higher clawback turndown (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIREF | EI contribution refund cut-in (EI only) |
| UIEIREFTK | EI contribution refund take up |
| UIEIREPOPT | EI Benefit repayment option (1=repeaters have higher rate,2=one rate)(EI only) |
| UIEIRPR | UI EI benefit clawback rate (EI only) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIMINPCT | Exemption limit (percent of maximum insurable earnings) (UI only) |
| UIPF | UI contribution rate on earnings (UI and EI) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| WSCF | CPP/QPP contribution rate on employment earnings |
| WSCM | Ratio of self-employed to employed contribution fraction |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|----------|--|
| hdprov | Province |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcarry | Carrying charges (221) |
| iddalimo | Alimony paid (220) |
| iddues | Union and professional dues (212) |
| idexplr | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idlyww | Weeks worked |
| idmovexp | Imputed moving expenses (219) |
| idothded | Other deductions from total income (232) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idtuitn | Tuition fees (320) |
| iduirank | Predicted ranked likelihood of getting UI |
| imiotg | Other taxable demogrants |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| nfineld | Eldest person in nuclear family [pointer] |
| nfnspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |
| ubcalpd | Benefits paid in calendar year |

| | |
|---------|---------------------------|
| ubeiwbp | Weeks of past EI benefits |
| ucbtyp | Claim type |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|----------|---|
| imalexp | Allowable employment expenses |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedft | Deductions from total income |
| imfar | Family allowance recovery |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imioas | OAS benefits |
| imitot | Total income |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imtfa | Taxable family allowances |
| imtutxc | Tuition tax credit |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |
| imuicrf | UI EI contribution refund |
| imuictc | UIC contributions tax credit |

txitax Compute taxable income and individual credits

SUMMARY

The process of computing taxable income is divided into two separate routines. Deductions and tax credits which are not dependent upon information from other members of the family (e.g., Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

The algorithms contained in txitax are:

- Basic Personal Tax Credit
- Age Tax Credit
- Pension Income Deduction
- Medical Expense Tax Credit, Charitable Donations Tax Credit
- Disability Tax Credit
- Education Tax Credit
- Capital Gains Deduction

- UI Benefit Repayment Payable
- Family Allowance and OAS Repayment Payable (optional)
- Employee Home Relocation Loan Deduction
- Stock Option Deduction

Basic Personal Tax Credit

The non-refundable Basic Personal Tax Credit is calculated by assigning the value of the parameter BXM (Basic Personal Tax Credit) to the variable imbtc (Modeled Basic Personal Tax Credit) which is applied to reduce Basic Federal Tax in the function txcalc.

Age Tax Credit

All Canadians who were 65 years of age or older on December 31st of the taxation year would be eligible to claim the Age Tax Credit.

When the Age Tax Credit is calculated, imatxc (Modeled Age Tax Credit) receives the value assigned to the parameter AXM. The function txcalc performs any applicable transfer of the tax credit from the spouse and applies the tax credit to reduce Basic Federal Tax.

Pension Income Tax Credit

Certain pension income from a pension plan or upon the death of a spouse qualifies for a Pension Income Tax Credit. The deduction amounted to the lesser of the maximum deduction (fixed at \$1,000) and eligible income. Any amount of this deduction not required to reduce taxable income to zero is transferable to the spouse.

The June, 1987 White Paper on Tax Reform proposed the conversion of this deduction into a tax credit amounting to a proportion of eligible income up to a maximum of \$170. This tax credit would also be transferable.

SPSM Implementation

The Modeled Pension Income Tax Credit (impentxc) is assigned the minimum of:

- a) qualified pension income (idipens) and
- b) the Maximum Allowable Tax Credit (YPNDL),
times the Tax Credit Rate (FNTCR).

Any portion of the Pension Income Tax Credit not required to reduce a filer's Basic Federal Tax to zero is transferable to the spouse. The transfer is calculated in the function txcalc.

Medical Expense Tax Credit

The filer is allowed a non-refundable tax credit for certain medical expenses paid on behalf of the filer, spouse or dependants. All medical expenses claimed require supporting proof to be allowed as a tax credit and only medical expenses in excess of 3% of net income are claimable.

SPSM Implementation

The value of Medical Expenses Allowed (immeda) is calculated as the value of the gross medical expenses from the database (idmedgro) less either MEDANF percent of net income or MEDALL, whichever is less. The Medical Expense Tax Credit (immedatc) is calculated as a proportion (FNTCR) of the value of Medical Expenses Allowed (immeda). The Medical Expense Tax Credit is applied to reduce Basic Federal Tax in the function txcalc.

Although medical expenses paid on behalf of dependants are claimable by either spouse, no transfers between spouses are made for this tax credit.

Charitable Donations Tax Credit

The filer is allowed a non-refundable tax credit on behalf of charitable donations and gifts to Canada or a province. SPSM Implementation

The database contains a value for gross charitable donations (idcharit). The allowable charitable donations (imchara) are calculated as the lesser of idcharit and CHATNF percent of net income. The value of gifts or donations to Canada, a province or a cultural institution are then added to imchara.

A two-tier, non-refundable Charitable Donation Tax Credit (imchartc) is calculated. Allowable Donations (imchara) up to a set amount (CHATL1) are converted at the first tax credit rate (CHATR1) and the remainder is converted at the second rate (CHATR2).

The Charitable Donations Tax Credit is a component of the total non-refundable tax credits used to calculate Basic Federal Tax in the function txcalc.

Disability Tax Credit

Disabled persons whose impairment has markedly restricted or is expected to restrict their activities of daily living for a continuous period of at least 12 months are eligible to claim a special Disability Tax Credit. SPSM Implementation

The Disability Tax Credit (imdisatc) is assigned the value of the parameter MAXDX (Maximum Disability Tax Credit) for filers with reported disability amounts for self (iddisslf) or other dependents (iddisoht). Any portion of the tax credit not required to reduce Basic Federal Tax to zero may be transferred to the spouse or a supporting parent in the function txcalc.

Education Tax Credit

The Education Tax Credit represents the amount that students with full-time attendance at a designated post-secondary institution may claim. The number of eligible months is multiplied by a maximum allowable amount per month. The filer may transfer to a spouse, parent or grandparent the part of the education tax credit that is not needed to reduce the federal income tax to zero.

SPSM Implementation

The Education Tax Credit (*imedtxc*) is calculated as the number of eligible months of education amount (*ideducm*) multiplied by the Education Tax Credit per Month (*EDXPM*). The function *txcalc* may transfer unused amounts of the tax credit to a parent or spouse.

Capital Gains Deduction

Since 1985, a deduction has been allowed on behalf of capital gains income. The Capital Gains Deduction is being phased in with an increasing annual deduction limit amounting to \$10,000 in 1985 and \$25,000 in 1986. The amount an individual may claim during his or her lifetime is limited to a fixed amount. These measures were introduced in the May, 1985 Budget Papers and subsequently modified in the June, 1987 White Paper on Tax Reform.

SPSM Implementation

The Capital Gains Deduction is calculated as the minimum of:

- a) the Annual Capital Gains Deduction Limit (The Annual Limit based on gross Capital Gains, *CAPGAL*, times the Capital Gains Inclusion Rate, *CAPGIR*, and
- b) Taxable Capital Gains (*imicapgt*) minus:
 - Allowable Business Investment Loss (*idcloss*)
 - Net Capital Losses of Other Years (*imiloss*)

The resultant deduction is added to Total Deductions from Net Income (*imdedfn*).

The database contains no information on the filer's previous Capital Gains Deduction and therefore, the lifetime limit cannot be applied.

Unemployment Insurance Benefit Repayment Payable

If an individual has received Unemployment Insurance Benefits and his or her Net Income exceeds a fixed amount (\$38,610 in 1986), a portion of the benefits must be repaid. This repayment is added to Federal Taxes Payable. The amount repaid becomes a deduction from Net Income.

SPSM Implementation

The amount repayable is a proportion (*UIBRP*) of the UI Benefits received (*imiuib*) or a proportion of Net Income exceeding the Repayment Level (*UIBRA*) whichever is less. The Repayment Amount (*imuibr*) is a proportion (*UIBRP*) of the lesser of:

- (a) *imiuib*: Modeled UI Benefits
- (b) *iminet* *UIBRA*: the amount by which Net Income exceeds the Repayment Level

The value of *imuibr* is added into the variable *imrepay* which accumulates modeled repayment amounts. *imrepay* is added to Total Deductions from Net Income (*imdedfn*).

Family Allowance and OAS Repayments

The SPSM includes optional algorithms which allow the analysis of certain modifications to Family Allowances and the Old Age Supplement. These algorithms are presented with the SPSD/M for illustrating a glass box application. Users may consult the *Programmer's Guide* for further details.

The Family Allowance Repayment is calculated if the parameter FARR (Family Allowance Repayment Rate) is non-zero. The repayment is calculated as the lesser of:

- a) a proportion (FARR) of family net income (the net income of the head plus the net income of the spouse) exceeding the Family Allowance Reduction Level (FATD), and
- b) Taxable Family Allowances Received (imtfa).

The OAS repayment is based on the filer's own Net Income and is computed as the lesser of:

- a) OAS Received (imioas), and
- b) a proportion (OASRR) of Net Income (iminet) exceeding the OAS Repayment Reduction Level (OASTD).

Neither the FA nor the OAS repayments are stored in separate variables. They are accumulated into the variable imrepay which is applied as a deduction from Net Income in the function txitax and is added to Taxes Payable in the function memo1.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AXM | Age amount |
| AXPI | Age amount phase in rate for 1994 and beyond |
| AXRR | Age amount credit reduction rate |
| AXTD | Age amount net income turndown |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CHATL1 | Charitable donations amount level 1 |
| CHATNF | Charitable donations maximum net income fraction |
| CHATR1 | Charitable donations tax credit rate 1 |
| CHATR2 | Charitable donations tax credit rate 2 |
| EDXPM | Education amount per month |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MEDALL | Medical allowance maximum lower limit |
| MEDANF | Medical allowance lower limit net income fraction |
| REPNETFLAG | Social program repayments reduce net income flag |
| YPNDL | Maximum pension income deduction/amount |
| INPUT VARIABLES: | |
| hnnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idcapgex | Capital gains exemptions (254) |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idclose | Allowable other years capital loss (253) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idemplo | Employee home relocation loan dedn (248) |
| idforavg | Forward averaging amount withdrawal (237) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idipens | Pension income (115) |
| idmedgro | Medical expenses, gross (330) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idstkded | Stock option deduction (249) |
| imicapgt | Capital gains (taxable) |
| iminet | Net income |
| imninc | No income flag |
| imrepay | Social Benefits Repayments |

OUTPUT VARIABLES:

| | |
|----------|---|
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imcapgex | Modelled capital gains deduction (254) |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchartc | Charitable donations tax credit |
| imdedfn | All deductions from net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |

txman Compute provincial taxes for Manitoba

SUMMARY

When MTXFLG is turned off, Manitoba Basic Provincial Tax (imbpt) is calculated as a proportion (MPTF) of Basic Federal Tax (imbft).

The Manitoba Surtax is calculated based on a series of family credits. The surtax is added to Basic Provincial Tax to derive Manitoba Tax (imtxp).

When the tax on taxable income flag is turned on (MTXFLG), a provincial tax table (MPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax).

Non-refundable tax credits are calculated using the non-refundable tax credit rate (MPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (MBXM) |
| impatxc | Age amount tax credit | (MAXM, MAXRR, MAXTD, MAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (MMXM, MMXMT, MEMXM, MEMXMT) |
| impcgtc | Caregiver tax credit | (MCGTC, MCGTCFLG, MCGTCTC, MCGTCTD, MCGTCTK) |
| impchrctc | Charitable donations | (MCHATL1, MCHATR1, MCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (MMAXDX) |
| impdtxc | Dividend tax credit | (MDTCR) |
| impedtxc | Education tax credit | (MEDXPM, MMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (MYPNDL) |
| imptutxc | Tuition Tax credit | (MMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using MAMTOPT.

The refundable learning tax credit (immanltc) is equal to MANLTCF times (the tuition amount (idtuitn) plus the education amount (imeducm * EDXPM) plus the education amounts transferred from a spouse or kids (imedrcv) minus the education amounts which have been transferred to a spouse or parents (imedtrf)). It is included in the refundable tax credits (imptc). Beginning in 1998, the credit is limited to MANLTMAX for each student.

The Manitoba labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Manitoba provincial credit is modelled as MLVCRT times the gross amount up to MLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Manitoba homeowner's school tax assistance was introduced in 1993 and is part of the total property tax credit (impptxtc). MSCHFLAG turns it on or off. In order to qualify for assistance, Manitoba residents must be homeowners and be older than MSCHAGE. The basic credit is MSCHBXM which is reduced by income over the turndown MSCHTD by a rate MSCHRR. The value of the benefit is also rounded (see MSCHRND). The benefit may not exceed school taxes paid (idmschpd) less the minimum threshold of MSCHMNTH. The school tax assistance is added to the basic property tax credit and applied against occupancy

costs in order to derive the total property tax credit (impptxtc).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| EDXPM | Education amount per month |
| MAMTOPT | Man. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| MAMTPCTF | Man. amt rate as pct of additional fed tax due to minimum tax |
| MAMTPCTM | Man. amt rate as pct of federal minimum tax amount |
| MAMTTX | Man. amt rate as tax on adjusted income |
| MANLTCF | Manitoba learning tax credit factor |
| MANLTMAX | Manitoba learning tax credit maximum amount per student |
| MAXM | Man. Age Amount |
| MAXPI | Man. Age Amount phase in rate for 1994 and beyond |
| MAXRR | Man. Age Amount credit reduction rate |
| MAXTD | Man. Age Amount net income turndown |
| MBXM | Man. Basic Personal Exemption/amount |
| MCAXM | Manitoba cost-of-living age credit |
| MCBXM | Manitoba cost-of-living basic credit |
| MCDISEX | Manitoba cost-of-living disability credit |
| MCEMXM | Manitoba cost-of-living married equivalent credit |
| MCFINCR | Manitoba cost-of-living family income reduction rate |
| MCGTC | Man. Caregiver Tax Credit |
| MCGTCFLG | Man. Caregiver Tax Credit activation flag |
| MCGTCTC | Man. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| MCGTCTD | Man. Caregiver Tax Credit Turn Down Income |
| MCGTCTK | Man. Caregiver tax credit take-up rate by income level [employment income,rate] |
| MCHATL1 | Man. Charitable Donations amount level 1 |
| MCHATR1 | Man. Charitable Donations tax credit rate 1 |
| MCHATR2 | Man. Charitable Donations tax credit rate 2 |
| MCMXM | Manitoba cost-of-living married credit |
| MCODISEX | Manitoba cost-of-living old disabled dependant credit |
| MCSAXM | Manitoba cost-of-living spouse age credit |
| MCSDISEX | Manitoba cost-of-living spouse disabled credit |
| MICYCXM | Manitoba cost-of-living young dependants credit |
| MDTCR | Man. dividend tax credit rate |
| MEDXPM | Man. Education Amount per month |
| MEMXM | Man. equivalent to married amount |
| MEMXMT | Man. equivalent to married turndown level |
| MHMASOPT | Manitoba homeowner assistance option (1=Model 2=database) |
| MLVCMAX | Maximum Man. labour-sponsored funds tax credit allowed |
| MLVCRT | Percent of Man. labour-sponsored funds cost allowed as credit |
| MMAXDX | Man. Maximum Disability deduction/amount |
| MMAXET | Man. maximum on transfer of education and tuition amount |

| | |
|----------|---|
| MMXM | Man. married amount |
| MMXMT | Man. married amount turndown level |
| MNITR | Manitoba net income tax rate |
| MPAXM | Manitoba property tax credit senior citizen credit |
| MPBXM | Manitoba property tax credit basic credit |
| MPFINCRR | Manitoba property tax credit family income reduction rate |
| MPMINC | Manitoba property tax credit minimum credit |
| MPMNTH | Manitoba property tax minimum threshold |
| MPNTR | Man. provincial non-refundable tax credit rate |
| MPRIR | Manitoba property tax credit rental inclusion rate |
| MPTC | Manitoba political contribution table [total donations,donation allowed] |
| MPTCBEN | Maximum Manitoba political tax credit allowed |
| MPTF | Manitoba provincial tax fraction |
| MPTX | Man. tax table [taxable income,basic provincial tax] |
| MRAXM | Manitoba tax reduction age credit |
| MRBXM | Manitoba tax reduction basic credit |
| MRDISEX | Manitoba tax reduction disability credit |
| MREMXM | Manitoba tax reduction married equivalent credit |
| MRMXM | Manitoba tax reduction married credit |
| MRODISEX | Manitoba tax reduction old disabled dependant credit |
| MRSAXM | Manitoba tax reduction spouse age credit |
| MRYCXM | Manitoba tax reduction young dependants credit |
| MSAXM | Manitoba surtax age credit |
| MSBXM | Manitoba surtax basic credit |
| MSCHAGE | Manitoba school tax minimum age |
| MSCHBXM | Manitoba school tax basic amount |
| MSCHFLAG | Manitoba school tax assistance activation flag |
| MSCHMNTH | Manitoba school tax minimum threshold |
| MSCHRND | Manitoba school tax assistance rounding unit |
| MSCHRR | Manitoba school tax reduction rate |
| MSCHTD | Manitoba school tax turndown |
| MSDISEX | Manitoba surtax disability credit |
| MSEMXM | Manitoba surtax married equivalent credit |
| MSMXM | Manitoba surtax married credit |
| MSODISEX | Manitoba surtax old disabled dependant credit |
| MSSAXM | Manitoba surtax spouse age credit |
| MSYCXM | Manitoba surtax young dependants credit |
| MTCINCF | Manitoba tax credit income definition flag |
| MTRNIO | Manitoba tax reduction net income offset |
| MTXFLG | Man. tax on taxable income activation flag |
| MYPNDL | Man. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdtenur | Tenure |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |

| | |
|----------|---|
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idmschpd | Manitoba school taxes paid |
| idothpe | Other dependant exemptions (305) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imatxc | Age tax credit |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imstxcrt | Tax credits transferred from spouse |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------|
| imbpt | Basic provincial tax |
| immanltc | Manitoba learning tax credit |
| immhmas | Manitoba Homeowners Assistance |

| | |
|-----------|---|
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impptxtc | Provincial Property tax tax credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impттxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnb Compute provincial taxes for New Brunswick

SUMMARY

When BTXFLG is turned off, the basic Provincial Tax (imbpt) for New Brunswick is simply a proportion (BPTF) of Basic Federal Tax (imbft).

The 2000 budget announced that New Brunswick would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (BTXFLG), a provincial tax table (BPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (BPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|---------|-----------------------|----------------------|
| impbtc | Basic amount | (BBXM) |
| impatxc | Age amount tax credit | (BAXM, BAXRR, BAXTD, |

| | | |
|-----------|--|--|
| | | BAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (BMXM, BMXMT, BEMXM, BEMXMT) |
| impcgtc | Caregiver tax credit | (BCGTC, BCGTCFLG, BCGTCTC, BCGTCTD, BCGTCTK) |
| impchrctc | Charitable donations | (BCHATL1, BCHATR1, BCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (BMAXDX) |
| impdtxc | Dividend tax credit | (BDTCR) |
| impdtxc | Education tax credit | (BEDXPM, BMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (BYPNDL) |
| imptutxc | Tuition Tax credit | (BMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using BAMTOPT.

The New Brunswick labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The New Brunswick provincial credit is modeled as BLVCRT times the gross amount up to BLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Child Tax Benefit

When NBCTBFLG is assigned a value of 1, the New Brunswick Child Tax Benefit calculation is activated. imnbcben is the total benefits received under the New Brunswick Child Benefits program announced in the 1997 New Brunswick Budget and commencing in April 1997. A first component is the base amount, imnbcbb, which is calculated as the base amount per child, NBCBBAS, times the number of children. The level of benefit is reduced, based on family income, at a rate NBCBRRS for families with only one child, and at rate NBCBRR for the others.

If the family gross employment income is higher than a threshold, NBCBECI, then the maximum supplement is NBCBEIS. The supplement is reduced at a rate NBCBESR for each \$ of employment income exceeding the threshold FCBECI. If the family income is higher than NBCBETD then the supplement is reduce at a rate NBCBERR. The final value of the work income supplement is stored in imnbwis.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BAMTOPT | N.B. alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| BAMTPCTF | N.B. amt rate as pct of additional fed tax due to minimum tax |
| BAMTPCTM | N.B. amt rate as pct of federal minimum tax amount |
| BAMTTX | N.B. amt rate as tax on adjusted income |
| BAXM | N.B. Age Amount |
| BAXPI | N.B. Age Amount phase in rate for 1994 and beyond |
| BAXRR | N.B. Age Amount credit reduction rate |
| BAXTD | N.B. Age Amount net income turndown |
| BBXM | N.B. Basic Personal Exemption/amount |
| BCGTC | N.B. Caregiver Tax Credit |
| BCGTCFLG | N.B. Caregiver Tax Credit activation flag |
| BCGTCTC | N.B. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| BCGTCTD | N.B. Caregiver Tax Credit Turn Down Income |
| BCGTCTK | N.B. Caregiver tax credit take-up rate by income level [employment income,rate] |
| BCHATL1 | N.B. Charitable Donations amount level 1 |
| BCHATR1 | N.B. Charitable Donations tax credit rate 1 |
| BCHATR2 | N.B. Charitable Donations tax credit rate 2 |
| BDCR | N.B. dividend tax credit rate |
| BEDXPM | N.B. Education Amount per month |
| BEMXM | N.B. equivalent to married amount |
| BEMXMT | N.B. equivalent to married turndown level |
| BLVCMAX | Maximum N.B. labour-sponsored funds tax credit allowed |
| BLVCRT | Percent of N.B. labour-sponsored funds cost allowed as credit |
| BMAXDX | N.B. Maximum Disability deduction/amount |
| BMAXET | N.B. maximum on transfer of education and tuition amount |
| BMXM | N.B. married amount |
| BMXMT | N.B. married amount turndown level |
| BPNTCR | N.B. provincial non-refundable tax credit rate |
| BPTC | New Brunsw. political contribution table [total donations,donation allowed] |
| BPTCBEN | Maximum New Brunswick political tax credit allowed |
| BPTF | New Brunswick provincial tax fraction |
| BPTX | N.B. tax table [taxable income,basic provincial tax] |
| BSCI | New Brunswick provincial tax above which surtax applies |
| BSF | New Brunswick provincial surtax rate |
| BTRBAS | Base N.B. low income tax reduction |
| BTRRR | N.B. low income tax reduction Reduction Rate |
| BTRSP | N.B. low income tax reduction for spouse or equivalent-to-spouse |
| BTRTD | N.B. low income tax reduction Turndown |
| BTXFLG | N.B. tax on taxable income activation flag |
| BYPNDL | N.B. Pension Income Deduction Amount |

| | |
|----------|---|
| CTCINC | CTC family income scaling factor |
| NBCBBAS | NB Basic child benefit (per child) |
| NBCBECI | NB Child benefits earning supplement cut-in level |
| NBCBEIS | NB Child benefits earned income supplement |
| NBCBERR | NB Child benefits earning supplement reduction rate |
| NBCBESR | NB Child benefits earned income supplement rate |
| NBCBETD | NB Child benefits earning supplement turndown level |
| NBCBPI | NB Child benefits phase-in rate |
| NBCBRR | NB Multi-children family income reduction rate |
| NBCBRRS | NB Single-child family income reduction rate |
| NBCBTD | NB child benefits family income turndown |
| NBCTBFLG | NB child benefit activation flag |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinseld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtsg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |

| | |
|-----------|--|
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnbcbb | NB child tax Benefits base amount |
| imnbcben | Total NB child tax Benefits |
| imnbwis | NB child tax Benefits WIS |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transferred |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnfld Compute provincial taxes for Newfoundland

SUMMARY

When NTXFLG is turned off, Basic Provincial Tax (imbpt) for Newfoundland is simply a

proportion (NPTF) of Basic Federal Tax (imbft).

For Newfoundland, the SPSM calculates provincial surtax (impsur) as NSF percent of provincial taxes (imtxp) above the level NSCI.

The 2000 budget stated that Newfoundland would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (NTXFLG), a provincial tax table (NPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (NPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (NBXM) |
| impatxc | Age amount tax credit | (NAXM, NAXRR, NAXTD, NAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (NMXM, NMXMT, NEMXM, NEMXMT) |
| impcgtc | Caregiver tax credit | (NCGTC, NCGTCFLG, NCGTCTC, NCGTCTD, NCGTCTK) |
| impchrctc | Charitable donations | (NCHATL1, NCHATR1, NCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (NMAXDX) |
| impdtxc | Dividend tax credit | (NDTCR) |
| impedtxc | Education tax credit | (NEDXPM, NMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (NYPNDL) |
| imptutxc | Tuition Tax credit | (NMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using NAMTOPT.

A new refundable sales tax credit was modeled and added to the provincial tax credit (imptc). Similar to the federal credit, it allows for NSTCA dollars for each adult, NSTCC dollars for each child, and it reduced starting at family incomes over NSTCL at a rate of NSTCR.

Newfoundland and Labrador Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget. The Newfoundland and Labrador Child Benefit (imncb) is a tax-free monthly payment to help low-income families with the cost of raising children under age 18. Benefits from this program are combined with the Canada Child Tax Benefit into a single monthly payment. The program was implemented in July 1999.

SPSM Implementation

This benefit is turned by NCBFLG. Under the Newfoundland and Labrador Child Benefit program, you may be entitled to receive a benefit of NCB1 for the first child, NCB2 for the second child, NCB3 for the third child, and NCB4 for each additional child. The benefit is reduced when net family income is greater than NCBTD and is completely phased out when net family income is at least NCBPO. The benefit (imncb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| NAMTOPT | NFLD alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| NAMTPCTF | NFLD amt rate as pct of additional fed tax due to minimum tax |
| NAMTPCTM | NFLD amt rate as pct of federal minimum tax amount |
| NAMTTX | NFLD amt rate as tax on adjusted income |
| NAXM | NFLD Age Amount |
| NAXPI | NFLD Age Amount phase in rate for 1994 and beyond |
| NAXRR | NFLD Age Amount credit reduction rate |
| NAXTD | NFLD Age Amount net income turndown |
| NBXM | NFLD Basic Personal Exemption/amount |
| NCB1 | Nfld. child benefit for first child |
| NCB2 | Nfld. child benefit for second child |
| NCB3 | Nfld. child benefit for third child |
| NCB4 | Nfld. child benefit for 4th and subsequent child |
| NCBFLG | Newfoundland child benefit activation flag |
| NCBPI | Nfld. child benefit program phase in |
| NCBPO | Nfld. child benefit family income phase out |
| NCBTD | Nfld. child benefit family income turndown |
| NCGTC | NFLD Caregiver Tax Credit |
| NCGTCFLG | NFLD Caregiver Tax Credit activation flag |
| NCGTCTC | NFLD Caregiver tax credit take-up rate by age of elderly [age,rate] |
| NCGTCTD | NFLD Caregiver Tax Credit Turn Down Income |
| NCGTCTK | NFLD Caregiver tax credit take-up rate by income level [employment income,rate] |
| NCHATL1 | NFLD Charitable Donations amount level 1 |
| NCHATR1 | NFLD Charitable Donations tax credit rate 1 |
| NCHATR2 | NFLD Charitable Donations tax credit rate 2 |
| NDTCR | NFLD dividend tax credit rate |
| NEDXPM | NFLD Education Amount per month |
| NEMXM | NFLD equivalent to married amount |
| NEMXMT | NFLD equivalent to married turndown level |
| NHEATFLG | Newfoundland home heating fuel rebate activation flag |

| | |
|----------|---|
| NHEATREB | Newfoundland home heating fuel rebate amount |
| NLVCMAX | Maximum NFLD labour-sponsored funds tax credit allowed |
| NLVCRT | Percent of NFLD labour-sponsored funds cost allowed as credit |
| NMAXDX | NFLD Maximum Disability deduction/amount |
| NMAXET | NFLD maximum on transfer of education and tuition amount |
| NMXM | NFLD married amount |
| NMXMT | NFLD married amount turndown level |
| NPNTCR | NFLD provincial non-refundable tax credit rate |
| NPTC | Newfoundland political contribution table [total donations, donation allowed] |
| NPTCBEN | Maximum Newfoundland political tax credit allowed |
| NPTF | Newfoundland provincial tax fraction |
| NPTX | NFLD tax table [taxable income, basic provincial tax] |
| NSCI | Newfoundland provincial tax above which surtax applies |
| NSCI2 | Newfoundland provincial surtax level 2 |
| NSF | Newfoundland provincial surtax rate |
| NSF2 | Newfoundland provincial surtax rate 2 |
| NSTCA | NFLD sales tax credit amount for adults |
| NSTCC | NFLD sales tax credit amount for children |
| NSTCFLAG | NFLD sales tax credit activation flag |
| NSTCL | NFLD sales tax credit reduction level |
| NSTCR | NFLD sales tax credit reduction rate |
| NTXFLG | NFLD tax on taxable income activation flag |
| NYPNDL | NFLD Pension Income Deduction Amount |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfageeld | Age of eldest in census family |
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| fxio | I/O expenditure categories [array] |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |

| | |
|----------|---|
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| imigist | GIS provincial top-up |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| imncb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpctc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |

impuictc Prov UI/EI contributions tax credit
 imtxp Provincial income tax payable

txns Compute provincial taxes for Nova Scotia

SUMMARY

This function calculates provincial taxes and credits for Nova Scotia. The programs simulated are as follows:

- Basic provincial tax
- Two level surtax
- Family tax reduction
- Phamacare tax and tax credits
- Provincial foreign tax credit
- Provincial political tax credit
- Provincial labour-sponsored venture capital tax credit
- Stock savings plan tax credit
- Home ownership savings plan tax credit
- Direct Assistance

Basic Provincial Tax

When VTXFLG is turned off, the algorithm first calculates basic provincial tax. Basic provincial tax (imbpt) for Nova Scotia is calculated as a proportion (VPTF) of Basic Federal Tax (imbft). Provincial taxes payable (imtxp) are then initialized to the value of basic provincial tax (imbpt).

The 2000 budget announced that Nova Scotia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (VTXFLG), a provincial tax table (VPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (VPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (VBXM) |
| impatxc | Age amount tax credit | (VAXM, VAXRR, VAXTD, VAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (VMXM, VMXMT, VEMXM, VEMXMT) |
| impcgtc | Caregiver tax credit | (VCGTC, VCGTCFLG, VCGTCTC, VCGTCTD, VCGTCTK) |
| impchrtc | Charitable donations | (VCHATL1, VCHATR1, |

| | | |
|-----------|-----------------------------|------------------|
| | | VCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (VMAXDX) |
| impdtxc | Dividend tax credit | (VDTCR) |
| impedtxc | Education tax credit | (VEDXPM, VMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (VYPNDL) |
| imptutxc | Tuition Tax credit | (VMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using VAMTOPT.

Provincial Surtax

The Nova Scotia surtax (impsur) is calculated as VSF percent of provincial taxes (imtxp) above the level VSCI plus VSF2 percent of provincial taxes above the level VSCI2. This amount is then added to provincial taxes payable (imtxp).

Family Tax Reduction

Program Description

The Nova Scotia tax reduction for low income individuals and families was introduced in 1994. To be eligible for the reduction a filer must be either over age 18, or have a spouse, or be a parent. This a family based tax reduction and only one person of a married couple may claim the reduction. The reduction has prescribed maximum amounts for the claimant, a spouse and children. There is an equivalent to married amount in cases where a claimant has filed for the federal equivalent to married non-refundable tax credit. The total of these amounts is then subject to a family income test.

SPSM Implementation

The calculation closely follows the structure on form T1C (N.S.). Individuals are first tested for eligibility on the basis of age (idage), marital status (idspoflg), and parental status. Parental status is only relevant for young (<19) families and single parents and so is tested using relation to head (idcfrh == 0) and presence of young children (nfnkids).

Persons without a spouse are assigned the basic amount (VTRBAS). Heads of census families with a spouse are assigned the basic and spouse amounts (VTRBAS + VTRSP). Equivalent to married amounts (VTREM) are given to spouseless heads who claim the federal married tax credit (immartxc). Amounts for children are given to the head of the census family. No child amounts are given with respect to children who triggered the equivalent to married amount.

The maximum deduction is then reduced by a fixed proportion (VTRRR) of the net income (iminet) of the head plus spouse (if present) in excess of the income base amount (VTRTD). This calculation is performed for persons without spouses or heads of census families with

spouses. The amounts for families with spouses are then assigned to the spouse with the higher net income. The tax reduction thus calculated is written to the non-refundable provincial tax reduction variable (imptr) and is used to decrease provincial taxes payable (imtxp).

Pharmacare Program

Program Description

Introduced in the 1995 provincial budget, the pharmacare program consists of an annual pharmacare premium payable by all seniors and a refundable tax credit for low income seniors.

SPSM Implementation

The pharmacare premium (VPHPREM) is assigned to the variable impeht for all Nova Scotians age 65 or older. This amount is then used to increase provincial taxes payable (imtxp).

The pharmacare refundable tax credit (impehtc) is calculated for all Nova Scotia seniors in receipt of GIS benefits (imigis). It is calculated as the basic tax credit (VPHTC) less a fixed proportion (VPHRR) of income (imgisinc) above a threshold (VPHTD). The pharmacare refundable tax credit (impehtc) is added to the variable for refundable provincial tax credits (imptc).

Starting in 1996, the tax credit no longer depended on whether or not a person received GIS. Instead, the credit is taxed back depending on family income. When VPHOPT is set to 1, the program depends on GIS receipt, and when it is set to 2 it depends on family income. There are now two turndowns, VPHTD for singles (also used in the original program) and VPHTDC for couples.

Provincial Foreign Tax Credit

The provincial foreign tax credit is imputed from the Greenbook (idprvftc). Only the amount of the foreign tax credit required to reduce provincial tax payable (imtxp) to zero is applied to the variable for non-refundable provincial tax credits (imnptc). Provincial tax payable (imtxp) is then reduced by the amount imnptc.

Political Contribution Tax Credit

Labour Sponsored Venture Capital Tax Credit

The Nova Scotia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Nova Scotia provincial credit is modeled as

VLVCRT times the gross amount up to VLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Direct Assistance

Program Description

Introduced in the 1997 provincial budget, direct assistance gives a benefit to low income Nova Scotians who would not be otherwise eligible for the tax reduction.

Beginning in 2000, direct assistance is only granted to families with children.

SPSM Implementation

Nova Scotia residents 19 and over are eligible for direct assistance if their income is below the cut-off (VDACI for families or VDASI for single individuals). The benefits are VDACB for families and VDASB for single individuals.

Differences between the SPSM estimate and reality will primarily come from two problems. Persons are eligible for Direct Assistance if they were full time students for 4 months or less or if they received Social Assistance for three months or less. In the SPSM model, anyone who is a full-time student in March (idestat==1) or anyone who receives Social Assistance was deemed ineligible for the program. This should lower estimates. But since people have to apply for the program, the take-up is probably not going to be 100% which will increase the SPSM estimate.

Nova Scotia Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget.

SPSM Implementation

The benefit is turned on by the flag VCBFLG, and families whose net income is less than VCBTD are eligible. They receive VCBBAS1 for their first child, VCBBAS2 for their second child, and VCBBAS3 for their third and each additional child. The benefit is completely phased out when the family net income reaches VCBPO. The benefit (imnscb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

CTCINC CTC family income scaling factor
 PYINC Deflator to calculate previous year income
 VAMTOPT N.S. alternative minimum tax option (1=none, 2=% fed, 3=fed
 adj inc, 4=% min amt)
 VAMTPCTF N.S. amt rate as pct of additional fed tax due to minimum
 tax
 VAMTPCTM N.S. amt rate as pct of federal minimum tax amount
 VAMTTX N.S. amt rate as tax on adjusted income
 VAXM N.S. Age Amount
 VAXPI N.S. Age Amount phase in rate for 1994 and beyond
 VAXRR N.S. Age Amount credit reduction rate
 VAXTD N.S. Age Amount net income turndown
 VBXM N.S. Basic Personal Exemption/amount
 VCBBAS1 NS child benefit for first child
 VCBBAS2 NS child benefit for second child
 VCBBAS3 NS child benefit for third or additional child
 VCBFLG NS child benefit activation flag
 VCBPO NS child benefit family income phase out
 VCBTD NS child benefit turndown
 VCGTC N.S. Caregiver Tax Credit
 VCGTCFLG N.S. Caregiver Tax Credit activation flag
 VCGTCTC N.S. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 VCGTCTD N.S. Caregiver Tax Credit Turn Down Income
 VCGTCTK N.S. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 VCHATL1 N.S. Charitable Donations amount level 1
 VCHATR1 N.S. Charitable Donations tax credit rate 1
 VCHATR2 N.S. Charitable Donations tax credit rate 2
 VDACB NS Direct assistance benefit for couples
 VDACI NS Direct assistance maximum income for couples
 VDAFLAG NS Direct assistance benefit flag
 VDAFWC NS Direct assistance benefit for families with children
 flag
 VDASB NS Direct assistance benefit for singles
 VDASI NS Direct assistance maximum income for singles
 VDTCR N.S. dividend tax credit rate
 VEDXPM N.S. Education Amount per month
 VEMXM N.S. equivalent to married amount
 VEMXMT N.S. equivalent to married turndown level
 VLVCMAX Maximum N.S. labour-sponsored funds tax credit allowed
 VLVCRT Percent of N.S. labour-sponsored funds cost allowed as
 credit
 VMAXDX N.S. Maximum Disability deduction/amount
 VMAXET N.S. maximum on transfer of education and tuition amount
 VMXM N.S. married amount
 VMXMT N.S. married amount turndown level
 VPHOPT Nova Scotia pharmacare premium option (1=GIS, 2=income)
 VPHPREM Nova Scotia pharmacare premium
 VPHRR Nova Scotia pharmacare tax credit reduction rate
 VPHTC Nova Scotia pharmacare refundable tax credit
 VPHTD Nova Scotia pharmacare tax credit turndown
 VPHTDC Nova Scotia pharmacare tax credit turndown for couples
 VPNTCR N.S. provincial non-refundable tax credit rate
 VPTC Nova Scotia political contribution table [total
 donations,donation allowed]
 VPTCBEN Maximum Nova Scotia political tax credit allowed

| | |
|--------|---|
| VPTF | Nova Scotia provincial tax fraction |
| VPTX | N.S. tax table [taxable income,basic provincial tax] |
| VSCI | Nova Scotia provincial tax above which surtax applies |
| VSCI2 | Nova Scotia provincial tax above which surtax applies (2nd level) |
| VSF | Nova Scotia provincial surtax rate |
| VSF2 | Nova Scotia provincial surtax rate (2nd level) |
| VTRBAS | Nova Scotia tax reduction basic amount |
| VTREM | Nova Scotia tax reduction equivalent to spouse amount |
| VTRKID | Nova Scotia tax reduction child amount |
| VTRRR | Nova Scotia tax reduction family income reduction rate |
| VTRSP | Nova Scotia tax reduction spouse amount |
| VTRTD | Nova Scotia tax reduction family income turndown |
| VTXFLG | N.S. tax on taxable income activation flag |
| VYPNDL | N.S. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idestat | Educational status |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtsg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imcemc | Child's equivalent to married credit |
| imchara | Allowable charitable donations and gifts (calculated) |

| | |
|----------|--|
| imcppse | CPP contributions deduction for self-emp |
| imcqppc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imgisinc | Individual's income for GIS/SPA reduction |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| idinspo | Person's spouse [pointer] |
| imbpt | Basic provincial tax |
| iminsda | NS Direct Assistance Program |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imnscb | Nova Scotia Child Benefit |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impeht | Provincial elderly health tax |
| impehtc | Provincial elderly health tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |

imtxp Provincial income tax payable

txont Compute provincial taxes for Ontario

SUMMARY

When OTXFLG is turned off, the Ontario Provincial Tax (imbpt) is calculated as a proportion (OPTF) of Basic Federal Tax (imbft). Added to Basic for some years is the Social Services Maintenance Tax which is a proportion (OSSMR) of Basic Provincial Tax (imbpt) exceeding the tax level (OSSML).

When the tax on taxable income flag is turned on (OTXFLG), a provincial tax table (OPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (OPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (OBXM) |
| impatxc | Age amount tax credit | (OAXM, OAXRR, OAXTD, OAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (OMXM, OMXMT, OEMXM, OEMXMT) |
| impcgtc | Caregiver tax credit | (OCGTC, OCGTCFLG, OCGTCTC, OCGTCTD, OCGTCTK) |
| impchrctc | Charitable donations | (OCHATL1, OCHATR1, OCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (OMAXDX) |
| impdtxc | Dividend tax credit | (ODTCR) |
| impdtxc | Education tax credit | (OEDXPM, OMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (OYPNDL) |
| imptutxc | Tuition Tax credit | (OMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using OAMTOPT.

Ontario provides a tax reduction for persons with a low taxable income. This reduction amounts to a proportion (OTRF) of taxable income (imitax) below the Ontario Tax Reduction Level (OMTY). This is subtracted from Basic Provincial Tax to derive Provincial

Tax Payable (imtxp).

The Ontario labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Ontario provincial credit is modeled as OLVCRRT times the gross amount up to OLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Employer Health Tax (imonteht) only applies to self-employed persons, and is calculated when OEHTFLAG is set to 1. When a person's income from self-employment is less than OEHTTD1, the Employer Health Tax is calculated using the rate OEHTRR1 on self-employment earnings over the exemption OEHTEX. When a person's income from self-employment is less than this value, but greater than OEHTTD1, the Employer Health Tax is calculated by adding OEHTRR1 times the difference between the first turndown (OEHTTD1) and the exemption rate (OEHTEX) and OEHTRR2 times the difference between earnings from self-employment and OEHTTD1. When self-employment earnings are greater than OEHTTD2, the Ontario Employer Health Tax is calculated as OEHTRR3 times earnings from self-employment which are greater than the exemption OEHTEX.

When the parameter OCCEAFLG is set to 1, the child care expense credit is calculated. The maximum amount of the benefit is calculated as the lower of either OCCEAPCT times actual child care expenses (imccea), or of a specified amount per child (OCCEAYNG) times the number of children age 6 and under in the census family. Maximum family benefits are then reduced by a proportion (OCCEARR) of family net income above the threshold (OCCEATD). The model assigns the imputed Child Care credit (imoccea) to the mother, if present.

When OCWISFLG is set to 1, the supplement for working families is calculated as a percentage (OCWISRR) of family income over a threshold OCWISTD. The percentage depends on the number of children under the age of 7 in the family. The Supplement cannot exceed OCCEAYNG times the number of children under the age of 7. In single parent families, the maximum cannot exceed OCWISSP times the number of children under the age of 7 as announced in the Ontario 2000 Budget. The benefit which is given is the maximum value of either the supplement or the childcare expenses credit.

The taxpayer dividend (imotxdv) announced in the 2000 Budget was implemented. It is equal to taxes paid in the previous year up to a maximum (OTXDVMAX). People who paid over 0\$ in taxes would get a minimum rebate of OTXDVMIN. The benefit is included in refundable tax credits of 2000. Since it is based on the previous year's taxes, the taxes are multiplied by OPYTAX in order to estimate the lagged effect.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CAPGIR | Capital gains inclusion rate |
| OAMTOPT | Ont. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| OAMTPCTF | Ont. amt rate as pct of additional fed tax due to minimum tax |
| OAMTPCTM | Ont. amt rate as pct of federal minimum tax amount |
| OAMTTX | Ont. amt rate as tax on adjusted income |
| OAXM | Ont. Age Amount |
| OAXPI | Ont. Age Amount phase in rate for 1994 and beyond |
| OAXRR | Ont. Age Amount credit reduction rate |
| OAXTD | Ont. Age Amount net income turndown |
| OBXM | Ont. Basic Personal Exemption/amount |
| OCAPGIR | Ont. Capital Gains Inclusion Rate |
| OCCEAFLG | Ont. Child Care Expense Credit activation flag |
| OCCEAPCT | Ont. Child Care Expense Credit qualifying percentage |
| OCCEARR | Ont. Child Care Expense Credit benefit reduction rate |
| OCCEATD | Ont. Child Care Expense Credit family income turndown |
| OCCEAYNG | Ont. Child Care Expense Credit allowance per child |
| OCGIRFLG | Ont. Capital Gains Inclusion Rate Activation Flag |
| OCGTC | Ont. Caregiver Tax Credit |
| OCGTCTFLG | Ont. Caregiver Tax Credit activation flag |
| OCGTCTC | Ont. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| OCGTCTD | Ont. Caregiver Tax Credit Turn Down Income |
| OCGTCTK | Ont. Caregiver tax credit take-up rate by income level [employment income,rate] |
| OCHATL1 | Ont. Charitable Donations amount level 1 |
| OCHATR1 | Ont. Charitable Donations tax credit rate 1 |
| OCHATR2 | Ont. Charitable Donations tax credit rate 2 |
| OCWISFLG | Ont. Child Care Working Income Supplement activation flag |
| OCWISRR | Ont. Child Care Working Income Supplement Rate [children][rr] |
| OCWISSP | Ont. Child Care Working Income Supplement maximum benefit for single parents |
| OCWISTD | Ont. Child Care Working Income Supplement minimum earnings |
| ODTCR | Ont. dividend tax credit rate |
| OEDXPM | Ont. Education Amount per month |
| OEHTDRR | OEHT - Income Tax Deduction Rate |
| OEHTEX | OEHT - Exemption |
| OEHTFLAG | OEHT - Ontario Employer Health Tax Flag |
| OEHTRR1 | OEHT - Rate 1 |
| OEHTRR2 | OEHT - Rate 2 |
| OEHTRR3 | OEHT - Rate 3 |
| OEHTTD1 | OEHT - Turndown 1 |
| OEHTTD2 | OEHT - Turndown 2 |
| OEMXM | Ont. equivalent to married amount |
| OEMXMT | Ont. equivalent to married turndown level |

| | |
|----------|---|
| OLVCMAX | Maximum Ont. labour-sponsored funds tax credit allowed |
| OLVCRT | Percent of Ont. labour-sponsored funds cost allowed as credit |
| OMAXDX | Ont. Maximum Disability deduction/amount |
| OMAXET | Ont. maximum on transfer of education and tuition amount |
| OMTY | Ontario tax reduction limit |
| OMXM | Ont. married amount |
| OMXMT | Ont. married amount turndown level |
| OPCRA | Ontario property tax college residence amount |
| OPNTCR | Ont. provincial non-refundable tax credit rate |
| OPOCAR | Ontario property tax percent of occupancy cost |
| OPOCM | Ontario property tax maximum occupancy cost |
| OPRIR | Ontario property tax credit rental inclusion rate |
| OPSMAX | Ontario property/sales tax credit maximum |
| OPTC | Ontario political contribution table [total donations,donation allowed] |
| OPTCBEN | Maximum Ontario political tax credit allowed |
| OPTCFLAG | Ontario political contribution refundable tax credit flag |
| OPTF | Ontario provincial tax fraction |
| OPTX | Ont. tax table [taxable income,basic provincial tax] |
| OPYTAX | Estimate of previous year's Ontario taxes |
| ORDOPT | Ontario tax reduction calculation option |
| OSPOCM | Ontario seniors property tax maximum occupancy cost |
| OSSML | Ontario surtax first cut-in level |
| OSSML2 | Ontario surtax second cut-in level |
| OSSMR | Ontario surtax first level rate |
| OSSMR2 | Ontario surtax second level rate |
| OSSTCP | Ontario seniors sales tax credit percent of income |
| OSTCB | Ontario sales tax credit basic credit |
| OSTCD | Ontario sales tax credit dependant credit |
| OSTCFLAG | Ontario seniors tax credit claimed flag |
| OSTCNIBA | Ontario seniors tax credit net income base amount |
| OSTCP | Ontario sales tax credit percent of income |
| OSTCS | Ontario sales tax credit spouse credit |
| OTCNIBA | Ontario tax credit net income base amount |
| OTRBPA | Ontario tax reduction basic personal amount |
| OTRDCA | Ontario tax reduction dependant child amount |
| OTRDDA | Ontario tax reduction disabled dependant amount |
| OTRF | Ontario tax reduction Ontario tax multiplier |
| OTRFP | Ontario tax reduction personal amount multiplier |
| OTXDVMAX | Maximum taxpayer dividend |
| OTXDVMIN | Minimum taxpayer dividend for people with non-zero taxes |
| OTXFLG | Ont. tax on taxable income activation flag |
| OYPNDL | Ont. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |

| | |
|----------|---|
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcapgex | Capital gains exemptions (254) |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imccea | Child care expenses allowed |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdedft | Deductions from total income |
| imdepni | Dependant's net income |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfnkids | Number of children in nuclear family |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imiotax | Ontario taxable income |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| imonteht | Ontario Employers Health Tax (Self-employed) |
| imotxdv | Ontario Taxpayer Dividend |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgctc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txpei Compute provincial taxes for P.E.I.

SUMMARY

When PTXFLG is off, the Basic Provincial Tax (imbpt) for Prince Edward Island is simply a proportion (PTF) of Basic Federal Tax (imbft).

The 2000 budget announced that PEI would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (PTXFLG), a provincial tax table (PPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (PPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (PBXM) |
| impatxc | Age amount tax credit | (PAXM, PAXRR, PAXTD, PAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (PMXM, PMXMT, PEMXM, PEMXMT) |
| impcgtc | Caregiver tax credit | (PCGTC, PCGTCFLG, PCGTCTC, PCGTCTD, PCGTCTK) |
| impchrctc | Charitable donations | (PCHATL1, PCHATR1, PCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (PMAXDX) |
| impdtxc | Dividend tax credit | (PDTCR) |
| impedtxc | Education tax credit | (PEDXPM, PMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (PYPNDL) |
| imptutxc | Tuition Tax credit | (PMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using PAMTOPT.

The Prince Edward Island labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Prince Edward Island provincial credit is modeled as PLVCRT times the gross amount up to PLVCMAX. The credit cannot be more than provincial taxes (imtxp).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| PAMTOPT | P.E.I. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| PAMTPCTF | P.E.I. amt rate as pct of additional fed tax due to minimum tax |
| PAMTPCTM | P.E.I. amt rate as pct of federal minimum tax amount |
| PAMTTX | P.E.I. amt rate as tax on adjusted income |
| PAXM | P.E.I. Age Amount |
| PAXPI | P.E.I. Age Amount phase in rate for 1994 and beyond |
| PAXRR | P.E.I. Age Amount credit reduction rate |
| PAXTD | P.E.I. Age Amount net income turndown |
| PBXM | P.E.I. Basic Personal Exemption/amount |
| PCGTC | P.E.I. Caregiver Tax Credit |

| | |
|-----------------------------|--|
| PCGTCTFLG | P.E.I. Caregiver Tax Credit activation flag |
| PCGTCTC | P.E.I. Caregiver tax credit take-up rate by age of elderly |
| [age,rate] | |
| PCGTCTD | P.E.I. Caregiver Tax Credit Turn Down Income |
| PCGTCTK | P.E.I. Caregiver tax credit take-up rate by income level |
| [employment income,rate] | |
| PCHATL1 | P.E.I. Charitable Donations amount level 1 |
| PCHATR1 | P.E.I. Charitable Donations tax credit rate 1 |
| PCHATR2 | P.E.I. Charitable Donations tax credit rate 2 |
| PDTCR | P.E.I. dividend tax credit rate |
| PEDXPM | P.E.I. Education Amount per month |
| PEMXM | P.E.I. equivalent to married amount |
| PEMXMT | P.E.I. equivalent to married turndown level |
| PLVCMAX | Maximum P.E.I. labour-sponsored funds tax credit allowed |
| PLVCRT | Percent of P.E.I. labour-sponsored funds cost allowed as |
| credit | |
| PMAXDX | P.E.I. Maximum Disability deduction/amount |
| PMAXET | P.E.I. maximum on transfer of education and tuition amount |
| PMXM | P.E.I. married amount |
| PMXMT | P.E.I. married amount turndown level |
| PPNTCR | P.E.I. provincial non-refundable tax credit rate |
| PPTC | P.E.I. political contribution table [total |
| donations,donation allowed] | |
| PPTCBEN | Maximum P.E.I. political tax credit allowed |
| PPTF | P.E.I. provincial tax fraction |
| PPTX | P.E.I. tax table [taxable income,basic provincial tax] |
| PSCI | P.E.I. provincial tax above which surtax applies |
| PSF | P.E.I. provincial surtax rate |
| PTRBAS | Base PEI low income tax reduction |
| PTRKID | PEI low income tax reduction for dependent child |
| PTRRR | PEI low income tax reduction Reduction Rate |
| PTRSP | PEI low income tax reduction for spouse or equivalent-to- |
| spouse | |
| PTRTD | PEI low income tax reduction Turndown |
| PTXFLG | P.E.I. tax on taxable income activation flag |
| PYPNDL | P.E.I. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |

| | |
|----------|---|
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impdtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |

| | |
|----------|-------------------------------------|
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txprov Compute provincial taxes

SUMMARY

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax as in Newfoundland, Prince Edward Island, New Brunswick and Nova Scotia to a parallel of the federal system in Quebec. The other provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|--------|----------|
| hdprov | Province |
|--------|----------|

txqcalc Calculate income tax (Quebec)

SUMMARY

The txqcalc function calculates Quebec income tax for those individuals affected.

SPSM Implementation

Each census family is processed in turn. First, the basic provincial tax is computed via a table look-up for each person. Next the non-refundable tax credits are applied and unused credits are transferred between spouses, if appropriate. Subsequently, the 'family situation' and 'eligible income' are computed followed by the family tax reduction. After the family tax reduction has been calculated, the refundable property tax credit is computed.

Relation to Other SPSM Routines

txqcalc is called from within txprov and is in a subsidiary relationship to it. It does not call, and is not called by, any further functions.

Sales tax credit

The refundable sales tax credit (imqstr) is activated when QSTRFLAG is set to 1. The sales tax credit includes a base credit (QSTRBCRD), a credit (QSTRCHILD) is added for each child in the family. A second credit is added (QSTRFTP3) when no spouse is present and at least one dependent child is present. And finally another credit is added (QSTRFTP4) is for a person living alone or with at least one dependent. The credit is reduced by the income considered at a rate QSTRRR.

Housing of Parent tax credit

The Housing of Parent Tax Credit (imqhptc) calculation is activated by a flag (QHPTCFLG) and the base tax credit is QHPTC. An economic family is eligible to the imqhptc if the parent or grandparent of the head of the economic family, or his/her spouse is in the economic family. A take-up rate QHPTCTC based on age of the potential parent assigns individuals with idefrh=3 as a parent according to SCF data. A take-up rate QHPTCTK based on employment income select the appropriate number of beneficiaries according to Portrait de la fiscalité des particuliers au Québec.

Medical Expenses tax credit

The calculation of the refundable tax credit for medical expenses is activated by the flag QMRTCFLG. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). The tax credit is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. Eligibility is also limited to persons aged 18 and over with employment related earnings greater than QMEDRMIN. The medical expenses tax credit was introduced in 1997.

Dues as non-refundable tax credit

Starting in 1997, dues that where a deduction (iddues) in txqinet are a tax credit activated by the option QDUESOPT = 2. The value of the tax credit is imquetc. When QDUESOPT = 1, the dues are calculated in txqinet.

Tuition as non-refundable tax credit

Starting in 1997, tuition are considered as a deduction (idtuitn) in txqinet are now a tax credit activated by the option QTUIOPT = 2. The value of the tax credit is imquitc.

Family Allowance Tax Credit

The Quebec Family Allowance Tax Credit started in September 1997 but is implemented in the model starting 1998. The Quebec Family Allowance Tax Credit is a credit based on

previous year net family income and is non-taxable. The maximum credits vary with the number of children (QFATCMXK), and a supplement QFATCSUP is allocated to single parent families. For families with 4 kids and more, a supplement, QFATCK6, is added that varies with the number of kids and the number of kids under 6 years of age. The credit is the maximum until it reaches the first turn down income level with a specific reduction rate. The sequence of turn down incomes and reduction rates for single parent families are in QFATCSRR and for married couples in QFATCMRR. The turning point at QFATD4K is increased by QFATD4KI for each child over three. The benefits are reduced up to a minimum based on the number of children in the family (QFATCMNK) until the net family income reaches the last turning point in either QFATCSRR or QFATCMRR. At this last turning point the benefits are starting to reduce until they reach a minimum for payments of QFATCMIN. The program is implemented by copying the reduction rate table (QFATCSRR or QFATCMRR) into a temporary table. Then another temporary table assigns benefits and reduction rates to turning point incomes. Finally, the calculated benefits, imqfatc, are assigned to the women in the married couples or to the head of the single parent family. When activated, the take-up rate, QFATCTK, selects the assigned individual only if a random number is higher than the level specified by its total income. As a standard, QFATCTK is set to zero and all individuals are selected.

Alternative Minimum Tax

The Alternative Minimum Tax in Quebec started in 1986 and is now fully implemented. The calculation is activated by QAMTXFLG. The calculation of the income considered is slightly different than the Federal Alternative Minimum Tax because of difference in the rates considered for:

- . the inclusion of an amount of capital in the income considered (QCAPAMTX),
- . the dividing factor for the dividends (QDIVRAT), and
- . the allowable taxable portion the capital gains (QAMTINCRT - QCAPGIR).

The exemption level is QAMTX and the tax rate is QAMTTX. When the Alternative Minimum Tax is higher than the calculated tax using the standard algorithm, the difference is stored in imqamt. A flag, imqamtfg, identifies the individuals with the modified income tax. In 1995, the definition of income was changed and QAMTXREF indicates new components used in the calculation of taxable income.

When QAMTXSTKFLG is set to 1, the stock option deduction (imqstkdd) can be deducted when calculating the Quebec Alternative Minimum Tax.

Political Contribution

Starting in 1995, the political contribution is subject to two rates (QPCTR) instead of one (QPTC). The calculation procedure for 1995 and after is activated when QPCOPT is set to 2, otherwise it is the single rate that applies.

Labour-sponsored venture capital tax credit

The Quebec labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Quebec provincial credit is modeled as QLVCRT times the gross amount up to QLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Simplified tax program (low income credit)

The simplified tax program, which includes a flat tax credit, started in 1998. People were allowed to decide whether it was in their benefit to fill out the simplified or general tax form. A worksheet was provided in order to facilitate the choice.

The SPSM has implemented this tax system in the following way. When QSFOPT is set to 1, everyone in Quebec fills out the general tax form. This is the system which was in place prior to 1998. If QSFOPT is set to 2, then everyone fills in the simplified tax form. And when QSFOPT is set to 3, then an optimization procedure is run. In this scenario, an approximation of the worksheet which was provided with the 1998 tax form is calculated prior to the computation of taxes. People are assigned to either the general tax form (which includes all deductions) or the simplified tax form (which includes few deduction but an additional credit - QSFTC). The variable imqsfllg notes which form was chosen.

A person can transfer all of their extra credits and deductions to their spouse when both spouses fill out the simplified tax form. When using the general form, only a limited number of deductions can be transferred. Because the worksheet does not take into account all the inter-spouse complexities, the optimization procedure will tend to overstate taxes. While it is very accurate for single persons, it tends to maximize the individual's gain which is not necessarily the couple's gain. The model may therefore slightly overstate Quebec taxes.

At the same time, the number of income tax brackets in QTX is reduced from 5 to 3, the Surtax and the Tax Reduction are eliminated.

This tax change also signified the replacement of the age, living alone, and retirement credits with a combined family-based credit (imqcalr).

Improved Tax System for Self Employed Workers

The improved tax system for self employed workers in Quebec was added. This improved system was announced in the Quebec 2000 Budget to enable the increasing number of self-employed workers to benefit from the simplified tax form. This system will standardize the tax treatment applicable to that part of the contribution paid by a worker in respect of pensionable self-employed earnings that could be equated with an employer's contribution, and refrain from excluding a growing number of self-employed workers from the simplified tax system. When activated (QITSFSEW), it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new

deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine the contribution to the Health Services Fund payable by individuals. The calculated amount of the contributions to be converted is held in imqcpse.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. The value of the tax credit is calculated in txqitax.

Refundable Tax Credit for Medical Expenses

When QMRTCFLG is assigned to 1, the Quebec refundable tax credit for medical expenses (imqmedrc) is calculated for persons aged 18 and over who had employment related earnings greater than QMEDRMIN. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). It is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. When QMRTCFLG is assigned to 0, the calculation of the Quebec refundable tax credit for medical expenses is suppressed.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| PYINC | Deflator to calculate previous year income |
| QAMTCBX | Quebec Alternative Minimum Tax Calculate Basic Exemption |
| QAMTDIV | Quebec Alternative Minimum Tax Taxable Dividend Limit |
| QAMTINCRT | Quebec Alternative Minimum Tax Inclusion Rate |
| QAMTNEGTTI | Quebec Alternative Minimum Tax Allow Negative Taxable Income |
| QAMTRITC | Quebec Alternative Minimum Tax Retirement Income Credit Deduction |
| QAMTRPFLG | RRSP/RPP included in Quebec Alternative Minimum Tax (1=include) |
| QAMTTX | QAMTX tax rate |
| QAMTX | QAMTX exemption level |
| QAMTXFLG | Quebec alternative minimum tax, QAMTX, activation flag |
| QAMTXREF | Quebec alternative minimum tax 1995 reform indicator (flag) |

| | |
|------------------|--|
| QAMTXSTKFLG | QAMTX stock option deduction inclusion (1=stk can be deducted) |
| QAPFFLG | Quebec anti-poverty fund activation flag |
| QAPFRAT | Quebec anti-poverty fund rate |
| QAXM | Quebec age exemption/amount |
| QBXM | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPAMTX | QAMTX taxable capital ratio |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |
| QCCETCR | Refundable CCE credit rate [net income, % cce claimable] |
| QCRDFLG | Quebec income credit flag [1=if social contribution are deducted] |
| QDIVRAT | QAMTX dividends ratio |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEIA1 | Quebec eligible income family type #1 |
| QEIA2 | Quebec eligible income family type #2 |
| QEIA3 | Quebec eligible income family type #3 |
| QEIA4 | Quebec eligible income family type #4 |
| QEIA5 | Quebec eligible income family type #5 |
| QEIAA | Quebec eligible income aged amount |
| QFAMDED | Quebec Family related deduction on income in refundable credits |
| QFAMFLG | Quebec family income deduction activation flag |
| QFAMNETI | Quebec family allowance tax credit net income concept flag |
| QFAMRAT | Quebec family income rate |
| QFATCHIRR | QFATC High income reduction rate |
| QFATCHITD | QFATC High income turndown |
| QFATCK6 | QFATC Supplement for kids under 6 in large families |
| [#kids][#kids<6] | |
| QFATCK6PYR | QFATC supplement for kids under 6 phase out year proportion |
| QFATCK6YR | QFATC Supplement for kids under 6 phase out year |
| QFATCMIN | QFATC minimum benefit paid |
| QFATCMNK | QFATC Minimum benefits by kid rank |
| QFATCMRR | QFATC turn down income levels and reduction rate for married parents |
| QFATCMXK | QFATC Maximum benefits by kid rank |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFATCSRR | QFATC turn down income levels and reduction rate for single parent |
| QFATCSUP | Quebec Family Allowance Tax Credit Supplement for single parent |
| QFATCTK | QFATC Take-up rates by total income |
| QFATD4K | QFATC turn down income for 4 children and more |
| QFATD4KI | QFATC turn down income increase by child for 4 children and more |
| QFTRA1 | Quebec family tax reduction family type #1 |
| QFTRA2 | Quebec family tax reduction family type #2 |
| QFTRA3 | Quebec family tax reduction family type #3 |
| QFTRA4 | Quebec family tax reduction family type #4 |
| QFTRFLAG | Quebec family tax reduction activation flag |
| QFTRRR | Quebec family tax reduction reduction rate |

QGIFTOPT Quebec gifts as tax credit
 QHPTC Quebec Housing Parent Tax Credit
 QHPTCFLG Quebec Housing Parent Tax Credit activation flag
 QHPTCTC QHPTC take-up rate by age of elderly [age,rate]
 QHPTCTK QHPTC take-up rate by income level [employment income,rate]
 QHSCI Quebec surtax first cut-in level
 QHSCI2 Quebec surtax second cut-in level
 QHSF Quebec surtax first level rate
 QHSF2 Quebec surtax second level rate
 QITSFSEW Quebec improved tax system for self-employed worker
 activation flag
 QLAXM Quebec living alone exemption/amount
 QLVCMAX Maximum Quebec labour-sponsored funds tax credit allowed
 QLVCRT Percent of Quebec labour-sponsored funds cost allowed as
 credit
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDRATE Proportion of expenses allowed for refundable tax credit
 for medical expenses
 QMEDRMAX Maximum expenses allowed for Que. refundable tax credit for
 medical expenses
 QMEDRMIN Minimum earnings for Quebec refundable tax credit for
 medical expenses
 QMEDRRR Reduction rate for the Que. refundable tax credit for
 medical expenses
 QMEDRTD Turndown level for Que. refundable tax credit for medical
 expenses
 QMRTCFLG Quebec refundable tax credits for medical expenses
 activation flag
 QNTPCR Quebec nominal tax credit rate
 QPCOPT Quebec political contribution option
 QPCTR Quebec political contribution tax rates
 QPTC Quebec political contribution table [total
 donations,donation allowed]
 QPTCBEN Maximum Quebec political tax credit allowed
 QPTRGISB Quebec property tax rebate GIS bonus
 QPTRMTP Quebec property tax minimum tax per person
 QPTRMTR Quebec property tax maximum tax for reduction
 QPTRRR Quebec property tax rebate reduction rate
 QPTRTF Quebec property tax fraction
 QRTRFLAG Quebec real estate rebate activation flag
 QSFDISFLAG Quebec Simplified Form Disability tax credit inclusion flag
 QSFOPT Quebec Simplified Form Option (1=general 2=simplified
 3=optimized)
 QSFTC Quebec Simplified Form tax credit
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QSTRBCRD Quebec sales tax rebate base credit
 QSTRCHILD Quebec sales tax rebate children dependent credit
 QSTRFLAG Quebec sales tax rebate activation flag
 QSTRFTP3 Quebec sales tax rebate family type 3 credit
 QSTRFTP4 Quebec sales tax rebate family type 4 credit
 QSTROPT Quebec sales tax rebate option=1 based on imigis, =2
 otherwise
 QSTRRR Quebec sales tax rebate reduction rate
 QTRBE Quebec Tax Reduction Breakeven
 QTROPT Quebec Tax Reduction calculation option 1=universal
 2=income tested

| | |
|------------|---|
| QTRP | Quebec tax Reduction proportion |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QYPDL | Quebec deduction limit for pension income |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfindeld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdnadult | Number of adults in household |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idnorth | Northern deductions (255) |
| idpartlo | Limited partnership losses (251) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsex | Sex |
| idspoflg | Person has spouse |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| immtot | Total income |
| improptx | Imputed property tax paid |
| imqalexp | Quebec allowable employment expenses |
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |

| | |
|----------|--|
| imqcchc | Quebec child's non-refundable credit |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdctc | Quebec dependent child tax credits |
| imqdedfn | Quebec all deductions from net income |
| imqdedft | Quebec deductions from total income |
| imqdistc | Quebec disability tax credit |
| imqduetc | Quebec Dues Tax Credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqidivt | Quebec taxable dividends |
| imqinet | Quebec net income |
| imqitax | Quebec taxable income |
| imqitot | Quebec total income |
| imqlatc | Quebec living alone tax credit |
| imqmeda | Quebec medical expenses allowed |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |
| imqritc | Quebec retirement income tax credit |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqstkdd | Quebec modelled Stock option deduction (249) |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| implvctc | Provincial labour-sponsored funds tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impsur | Provincial surtax |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| imqamt | Quebec Minimum Tax Amount |
| imqamtfg | Quebec Minimum Tax flag |
| imqapf | Quebec Anti-Poverty Fund |
| imqcalr | Quebec combined age, living alone, retirement credit |
| imqcceni | Quebec net income for refundable cce credit calculation |
| imqccetc | Quebec refundable child care expenses Tax Credit |
| imqdtxc | Quebec dividend tax credit |
| imqei | Quebec eligible income for tax reduction |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqfs | Quebec family situation (1-5) |
| imqftr | Quebec family tax reduction |
| imqhptc | Quebec Home Parent Tax Credit level |
| imqittr | Quebec income tested tax reduction |
| imqmedrc | Quebec refundable tax credit for medical expenses |
| imqprr | Quebec property tax refund |
| imqstr | Quebec sales tax refund |
| imqtca | Quebec tax credits applied |
| imqtct | Quebec tax credits transferable |
| imqtcts | Quebec tax credits transferred from spouse |
| imqtottc | Quebec total tax credits |

imtxp Provincial income tax payable

txqceea Compute child care expense allowance (Quebec)

SUMMARY

Since the amounts allowable for the Child Credit Expense Deduction differ slightly between the federal and Quebec provincial tax systems, it would be desirable to use the actual amount allowed for Quebec provincial tax purposes in the calculation of this deduction. The rules for eligibility exactly parallel the federal (see txceea). The algorithms are therefore essentially the same as the ones modeling the allocation of the federal Child Care Expense Deduction.

Unlike the federal algorithm, child care expenses are always treated as a deduction from total income. There is no option for treating them as a tax credit.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|----------|---|
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| QCCEAC1 | Quebec CCEA earned income fraction (1 child) |
| QCCEAC2 | Quebec CCEA earned income fraction (2 children) |
| QCCEAC3 | Quebec CCEA earned income fraction (3+ children) |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |

INPUT VARIABLES:

| | |
|----------|---|
| cfinch | First child in census family [pointer] |
| cfined | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |

OUTPUT VARIABLES:

| | |
|----------|---|
| imqccea | Quebec child care expenses allowed (dedn) |
| imqdedft | Quebec deductions from total income |
| imqinet | Quebec net income |

txqhstr Compute family-related deductions or credits (Quebec)

SUMMARY

This function parallels txhstr which performs similar calculations for federal taxes. The major difference is that the model does not incorporate the conversion of deductions into tax credits for the calculation of Quebec taxes. The algorithms include:

- calculate and allocate Personal Exemptions for Wholly Dependent Children
- calculate and allocate Married Exemption
- calculate Family Support Exemption (similar to federal Married Equivalent Exemption)
- calculate and transfer deductions from spouse

Calculate and Allocate Personal Exemptions for Wholly Dependent Children

Quebec filers with dependent children are eligible to claim an exemption based on the age and net income of the child. The exemption is calculated as a fixed amount minus a proportion of the child's net income exceeding the reduction level. The young child exemption is claimable on behalf of children aged 16 or 17. The old child exemption is claimable on behalf of children 18 and over but under 21, or over 20 and attending school full-time.

For taxation year 1986 and later, the definition of dependant's net income for the purpose of calculating the Exemption for Wholly Dependent Children requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The exemptions for all children are accumulated in cdeds which may later be adjusted by the calculation of the Family Support Exemption. If a spouse is present, the one with the higher Net Income (imqinet) receives the full amount of the exemption for all dependent children (imqcdeds) which is used to reduce Taxable Income (imqitax).

The model does not partition the exemptions for dependent children between spouses as is allowed by the tax regulations. This means that the tax burden of spouses with similar net incomes is not minimized.

In calculating the amount of the exemption, the model does not adjust the Net Income of the dependant to include certain non-taxable amounts of the Guaranteed Income Supplement (GIS), Spouse's Allowance (SPA) or Social Assistance as is specified in the Quebec tax regulations.

Calculate and Allocate Married Tax Credit

Persons legally married during the taxation year are eligible to claim a Married Tax Credit amounting to a fixed value reduced by the spouse's net income. The definition of spouse's net income for the purpose of calculating the Married Tax Credit requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The Married Tax Credit (imqmtc) is calculated only for the spouse with the lower Net Income (imqinet). It amounts to a fixed value (QMXM) reduced by the other spouse's Net Income. imqmtc is used to reduce the taxable income (imqitax) of the claiming spouse.

Note that the value of Net Income is not adjusted to include GIS, SPA, Social Aid and non-taxable amounts from international sources. GIS and SPA are calculated later in the model and the amounts are not available when this function is executed. Non-taxable amounts from international sources cannot be separated from other non-taxable income in the database.

Calculate Family Support Exemption

The definition of the Family Support Exemption is similar to the federal Married Equivalent Exemption. Filers who are single, divorced, separated or widowed and who supported a relative related by blood, marriage or adoption are eligible to claim that relative for a Family Support Exemption. This exemption amounts to a fixed value reduced by a proportion of the dependant's net income exceeding a reduction level.

The definition of the dependant's net income for the purpose of calculating the Family Support Exemption requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- Earnings from international sources which are tax exempt in Canada

SPSM Implementation

SPSM calculates the Family Support Exemption on behalf of dependent children and not other relatives who may be eligible.

The model attempts to make the claim on behalf of the dependant for whom a claim will benefit the filer most. The first choice for the exemption is a dependant who is not claimable for the child exemption, i.e., one who is 15 years of age or younger, or one who is over 21 and not attending an educational institution. If more than one dependant is eligible under these conditions, then the one with the lower Net Income (imqinet) is chosen. If there is no such dependant, the dependant claimable for the child exemption with the lowest Net Income is chosen.

If the Family Support Exemption is claimed on behalf of a dependant who is also claimable for the child exemption, the accumulated amount of the child exemption is adjusted by subtracting the amount claimed for that dependant.

The Family Support Exemption (imqmarex) is added to Total Personal Exemptions (imqpex) and subtracted from Taxable Income (imqitax).

Calculate and Transfer Deductions From Spouse

As in the federal case (see the function txhstr) Quebec allows the transfer of certain deductions from the spouse in the calculation of provincial income taxes. Deductions that may be transferred are:

- Age Exemption
- Interest and Dividend Income Deduction
- Deduction for Retirement Income
- Disability Deduction

Only the amount not required to reduce the spouse's taxable income to zero may be transferred. There is a limit to the amount of combined Interest and Dividend Income Deduction and Pension Income Deduction transferable which amounts to the unused proportion of the Married Exemption, i.e., if the full Married Exemption was claimed, no portion of these two deductions may be transferred.

SPSM Implementation

For the spouse with the lower Net Income (imqinet) the model calculates a value for potentially transferable deductions as the sum of:

- Age Exemption (imqaxm)
- Disability Deduction (imqdisex)

the lesser of:

- Total Pension Income Deduction (imqpendn) and Interest Income Deduction (imqintdn),
and
- the unused portion of the Married Exemption (QMXM minus imqmarex).

minus any amount required to reduce the spouse's Taxable Income to zero (imqinet minus QBXM).

The amount transferred from the spouse is subtracted from the filer's Taxable Income (imqitax) and added to Total Deductions from Net Income (imqdedfn). The spouse's Taxable Income and deductions are not adjusted because, if a transfer occurs, taxable income is zero by definition. The amounts recorded for the individual deductions (e.g., imqaxm, imqpendn) are not adjusted to reflect the transfer.

The value of Net Income used in the calculation of the transfer is not adjusted to include GIS, SPA and Social Aid income.

Calculate Living alone tax credit

The calculation of the living alone tax credit imqlatc is based on the value of the tax credit QLAXM adjusted by the nominal tax credit rate (QNTCR).

Starting in 1996, the calculation of the living alone tax credit is subject to turndown income (QLAXTD) and a reduction rate (QLAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QLAXPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqlatc is set to zero.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QLAXM | Quebec living alone exemption/amount |
| QLAXPI | Quebec living alone phase-in |
| QLAXRR | Quebec living alone reduction rate |
| QLAXTD | Quebec living alone turn down |
| QLPXM | Quebec lone parent exemption/amount |
| QMEDINC | Income definition for Que. refundable tax credit for medical expenses |
| QMXM | Quebec married exemption/amount |
| QNTCR | Quebec nominal tax credit rate |
| QPSXM | Quebec post-secondary exemption/amount |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QYCXM1 | Quebec dependent child #1 amount |
| QYCXM2 | Quebec dependent child #2 amount |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |

| | |
|----------|--|
| cfspoflg | Census family contains married couple |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idestat | Educational status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqinet | Quebec net income |
| imqitot | Quebec total income |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imqcchc | Quebec child's non-refundable credit |
| imqdctc | Quebec dependent child tax credits |
| imqdepni | Quebec dependant's net income |
| imqlatc | Quebec living alone tax credit |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |

txqinet Compute net income (Quebec)

SUMMARY

The Quebec provincial personal income tax system largely parallels the federal system: deductions and exemptions reduce total income to a taxable amount for which the basic provincial tax is calculated, then tax credits are applied to derive the amount of provincial tax payable. The function calculates net income for Quebec taxpayers and is similar to the process for calculating net income for federal income tax purposes.

SPSM Implementation

The algorithms for calculating Net Income for Quebec Provincial Income Tax Purposes are similar to the algorithms for calculating federal Net Income described under the function txinet. The major difference is that there are no options to treat deductions and personal exemptions as tax credits.

Whenever possible values already calculated in the computation of federal Net Income are applied here. The implementation of specific measures are described below.

Employment Expense Deduction

The calculation of the Quebec Employment Expense Deduction (imqdedia) is the same as the federal case. imqdedia is a proportion (QEAP) of Earnings from Employment (idiemp) up to a maximum deduction of QEAMAX. There is no flag controlling the calculation of

this value. If this deduction is to be eliminated, the values of QEAP and QEAMAX may be set to zero.

This value is added into Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Other Allowable Employment Expenses

The model assumes that the definition for Other Allowable Employment Expenses as applied to Quebec Provincial Taxes is the same as the federal definition (see txinet). The same value as used in the federal algorithm (idalexp) is used here. The value of idalexp may be scaled up or down by supplying an appropriate value for the parameter QALEXP (Proportion of Other Allowable Employment Expenses to Use as a Deduction).

The amount idalexp is added to Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Calculate Taxable Capital Gains

Capital Gains are treated as they are for federal taxes (see function txinet). Taxable Capital Gains for Quebec Provincial Tax Purposes (imqcapgt) is calculated as Total Capital Gains Received (idicapg) multiplied by the Capital Gains Inclusion Rate for Quebec Provincial Taxes (QDGUR).

Taxable Dividends

The treatment of dividends is similar to the federal algorithms described under the function txinet. Taxable Dividends for Quebec Provincial Taxes (imqdivt) are calculated as Total Dividends Received (idivid) multiplied by the Quebec Dividend Gross-up Rate (QDGUR).

Calculation of Total Income

As in the federal case (see function txinet), Total Income at this stage does not include Family Allowances which cannot be allocated until it is known whether the mother or the father have the higher net income. Total Income (imqitot) is calculated as the sum of:

| | |
|----------|---|
| idiemp: | Earnings From Employment |
| idisenf: | Self-employment Earnings (Non-farm), optionally scaled by the parameter FACTISENF |
| idisefm: | Self-employment Earnings (farm) |
| idiint: | Interest Income |
| idioinv: | Other Investment Income |
| idicqp: | CPP/QPP Benefits Received |
| iditogv: | Other Taxable Government Income |
| idipens: | Pension Income |
| iditoth: | Other Taxable Income |
| imiuib: | Modeled Unemployment Insurance Benefits Received |
| imiotg: | Modeled New Taxable Demogrants |
| imffa: | Modeled Family Allowance Benefits (optional) |

imioas: Modeled OAS Benefits
imqidivt: Modeled Taxable Amount of Dividends for Quebec
imqcapgt: Modeled Taxable Capital Gains and Losses for Quebec

The parameter QFAIFLAG controls whether federal Family Allowances are included in total income. If QFAIFLAG is set to one then imffa is added to imqitot. Also, Employment Expenses (imqdedia) and Other Allowable Employment Expenses (imqalexp) are added into All Deductions from Total Income (imqdedft) and not subtracted from Total Income as in the federal algorithms.

Calculation of Net Income

All Deductions from Total Income (imdedft) is calculated as the sum of:

idrpp: Registered Pension Plan Contributions
idrrsp: Registered Retirement Savings Plan Contributions
iddues: Union and Professional Dues
idtuitn: optionally, Tuition Fees
imqiloss: Allowable Business Investment Loss
idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions (calculated in txinet)
imuic: optionally, UI Contributions (calculated in txinet)
imqceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txqceca)
imqdedia: Employment Expenses
imqalexp: Other Allowable Employment Expenses

Dues as a tax credit

The dues as a deduction is activated by the option QDUESOPT = 1. Starting in 1997, dues are used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Tuition as a tax credit

The tuition as a deduction is activated by the option QTUIOPT = 1. Starting in 1997, tuition is used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Improved Tax System for Self-Employed Workers

The improved tax system for self employed workers in Quebec was added. When activated by QITSFSEW, it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine

the contribution to the Health Services Fund payable by individuals.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CPPXM | CPP/QPP exemptible earnings |
| QALEXP | Quebec proportion of other allowable employment expenses to use |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCPPOPT | Quebec CPP/QPP contribution deduction/credit option [1=deduction,2=credit] |
| QDGUR | Quebec dividend gross-up rate |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEAMAX | Quebec maximum employment allowance deduction |
| QEAP | Proportion of earnings for Quebec employment allowance deduction |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QITSSEF | Quebec percentage of self-employ CPP/QPP contributions to convert to deduction |
| QMAXDX | Quebec maximum disability deduction/amount |
| QMEDANF | Quebec medical allowance lower limit net income fraction |
| QNTCR | Quebec nominal tax credit rate |
| QREPNETFG | Social program repayments reduce Quebec net income flag |
| QSFDISFLAG | Quebec Simplified Form Disability tax credit inclusion flag |
| QSFOPT | Quebec Simplified Form Option (1=general 2=simplified 3=optimized) |
| QSFSMXI | Quebec simplified form spouse maximum income for work sheet |
| QSFTC | Quebec Simplified Form tax credit |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QUICOPT | Quebec UI contributions deduction/credit option [1=deduction,2=credit] |
| WSCF | CPP/QPP contribution rate on employment earnings |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|---------|---|
| hhnin | Number of individuals in household |
| idalexp | Other allowable employment expenses (229) |

| | |
|----------|--|
| idcarry | Carrying charges (221) |
| idcclos | Allowable other years capital loss (253) |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqpp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idmedgro | Medical expenses, gross (330) |
| idmovexp | Imputed moving expenses (219) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imcqqpc | CPP/QPP contributions |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imiotg | Other taxable demogrants |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|--|
| imqalexp | Quebec allowable employment expenses |
| imqcapgt | Quebec taxable capital gains |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdedia | Quebec employment allowance |
| imqdedft | Quebec deductions from total income |
| imqduetc | Quebec Dues Tax Credit |

| | |
|----------|--|
| imqidivt | Quebec taxable dividends |
| imqiloss | Quebec Modelled Business investment losses (243) |
| imqinet | Quebec net income |
| imqitot | Quebec total income |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |

txqitax Compute taxable income and individual credits (Quebec)

SUMMARY

The process of computing taxable income for Quebec provincial taxes parallels that of the federal method. The following deductions are calculated and subtracted from Net Income (imqinet) to derive a tentative value for Taxable Income (imqitax):

| | |
|-----------|---|
| imqpendn: | Pension Income Deduction |
| imqintdn: | Interest Income Deduction |
| imqstddn: | Combined Medical Expense Deduction, Charitable Donations and Gifts to Canada or a Province |
| imqdisex: | Disability Deduction |
| imqdedfn: | Calculate Deductions from Net Income |
| imqaxm: | Age Exemption |
| imqexm: | Basic Exemption |

The computation of Taxable Income is completed by the function txqhstr which calculates exemptions for dependents and performs the transfer of deductions between members of the family.

Unlike the algorithms for the calculation of Federal Taxable Income, this function contains no options for converting these deductions into tax credits.

Pension Income Deduction

Depending upon the filer's age and the type of income, pension and retirement income may be eligible for the Pension Income Deduction. Any portion of this deduction not required to reduce a filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Modeled Pension Income Deduction (imqpendn) is calculated as the lesser of:

- a) Eligible Pension Income (idipens), and
- b) the Maximum Pension Income Deduction (QYPDL)

The Modeled Pension Income Deduction (imqpendn) is added to Total Deductions from Net

Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet).

The function txqhstr may transfer some amount of the Pension Income Deduction to the spouse. In this event, adjustments are made to imqdedfn and imqinet but not to imqpendn.

The model assumes that the value of idipens represents pension income eligible for this deduction. No further checks are made to ensure that the pension is of the appropriate type for the age of the filer.

After the reform in 1988, the non-refundable tax credit for pension income (imqritc) was the minimum of the base credit (QYPDL) and the eligible pension income (idipens). Starting in 1996, the calculated deduction for pension income (imqritc) based on the credit (QYPDL) is now subject to turn-down income (QYPTD) and a reduction rate (QYPRR) for pension income (idipens) in excess. In 1996 the reduction is only 50% and 100% after and it is controlled by the phase in variable QYPPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqritc is set to zero.

Interest Income Deduction

Interest income and dividends from Canadian sources are eligible for the Interest Income Deduction. This deduction amounts to the lesser of a fixed amount and the eligible income. Any portion of the deduction not required to reduce the filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Interest and Dividend Income Deduction (imqintdn) is calculated as the lesser of:

- a) the Maximum Interest and Dividend Income Deduction (QYIDL), and
- b) the sum of Interest Income (idiint) and Dividends (imqidivt) minus Carrying Charges (idcarry).

The deduction is added to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet) to derive Taxable Income (imqitax).

Since the Interest and Dividend Income Deduction is transferable between spouses, the function txqhstr may adjust the values of imqdedfn and imqitax. The value of imqintdn is not adjusted to reflect a transfer to the spouse.

Medical Expense and Charitable Donations Deduction

The filer is allowed a deduction for certain medical expenses, charitable donations and gifts to Canada or a province. In 1984, eligible medical expenses were deductible if they exceeded 3% of Net Income. Deductible charitable donations were limited to 20% of Net Income.

Before 1997, the calculation of the medical exemption in txqitax was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997,

(with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

SPSM Implementation

The database contains variables representing the federal Medical Expense Deduction Allowed (immeda) and combined Eligible Charitable Donations and Gifts to Canada or a Province (imchara). Net Medical Expenses represent medical expenses in excess of 3% of Net Income. Eligible Charitable Donations represent charitable donations not exceeding QCHATNF percent of Net Income.

The Combined Medical Expense and Charitable Donations Deduction (imqstddn) is calculated by taking the higher of:

- a) the Standard Deduction (QSTD), which may be zero, and
- b) the sum of Net Medical Expenses Allowed (imqmeda), Eligible Charitable Donations and Gifts to Canada or a Province (imqchara).

The variable imqstddn is added to Total Deductions from Net Income (imqdedfn) which is subsequently used to reduce Taxable Income.

Disability Deduction

As in the case of the federal income tax system, Quebec allows a special deduction for blind persons or persons confined to a bed or a chair. Any unused portion of the Disability Deduction may be transferred to a spouse or supporting parent.

SPSM Implementation

The database contains a value of the Disability Deduction Allowed on behalf of the filer (iddisslf), spouse or dependents (iddisoth). If either of these values are non-zero, the Quebec Disability Deduction (imqdisex) takes on the value assigned to the parameter QMAXDX. imqdisex is added in to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income.

Since this deduction is potentially transferable, the function txqhstr checks the relative net incomes of the head and spouse and performs any necessary transfers. The values of imqdedfn and imqitax are adjusted to reflect these changes. The value of imqdisex is not updated if the Disability Deduction is transferred to a spouse.

The model does not transfer unused portions of the Disability Deduction from dependant to parent. This probably does not cause a large error since the value on the database already takes into account amounts transferred from the spouse or dependents. The transfer between head and spouse is repeated in txqhstr because the estimate of Net Income is more accurate at this stage than during the database creation process.

Calculate Deductions from Net Income

The variable imqdedfn stores the value of All Deductions from Net Income. It is calculated

as the sum of:

| | |
|-----------|---|
| imqstdn: | Combined Medical Expense and Charitable Donations Deduction |
| imqintdn: | Interest and Dividend Income Deduction |
| imqpendn: | Pension Income Deduction |
| imqdisex: | Disability Deduction |
| imuibr: | Unemployment Insurance Benefits Reimbursed |
| idclos: | Capital Losses from Other Years |
| idnclos: | Non-capital Losses from Other Years |

The variable imqdedfn is subtracted from Net Income (imqinet) and may be adjusted in the function txqhstr if deductions are transferred between spouses.

The model does not include the Exemption for Members of a Religious Order, the Exemption for Dependents Aged 21 and Over Suffering from a Physical or Mental Infirmity, Deduction for a Home Relocation Loan, the Sociétés de placements dans l'entreprise québécois Deduction, or the Capital Gains Deduction.

Basic Exemption

Each filer claims a Basic Exemption which is subtracted from Net Income. The Amount of the Basic Exemption for Quebec Provincial Income Taxes is increased occasionally.

SPSM Implementation

For all filers with income, the Quebec Basic Exemption (QBXM) is added to the variable imqexm which accumulates personal exemptions. imqexm is subsequently added to imqpex which accumulates all exemptions and is later subtracted from Net Income imqinet.

Age Exemption

All filers who were 65 years of age or older during the taxation year claim the Age Exemption. The value of the Age Exemption is increased occasionally. Any unused portion of the Age Exemption may be transferred to the spouse.

SPSM Implementation

The Modeled Quebec Age Exemption (imqaxm) is assigned the value of the parameter QAXM for all filers 65 or over (idage \geq 65) if they have income (imninc $>$ 0). This value is added to imqexm (All Personal Exemptions on behalf of filer) which is subsequently added to imqpex (All Personal Exemptions) and subtracted from Net Income imqinet. The function txqhstr may transfer the unused portion of the Age Exemption to the spouse and make corresponding adjustments to the value of imqinet but not to imqaxm.

Starting in 1996, the calculation of the age exemption tax credit is subject to turndown income (QAXTD) and a reduction rate (QAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QAXPI.

Medical exemption calculation

Before 1997, the calculation of the medical exemption was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997, the calculation of the medical exemption is transferred to txqhstr (with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. Beginning in 2000, there are two tax credit rates applied to gifts in Quebec. The activation flag, QGIFTHCR, is used to implement the calculation. Allowable gifts up to QGIFTL1 use the QNTCR. The higher credit rate QGFTCR is applied to allowable gifts over QGIFTL1. The total value of the tax credit is imqchatc.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| QAXM | Quebec age exemption/amount |
| QAXPI | Quebec age exemption reduction phase in |
| QAXRR | Quebec age exemption reduction rate |
| QAXTD | Quebec age exemption income turn down |
| QBXN | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCHATNF | Quebec charitable donations maximum % net income |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QGFTCR | Quebec credit rate for gifts over upper limit |
| QGIFTFLG | Quebec max to gifts to Federal/Province/Crown activation flag |
| QGIFTHCR | Quebec higher tax credit on large gifts activation flag |
| QGIFTL1 | Quebec minimum gift limit subject to higher credit rate |
| QGIFTOPT | Quebec gifts as tax credit |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSCFLAG | Quebec Health Services Fund Contribution calculation flag |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QMAXDX | Quebec maximum disability deduction/amount |

QMEDALL Quebec medical allowance maximum lower limit
 QMEDANF Quebec medical allowance lower limit net income fraction
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDOPT Quebec Medical Tax Credit option
 QNFSDED Quebec deduction of net federal supplements (SPA and GIS)
 from net income flag
 QNTPCR Quebec nominal tax credit rate
 QREPNETFG Social program repayments reduce Quebec net income flag
 QSADED Quebec deduction of social assistance benefits from net
 income flag
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QYPDL Quebec deduction limit for pension income
 QYPPI Quebec deduction phase-in for pension income
 QYPRR Quebec deduction reduction rate for pension income
 QYPTD Quebec deduction turn down for pension income

INPUT VARIABLES:

hhnin Number of individuals in household
 idage Age
 idcagpex Capital gains exemptions (254)
 idcarry Carrying charges (221)
 idcfrh Relationship to census family head
 idcharit Charitable donations (340)
 idclos Allowable other years capital loss (253)
 iddalimo Alimony paid (220)
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 idemplo Employee home relocation loan dedn (248)
 idgifts Gifts to Canada/provinces/culture (342)
 ididiv Dividend income (actual)
 idiemp Wages & salaries
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idmedgro Medical expenses, gross (330)
 idnclos Allowable other years non-capital loss (252)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idspoflg Person has spouse
 idstkded Stock option deduction (249)
 imigis GIS benefits
 imioas OAS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 imninc No income flag
 imoasr OAS recovery
 imqalexp Quebec allowable employment expenses
 imqcapgt Quebec taxable capital gains
 imqcppse Quebec self-employ. QPP/PPP Cont. deduction
 imqiloss Quebec Modelled Business investment losses (243)
 imqinet Quebec net income
 imqitot Quebec total income
 imqsfflg Quebec simplified tax form flag 0=general 1=simplified
 imrepay Social Benefits Repayments
 imuibr UI benefit recovery

OUTPUT VARIABLES:

| | |
|----------|--|
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |
| imqchara | Quebec allowable charitable donations(calc) |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqdedfn | Quebec all deductions from net income |
| imqdistc | Quebec disability tax credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqitax | Quebec taxable income |
| imqmeda | Quebec medical expenses allowed |
| imqritc | Quebec retirement income tax credit |
| imqstkdd | Quebec modelled Stock option deduction (249) |

txque Compute provincial taxes for Quebec

SUMMARY

For residents of Quebec, the calculation of provincial taxes roughly approximates the process of calculating federal taxes. The SPSM divides this task among three functions which are described in another section of this document:

1. txqinet calculates total and net income tax
2. txqitax calculates a provisional value for taxable income subject to updating by txqhstr
3. txqhstr performs the calculation of personal exemptions for dependents and the allocation of deductions between head and spouse

The value of Taxable Income (imqitax) calculated by txqhstr is used to look up a value for Basic Provincial Tax (imbpt) in the tax table (QTX).

The Quebec Dividend Tax Credit (imqdtxc) is calculated as a proportion (QDTCR) of Taxable Dividends (imqidivt) and is subtracted from Basic Provincial Tax to derive Provincial Tax Payable (imtxp). Also subtracted is the Quebec Tax Reduction which is a proportion (QTRP) of Provincial Tax Payable (imtxp).

txsask Compute provincial taxes for Saskatchewan

SUMMARY

When STXFLG is off, Saskatchewan Basic Provincial Tax is a proportion (SPTF) of Basic Federal Tax (imbft). A flat surtax, calculated as a proportion (SFTAX) on Net Income (iminet) is added to Basic Tax.

The 2000 budget announced that Saskatchewan would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (STXFLG), a provincial tax table (SPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (SPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (SBXM) |
| impatxc | Age amount tax credit | (SAXM, SAXRR, SAXTD, SAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (SMXM, SMXMT, SEMXM, SEMXMT) |
| impcgtc | Caregiver tax credit | (SCGTC, SCGTCFLG, SCGTCTC, SCGTCTD, SCGTCTK) |
| impchrctc | Charitable donations | (SCHATL1, SCHATR1, SCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (SMAXDX) |
| impdtxc | Dividend tax credit | (SDTCR) |
| impedtxc | Education tax credit | (SEDXPM, SMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (SYPNDL) |
| imptutxc | Tuition Tax credit | (SMAXET) |
| impuictc | EI contributions tax credit | |
| imsctxc | Saskatchewan Non-refundable child tax credit | (SCNTC) |
| imssstxc | Saskatchewan senior supplement tax credit | (SSSTC) |

The option to apply a minimum tax is controlled using SAMTOPT.

Adjusted Saskatchewan Tax Payable (before a tax reduction is applied, is stored in the temporary variable a) is calculated as Basic Saskatchewan Tax (imbpt) plus a proportion (SSF) of Basic Saskatchewan Tax exceeding the Saskatchewan Surtax Level (SSCI).

Saskatchewan also implements a system of tax reductions for senior citizens and persons with dependent children. The Basic Tax Reduction (STRBR) is augmented by the Senior Citizen's Tax Reduction (STRSC) if the filer is age 65 or older. A tax reduction per child under 18 (STRPC) up to a maximum total for all children (STRCL) is also added. The number of children claimable for this tax reduction is taken from imnfach, the number of children eligible for Family Allowances.

The total potential tax credit is reduced by a proportion (STRRR) of the tax credit exceeding Adjusted Saskatchewan Tax Payable a to derive Reduced Saskatchewan Tax Payable imtxp.

Starting in 1992, a surtax (SDSF) for the reduction of the deficit is applied to the tax (imtxp). In 1995, an amount (SDSRA) was deducted from the surtax.

The Saskatchewan labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Saskatchewan provincial credit is modeled as SLVCRT times the gross amount up to SLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Saskatchewan Child Benefit and Saskatchewan Employment Supplement announced in the 1998 budget are modeled. When the SCBFLG is activated, families receive a benefit which depends on the number of children in the family (SCB1, SCB2, and SCB3). The benefit is reduced in two stages. Net family income greater than SCBTD1 and less than SCBTD2 is reduced at a rate SCBRR1 which depends on the number of children in the family. The benefit is further reduced at a rate of SCBRR2 for income over SCBTD2.

The Saskatchewan Employment Supplement is a monthly program. In the SPSD/M, the program is modeled in a yearly fashion. The maximum benefit is derived by multiplying a family's employment income in excess of SESCO (up to a maximum of SESMXIP) by a rate (SESR) which depends on the number of children in the family. The benefit is reduced for any family net income in excess of SESTD by a SESRR rate. The supplement started in mid-1998 and hence a phase-in rate SESPI was applied.

The estimate resulting from the SPSD/M may differ from the administrative totals. In modeling the program, employment income is assumed to be evenly distributed during the year. No maintenance income (e.g. child or spousal support) is added to employment income. The program is administered monthly with eligibility being determined depending on each month's income.

The Saskatchewan Sales Tax Credit announced in their 2000 Budget is now modelled. The Saskatchewan Sales Tax Credit is activated when SSTCFLAG is set to 1.

The Saskatchewan Sales Tax Credit was introduced in 2000 and became effective April 1, 2000 to offset the effect of sales taxes on lower income earners. SSTCPI represents the phase in rate for the program. The Saskatchewan Sales Tax Credit (imsstc) will consist of an adult component and a child component. This credit will be fully refundable and will be assigned to the spouse with the highest income.

The adult component of the Saskatchewan Sales Tax Credit will rise at a rate of SSTCBASPIR of individual net income up to a maximum (SSTCBAS). It will be reduced at a rate of SSTCRR as family net income increases above SSTCBASTD. An individual will also be eligible for SSTCSP in additional benefits for a dependent spouse or equivalent. This amount will be reduced at a rate of SSTCRR as family net income rises over SSTCSPTD.

The child component of the Saskatchewan Sales Tax Credit will provide an additional

SSTCKID per child. For two-parent families, the maximum child component will be SSTCKID + SSTCKID. For single parent families, the first child will be eligible for the adult benefit of SSTCSP and the maximum child component will be SSTCKID. The child component of the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC1KIDTD for families with one qualifying child. For families with more than one qualifying child, the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC2KIDTD.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| SAMTOPT | Sask. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| SAMTPCTF | Sask. amt rate as pct of additional fed tax due to minimum tax |
| SAMTPCTM | Sask. amt rate as pct of federal minimum tax amount |
| SAMTTX | Sask. amt rate as tax on adjusted income |
| SAXM | Sask. Age Amount |
| SAXPI | Sask. Age Amount phase in rate for 1994 and beyond |
| SAXRR | Sask. Age Amount credit reduction rate |
| SAXTD | Sask. Age Amount net income turndown |
| SBXM | Sask. Basic Personal Exemption/amount |
| SCB1 | Sask Child Benefit max for 1st child |
| SCB2 | Sask Child Benefit max for 2nd child |
| SCB3 | Sask Child Benefit max for 3rd and additional child |
| SCBFLG | Sask Child Benefit activation flag |
| SCBRR1 | Sask Child Benefit 1st reduction rate [number of kids] |
| SCBRR2 | Sask Child Benefit 2nd reduction rate [number of kids] |
| SCBTD1 | Sask Child Benefit 1st turndown |
| SCBTD2 | Sask Child Benefit 2nd turndown |
| SCGTC | Sask. Caregiver Tax Credit |
| SCGTCFLG | Sask. Caregiver Tax Credit activation flag |
| SCGTCTC | Sask. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| SCGTCTD | Sask. Caregiver Tax Credit Turn Down Income |
| SCGTCTK | Sask. Caregiver tax credit take-up rate by income level [employment income,rate] |
| SCHATL1 | Sask. Charitable Donations amount level 1 |
| SCHATR1 | Sask. Charitable Donations tax credit rate 1 |
| SCHATR2 | Sask. Charitable Donations tax credit rate 2 |
| SCNTC | Sask. non-refundable child tax credit amt per child |
| SDSF | Saskatchewan provincial deficit surtax fraction |
| SDSRA | Saskatchewan deficit surtax reduction rate |
| SDTCR | Sask. dividend tax credit rate |

| | |
|-----------------------------|---|
| SEDXPM | Sask. Education Amount per month |
| SEMXM | Sask. equivalent to married amount |
| SEMXT | Sask. equivalent to married turndown level |
| SESCI | Sask Employment Supplement cut in level |
| SESMIN | Sask Employment Supplement minimum benefit |
| SESMXIP | Sask Employment Supplement maximum benefit income point |
| SESPI | Sask Employment Supplement phase-in |
| SESR | Sask Employment Supplement benefit rate [number of kids] |
| SESRR | Sask Employment Supplement reduction rate |
| SESTD | Sask Employment Supplement turndown level |
| SESTK | Sask. Employment Supplement take up by number of kids |
| SESYPI | Sask Employment Supplementary benefit for under 13 phase-in |
| SESYR | Sask Employment Supplementary benefit for under 13 rate |
| [number of kids] | |
| SESYRR | Sask Employment Supplementary benefit for under 13 |
| reduction rate | |
| SFTAX | Saskatchewan provincial flat surtax rate on net income |
| SHEATFAM | Saskatchewan Home Heating Assistance Rebate for families |
| SHEATFLG | Saskatchewan Home Heating Assistance Rebate activation flag |
| SHEATSNG | Saskatchewan Home Heating Assistance Rebate for singles |
| SLVCMAX | Maximum Sask. labour-sponsored funds tax credit allowed |
| SLVCRT | Percent of Sask. labour-sponsored funds cost allowed as |
| credit | |
| SMAXDX | Sask. Maximum Disability deduction/amount |
| SMAXET | Sask. maximum on transfer of education and tuition amount |
| SMXM | Sask. married amount |
| SMXMT | Sask. married amount turndown level |
| SPNTCR | Sask. provincial non-refundable tax credit rate |
| SPTC | Saskatchewan political contribution table [total |
| donations,donation allowed] | |
| SPTCBEN | Maximum Saskatchewan political tax credit allowed |
| SPTF | Saskatchewan provincial tax fraction |
| SPTX | Sask. tax table [taxable income,basic provincial tax] |
| SSCI | Saskatchewan surtax cut-in |
| SSF | Saskatchewan provincial high income surtax fraction |
| SSSTC | Sask. senior supplement tax credit |
| SSTC1KIDTD | Sask. sales tax credit child amount turndown if only 1 |
| child | |
| SSTC2KIDTD | Sask. sales tax credit child amount turndown if more than 1 |
| child | |
| SSTCBAS | Sask. sales tax credit base amount |
| SSTCBASPIR | Sask. sales tax credit base amount phase in rate |
| SSTCBASTD | Sask. sales tax credit base amount turndown |
| SSTCFLAG | Sask. sales tax credit activation flag |
| SSTCKID | Sask. sales tax credit child amount |
| SSTCPI | Sask. sales tax credit phase in |
| SSTCRR | Sask. sales tax credit reduction rate |
| SSTCSP | Sask. sales tax credit spousal amount |
| SSTCSPTD | Sask. sales tax credit spousal amount turndown |
| SSTR | Saskatchewan spousal & married equivalent tax reduction |
| STRBA | Saskatchewan tax reduction base amount |
| STRBR | Saskatchewan basic provincial tax reduction |
| STRCL | Saskatchewan child tax reduction limit |
| STRPC | Saskatchewan tax reduction per child |
| STRRR | Saskatchewan tax reduction reduction rate |
| STRSC | Saskatchewan tax reduction for senior citizens |
| STXFLG | Sask. tax on taxable income activation flag |

SYPNDL Sask. Pension Income Deduction Amount

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| imuic | UIC contributions |

| | |
|----------|---|
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| impptc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imscb | Saskatchewan Child Benefit |
| imsctxc | Saskatchewan Non-refundable child tax credit |
| imses | Saskatchewan Employment Supplement |
| imssstxc | Saskatchewan senior supplement tax credit |
| imsstc | Saskatchewan refundable sales tax credit |
| imtxp | Provincial income tax payable |

ui Compute UI benefits

SUMMARY

Unemployment Insurance (UI) and Employment Insurance (EI) benefits are calculated by a set of functions which mimic application of UI/EI regulations to individual employment and

claim histories. These histories are summaries of administrative data from a 1% sample of persons with some UI/EI claim activity . Benefits are first calculated on a claim basis. Adjustments are then made to allow for claims overlapping more than one calendar year. Finally, taxable benefits received by individuals within a calendar year are determined.

Program Description

Unemployment/Employment insurance is an income support program financed jointly by employees, employers and the federal government. It is intended to provide income maintenance during temporary interruptions in employment. As such, it is not a universal program. Among those excluded from coverage are persons who do not participate in the labour force, the self-employed (other than fishermen) and persons who have exhausted benefit entitlements.

SPSM Implementation

The SPSM implementation of the UI/EI program has distinct steps representing application of program regulations to a given claim. The function `ui` operates as a controller which calls the sub-functions which apply UI/EI regulations to each claim and each UI/EI claimant within a household and returns the benefits received by individuals for the calendar year. Claimants may have one or two claims overlapping the survey calendar year. Payments within the calendar year are determined assuming benefits are paid on consecutive weeks.

For SPSM purposes, the unemployment regions are urban size classes within each province. These are not the regions defined for administration of the UI/EI program. The use of proxy unemployment regions is required to ensure data confidentiality.

For purposes of determining entitlements, the claim histories include the initial claim type `ucbtyp` (i.e., Maternity, Sickness, Retirement, Fishing or Regular) and a type change flag (i.e., indicating that a Sickness claim, for example, was changed to a Regular claim within the Initial Phase). SPSM deems the type change to have taken place immediately after the claim is established and does not attempt to subdivide the Initial Phase into Special and Regular periods. Since type change takes place, the special benefits totals (e.g., Sickness benefits) can not be determined by eliminating the type (e.g., by setting eligibility requirements high) and calculating the reduction in benefits. A second claim type (`ucmtyp`) is also imputed. If there was more than one type of benefit received within a claim, `ucmtyp` represents the claim type which had the majority of weeks. By turning on `UIEIMTYPFLG`, `ucmtyp` is modelled instead of `ucbtyp`.

The UI/EI algorithm has no behavioral response capacity, so that, for example, no new claims can be created. However, there have been more people with claims imputed in the base year than was necessary. The means that the number of persons with claims can be modified using the `UITARGET` and `UIEITKP` parameters. Similarly, the duration of modeled claims does not exceed observed durations, except when the following parameters are used: `UIREGWKFCT`, `UITRNWKFCT`, `UIOTHWKFCT`, `UIEXTMATWKS`. Unless these parameters are modified, the assumption is that individuals would not increase their duration on claim, if their entitlements were increased. However, no restriction is placed on

durations within each phase. Consequently, the elimination of a phase need not reduce the overall duration of a claim.

There are several sub-functions contained in the *ui* function. The first called is *uicl*m which calculates benefits for a single claim. *uicl*m does this by first calling three sub-functions which test for eligibility requirements based on claim type, repeat claim status, and regional unemployment rates (*uielent*, *uielrep*, *uielrge*). *uicl*m next calls three sub-functions which determine the weeks of entitlement in the Initial, Labour Force Extended and Regional Extended Phases (*uiwkbas*, *uiwklfe* and *uiwkrge*). The *ui* function then calls *uitrnc*l*m* which calculates training and other benefits (excluding regular, fishing, sickness, maternity, and parental which are calculated in *uicl*m). If a second claim is required *uicl*m and *uitrnc*l*m* are called again. Each function and sub-function are briefly described below.

ui

The *ui* function serves to pass information about each individual with a UI/EI claim in a household to *uicl*m. If an individual has more than one claim, modeled weeks of benefits in the qualifying period are computed for the first claim and passed to *uicl*m when the second claim is processed. UI/EI benefits for a calendar year are returned.

***uicl*m**

The sub-function *uicl*m processes distinct claims from the information passed to it by *ui*. In the event of a repeat claim, *ui* passes information about modeled claim activity in the qualifying period. Modeled changes to UI/EI regulations may produce important differences in first claim activity, thereby effectively changing the status of the second claim.

The *uicl*m function operates at a claim rather than an individual level. It calls *uielent*, *uielrep* and *uielrge* to establish eligibility. It then changes the type of eligible claims, where appropriate.

Once a claim is established, *uicl*m calls *uiwkbas*, *uiwklfe* and *uiwkrge* to determine the weeks of entitlement in each of the Initial, Labour Force Extended and Regional Extended Phases, respectively. The claim is represented by four pointers which identify:

Pointer #1 - 1st week of benefits (following waiting period)

Pointer #2 - 1st week of Labour Force Extended benefits

Pointer #3 - 1st week of Regional Extended benefits

Pointer #4 - week after end of Regional Extended Benefits.

Weeks are identified by integers with the week of January 1 being zero. The differences between succeeding pointers will initially equal the entitlement on the appropriate phase. *uicl*m then calls a utility function *uisqz* which ensures that interval between #1 and #4 does not exceed the original claim (minus any training or other weeks) or the maximum allowable duration of a claim. A subsequent call to *uisqz* produces a second set of (windowed) pointers that do not include any weeks outside the calendar year.

The *uicl*m function then calculates the weekly benefits. Benefits are the product of phase weeks times the weekly benefit rate for each phase summed over phases. However, benefit

rates may be increased or decreased by the following modelled programs: minimum divisor rule (see UIEIDIVFLG), the intensity rule (see UIEIFIFLG), an enhanced rate should there be dependents (see UIENSTRO), and the family supplement (see UIEIFSFLG).

uielent

The uielent sub-function applies eligibility tests based on the minimum weeks or hours of insurable employment in the qualifying period required for each initial claim type. These are basic tests which may be superseded by special tests applied to repeaters, new entrants/re-entrants, and other regular claimants. The function sets a flag indicating eligibility status.

uielrep

The uielrep function performs special eligibility tests that apply to repeaters only. The required weeks of insurable employment depend on the regional unemployment rate and on weeks of benefits in the qualifying period. The function performs a two dimensional table lookup to determine whether eligibility is established. The function sets a flag indicating eligibility status.

uielrge

Claims that are initiated as regular claims are subject to variable entrance requirements that depend on the regional unemployment rate. The function uielrge performs the table lookup necessary for these tests. The function sets a flag indicating eligibility status.

uiwkbas

The function uiwkbas determines entitlements in the Initial Phase. For special benefit types (i.e., claims that remain maternity, fishing, sickness or parental), this is the total claim entitlement and is determined by a table lookup. For regular claims, entitlements, up to a maximum number of weeks, are determined in proportion to weeks or hours of insurable employment in the qualifying period up to a maximum number of weeks.

uiwklfe

The function uiwklfe determines entitlements in the Labour Force Extended Phase. As in the Initial Phase, entitlements are determined in proportion to weeks, above a minimum, of insurable employment in the qualifying period.

uiwkrge

The function uiwkrge determines entitlements in the Regional Force Extended Phase. Entitlements are determined by the regional unemployment rate.

uitrnclm

The function uitrnclm is called by the ui function after the uiclm function. Therefore, regular, sickness, maternity, fishing, and parental benefits have already been assigned. The uitrnclm function assigns first other types of benefits, then training benefits. Other types of

benefits will include everything not included in regular, sickness, maternity, parental, fishing or training. The list of other benefits included will vary depending on the year of the program. But they may include such items as job creation benefits, work sharing benefits, and self-employed assistance.

Other benefits are calculated using the imputed weeks of other benefits (ucothwk) and a weekly benefit rate (ucothbr). These can be adjusted using UIOTHWKFCT and UIOTHBNFCT. Training benefits are calculated in a similar manner using uctrnwk, uctrnbr, UITRNWKFCT, and UITRNBNFCT. There are no eligibility tests for these types of benefits. New pointers, ubp5 and ubp6 are created to signify the end of these benefit phases.

Adjusting UI/EI

Some parameters were added to the model in order to mimic some historical changes to the UI/EI program which the model cannot do without changes to the database. The UITARGET and UIEITKP parameters allow the users to increase or decrease the number of UI/EI recipients. The following parameters: UIREGWKFCT, UITRNWKFCT, UIOTHWKFCT, UIEXTMATWKS allow the users to increase the number of weeks of benefits over and above the weeks claimed on the database. UITRNBNFCT and UIOTHWKFCT allow the benefit rate for training and other benefits to be increased.

1 - Qualifying for benefits is now based on hours of work instead of weeks of work

Since the SPSD does not contain total hours of work, these are derived using the weeks of work prior to claim (ucwwork) multiplied by a new variable: the average weekly hours of work (ucwchr) which was imputed from the Survey of Labour and Income Dynamics. For more information, see UIREGHRMIN, UIMATHRMIN, UISICHRMIN,.

As for fishing benefits, qualification is based on earnings in the past 31 weeks. These are derived using weeks of work prior to claim (ucwwork) and average weekly earnings (ucern). It is assumed that the weeks ucwwork occurred immediately prior to the start of the claim. See UIFSHERMIN.

2 -The Family Income Supplement was added

When UIEIFSFLG is set to 1, the Family supplement is calculated. The total amount of the family supplement paid on a claim is ubclmfs. The total amount of family supplement paid on a claim in the calendar year is ubcalfs.

The Family Supplement was introduced as part of the Employment Insurance system reform introduced in 1995. It increases the basic benefit of families with low income. It replaces the older program which gave an enhanced rate for individuals with low income (in the SPSD/M this older program was controlled by UIENSRATE, UIDEPOPT, UIENSRTCO).

There are two methods of calculating the Family Supplement. When UIEIFSOPT is set to 1, then family supplement is directly tied into the Canada Child Tax Benefit (imfcben). Families which are eligible for the Child Tax Benefit receive the weekly amount of the benefit in addition to their regular Employment Insurance. It is reduced at a rate (UIEIFSRR) over incomes greater than UIEIFSRL.

Some simplifications were made in order to implement this program in the SPSM. The calculation of the Canada Child Tax Benefit is done after the calculation of EI in the model since it requires net income. But it requires the previous year's net income which is estimated as PYINC times the current year's net income.

When the Family Supplement is activated, the tax/transfer driver (drv) is run through twice per eligible household. The first time, no one will get a family supplement since the child tax benefit is equal to zero. The value of the benefit is saved (in cceopt) and drv is called again. This time, the previously saved value for the child tax benefit is used to calculate the family supplement. The family supplement will be slightly inconsistent with the child tax benefit since the latter will be recalculated and may be slightly smaller than the one used for deriving the family supplement since family net income will increase due to the family supplement.

Another simplification in deriving the family supplement derives from the fact that the SPSM assumes that the Child Tax Benefit is given in one lump sum amount in July. Therefore in the case of the Family supplement, the rules governing the Child Tax Benefit may be a year off if the benefit is received in the first half of the year.

When UIEIFSOPT is set to 2, the family supplement is calculated independently of the child tax benefit. First the number of children under the age of 7 is calculated (imuiydep). By going through the drv twice, the family's net income (prior to the addition of the family supplement) is available and the previous year's income is derived by multiplying it by PYINC. The family supplement is then derived by looking up the base value (UIEIFS1 for families with 1 child, UIEIFS2 for families with 2 children, and UIEIFS3 for families with 3 or more children). A supplement for each child over and above the third is added (UIEIFSTOPUP) as is a supplement for each child under the age of 7 (UIEIFSYNG).

The Family supplement rules changed on July 1999. Since the methodology under UIEIFSOPT = 1 would be off by a year, it was decided to treat all of 1999 under the methodology introduced in July 1999 (UIEIFSOPT = 2).

Under both options, EI weekly benefits including the family supplement cannot exceed a proportion (UIEIMFSP) of the claimant's weekly earnings (ubern). Nor can EI benefits, including the family supplement exceed the base rate (UIEIRATE) times the maximum weekly earnings (UIERNMAX).

Also, under both options, when the UIEIFIFLG is turned on, people who receive the family supplement are exempted from the intensity rule.

3 - The Intensity Rule

For persons receiving regular or fishing EI benefits and who did not receive the Family Income Supplement, the intensity rule was applied. The benefit rate (UIEIRATE) depends on the number of weeks of EI collected in the past. See UIEIFIFLG, UIEIRATE, UIEIYRS, ubeiwbp, ucy1, ucy2, ucy3, ucy4, ucy5 for more details.

4 -The Minimum Divisor

In order to obtain their maximum benefits, EI claimants must work two weeks more than the minimum entrance requirements. The minimum divisor rule is controlled by UIEIDIVFLG and UIEIDIV.

5 -Minor Changes

There was a minor change in the method used to derive training weeks and training benefits.

The method of using the UI/EI regular benefit weeks adjustment factor UIREGWKFACT was adjusted.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| PYINC | Deflator to calculate previous year income |
| UIBASFLAG | Basic phase calculation flag (UI and EI) |
| UIBASOPT | UI reform option [1=normal, 2=Apr'89] (UI and EI) |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIDEPOPT | UI dependency option [1=normal, 2=Feb'94] (UI only) |
| UIEFFFLAG | Observed effective weekly benefit rate flag (UI and EI) |
| UIEIDIV | EI minimum divisor [uer][divisor] (EI only) |
| UIEIDIVFLG | EI minimum divisor flag (EI only) |
| UIEIFIFLG | EI intensity rule exemption for family supplement receivers (EI only) |
| UIEIFS1 | Max fam supplement 1 child (EI only) |
| UIEIFS2 | Max fam supplement 2 children (EI only) |
| UIEIFS3 | Max fam supplement 3+ children (EI only) |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIFSOPT | UI EI calculate family supplement option (EI only) |
| UIEIFSRL | UI EI family supplement reduction level (EI only) |
| UIEIFSRR | UI EI family supplement reduction rate (EI only) |
| UIEIFSTOPUP | Max fam supplement top up for more than 3 kids (EI only) |
| UIEIFSYNG | Max fam supplement top up for young children (EI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIMTYPFLG | Flag to model main benefit type (UI and EI) |
| UIEINEREFLG | Flag to check for hours for new entrants and re-entrants (EI only) |

| | |
|----------------------------|---|
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIRATE | Benefit rate under EI reform [Past Wks ben][Rate] (EI only) |
| UIEITKP | UI EI takeup rate [index] : index based on prov, sex, age, |
| weeks | |
| UIEIYRS | Number of years of previous EI benefits calculated (EI |
| only) | |
| UIENSRATE | Enhanced rate for basic phase (UI only) |
| UIENSRTCO | Enhanced rate cutoff (UI only) |
| UIENTFLAG | Basic entrance requirements flag (UI and EI) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIEWK | Entitlement (weeks) [wkwrk, uer] (UI and EI) |
| UIEXTMATWKS | Additional weeks for maternity - behavioural response (UI |
| and EI) | |
| UIFLAG | UI/EI Activation flag (UI and EI) |
| UIFSHERMIN | Min. earnings to qualify for fish. benefits [unempl. rate] |
| (EI only) | |
| UIFSHMINWK | Minimum weeks to qualify for fishing benefits (UI only) |
| UILFEFLAG | Labour force extended phase calculation flag (UI only) |
| UILFEMIN | Weeks worked in qualifying period [UILFEWKS index] (UI |
| only) | |
| UILFERATE | Benefit rate for labor force extended phase (UI only) |
| UILFEWKS | Weeks LFE entitlement [UILFEMIN](UI only) |
| UIMATHRMIN | Minimum hours to qualify for maternity benefits (EI only) |
| UIMATMINWK | Minimum weeks to qualify for maternity benefits (UI only) |
| UIMAXBASEWKS | Maximum number of weeks - regular (UI and EI) |
| UIMAXDUR | Maximum duration of a UI claim (UI and EI) |
| UIMAXFSHWKS | Maximum number of weeks - fishing (UI and EI) |
| UIMAXMATWKS | Maximum number of weeks - maternity (UI and EI) |
| UIMAXPARWKS | Maximum number of weeks - parental (UI and EI) |
| UIMAXSICWKS | Maximum number of weeks - sickness (UI and EI) |
| UINEREHRMIN | Minimum hours to qualify for new entrant or re-entrant (EI |
| only) | |
| UIOTHBNFCT | UI other benefits per week adjustment factor (EI and EI) |
| UIOTHWKFCT | UI other benefits weeks adjustment factor (UI and EI) |
| UIREGHRMIN | Min. hours to qualify for reg. benefits [unempl. rate] (EI |
| only) | |
| UIREGMINWK | Minimum weeks to qualify for regular benefits (UI only) |
| UIREGWKFCT | UI regular benefit weeks adjustment factor (UI and EI) |
| UIREPPREV | Weeks of insurable employment [weeks] (UI only) |
| UIREPUER | Regional unemployment rate [rates] (UI only) |
| UIREPWWKD | Repeater eligibility requirements [weeks x rates] (UI only) |
| UIRGEFLAG | Regional extended phase calculation flag (UI only) |
| UIRGEMIN | Unemployment rate for Regional Extended entitlement |
| [UIRGEWKS index] (UI only) | |
| UIRGERATE | Benefit rate for regional extended phase (UI only) |
| UIRGEWKS | Weeks Regional Extended entitlement [UIRGEMIN] (UI only) |
| UIRGNFLAG | Regional requirements flag (UI only) |
| UIRGNMIN | Regional unemployment rate (UI only) |
| UIRGNWKS | Weeks required for eligibility (UI only) |
| UIRPTFLAG | Repeater requirements flag (UI only) |
| UISICHRMIN | Minimum hours to qualify for sickness benefits (EI only) |
| UISICMINWK | Minimum weeks to qualify for sickness benefits (UI only) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| UITRBNFCT | UI training benefit per week adjustment factor (EI and EI) |
| UITRNWKFCT | UI training benefit weeks adjustment factor (UI and EI) |
| UIWAITWKS | Minimum waiting period all claims (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hdurb | Size of urban area |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| hhnfn | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinOTH | Other money income (non-taxable) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditOTH | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idnfn | Person's nuclear family [pointer] |
| idninco | No income flag (SPSD variables) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| iduirank | Predicted ranked likelihood of getting UI |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imuidpfg | UI claimants has dependents flag |
| nfin | First person in nuclear family [pointer] |
| nfinch | First child in nuclear family [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnpers | Number of persons in nuclear family |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucgotpa | Received paternity benefits |
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucyl | Weeks on UI in first year before claim |

| | |
|------|---|
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

OUTPUT VARIABLES:

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imuibr | UI benefit recovery |
| imuidpfg | UI claimants has dependents flag |
| imuiydep | Number of dependents under 7 for family supplement (EI only) |
| ubcalfs | Family supplement paid in calendar year |
| ubcalpd | Benefits paid in calendar year |
| ubcalwk | Weeks on claim in calendar year |
| ubclmfs | Family supplement paid on claim |
| ubclmpd | Benefits paid on claim |
| ubclmwk | Weeks on claim |
| ubeiwbp | Weeks of past EI benefits |
| ubern | Modelled insurable weekly earnings |
| ubp1 | Week # of first payment |
| ubp1c | Week # of first payment (windowed) |
| ubp2 | Week # of start of second phase |
| ubp2c | Week # of start of second phase (windowed) |
| ubp3 | Week # of start of third phase |
| ubp3c | Week # of start of third phase (windowed) |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ubp5 | Week # of last other type of ui/ei payment |
| ubp5c | Week # of last other type of ui/ei payment (windowed) |
| ubp6 | Week # of last training payment |
| ubp6c | Week # of last training payment (windowed) |

vardef Define structure member as an SPSM variable

SUMMARY

The vardef function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.



SPSD/M 

Algorithm Guide

This guide is designed primarily to provide *SPSD/M* users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black box and glass box users.

September 21, 2001



Canada

Introduction

The Algorithm Guide provides SPSD/M users with a description of the specific personal tax and cash transfer programs which are simulated and the specific way in which this is done. An attempt is also made to guide and caution the user, where necessary, as to the interpretation of the results. Also included in this guide are descriptions of processing and utility algorithms which have a significant effect on the results. The guide is intended for both black box and glass box users.

The guide is organized into three main sections. After the first section (this Introduction), there is a section describing the algorithms organized into logical groupings. This is followed by an alphabetically-arranged encyclopaedic section that lists all algorithms in the SPSM.

These modules are referred to as functions. Function names are printed in lower case (e.g. `txinet`, `txcalc`). Sub-functions are defined within the function that calls them and are also shown in lower case (e.g. `uicl`, `gissub`). Both regular and local variables are shown as usual in lowercase (immicons). These local variables may not be used for reporting purposes unless modifications are made in glass box mode.

These functions tend to have a one-to-one correspondence with actual social and tax programs. In some cases however, two functions are required for one social program (Eg. the child care expense deduction is calculated in one function and allocated to a particular family member in another), or many programs may be simulated in one function (e.g. federal and provincial family allowances are both calculated by one routine).

Subject Reference

1 Algorithm by Program

1.1 Introduction

This guide is designed primarily to provide SPSD/M users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black-box and glass-box users.

1.2 Pre-simulation Functions

The functions in this group are executed prior to the simulation of taxes and transfers. The database is first adjusted to the users specifications, by `adj`. This adjusted database will form the basis of all base/variant combinations executed in a single program run. Parameter edit checks and the calculation of derived parameters are performed next in `mpc`. This is done based on `.apr` parameters and rules embodied in the function. Finally, calls to the tax/transfer algorithms are made for each requested base and/or variant simulation as controlled by the `drv` function.

1.2.1 Adjust Database

Three functions perform certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database.

| | |
|-----------------------|--|
| <code>fmspopen</code> | Routines to read SPSD file (.spd) |
| <code>fmxopen</code> | Routines for reading FAMEX (.fxv) file |
| <code>adj</code> | Perform SPSD database adjustment |

1.2.2 Calculate Derived Parameters

The `mpc` function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters.

| | |
|------------------|---|
| <code>mpc</code> | Calculate derived model parameters and do edits |
|------------------|---|

1.2.3 Tax/Transfer Calculator

Two functions are responsible for invoking the algorithms which calculate all taxes and transfers.

| | |
|-------------------|------------------------------|
| <code>call</code> | Call tax/transfer calculator |
| <code>drv</code> | Tax/transfer calculator |

1.3 Government Cash Transfers

1.3.1 Unemployment Insurance Benefits

Unemployment Insurance benefits are calculated by a set of functions which mimic application of UI regulations to individual employment and claim histories. These functions are contained within the ui function

ui Compute UI benefits

1.3.2 Family Allowances

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

famod Compute family allowance

1.3.3 Federal Child Tax Benefit/Credit

This function is used to calculate either the federal Child Tax Credit program or the federal child tax benefit. Both programs are intended to provide benefits to help low and middle income families meet the costs of raising children under the age of 18.

txctc Compute child tax credit

ccept zero CCE for young kids if optimal

1.3.4 Federal Sales Tax Credits

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse.

txfstc Compute federal sales tax credit

1.3.5 Elderly Programs

1.3.5.1 Old Age Security

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. The SPSM calculates OAS based on the age of the individual and, for immigrants, the years since immigration. The clawback of OAS is performed in the txitax function.

oas Compute OAS for elderly

1.3.5.2 Guaranteed Income Supplement/Spouses Allowance

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable

monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested.

gis Compute GIS/SPA for elderly

1.3.5.3 Provincial GIS Supplementation Programs

The gist function calculates benefits for seven provincial GIS supplementation programs in six provinces; Nova Scotia, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. All modelled provincial senior's programs within SPSM are in this function.

gist Compute Provincial GIS top-ups for elderly

1.3.6 Social Assistance Benefits

This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here.

samod Compute social assistance or guarantees

1.4 Federal Income and Payroll Taxes

1.4.1 Calculate Net Income

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Taxable Dividends
- Taxable Capital Gains
- Total Income
- CPP/QPP Contributions (Deduction or Tax Credit)
- UI Contributions (Deduction or Tax Credit)
- Tuition Fees (Deduction or Tax Credit)
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

txinet Compute net income

1.4.2 Calculate Taxable Income

The process of computing taxable income is divided into two separate routines. Exemptions, deductions and tax credits which are not dependent upon information from other members of the family (e.g., the Basic Personal Exemption or Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

txitax Compute taxable income and individual credits

txhstr Compute family-related deductions or credits

1.4.3 Child Care Expense Allowance

The txceea function calculates the value of the child care expense deduction. The calculation may be optionally converted to a tax credit basis rather than a deduction.

txceea Compute child care expense allowance

1.4.4 Calculate Federal Tax

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Basic Federal Tax (including credit transfers)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement

txcalc Calculate federal income tax

1.5 Calculate Provincial Taxes

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax to a parallel of the federal system in Quebec. Most provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

1.5.1 All Provinces except Quebec

| | |
|--------|---|
| txprov | Compute provincial taxes |
| txnfld | Compute provincial taxes for Newfoundland |
| txpei | Compute provincial taxes for P.E.I. |
| txns | Compute provincial taxes for Nova Scotia |
| txnb | Compute provincial taxes for New Brunswick |
| txont | Compute provincial taxes for Ontario |
| txman | Compute provincial taxes for Manitoba |
| txsask | Compute provincial taxes for Saskatchewan |
| txalta | Compute provincial taxes for Alberta |
| txbc | Compute provincial taxes for British Columbia |

1.5.2 Quebec

| | |
|---------|--|
| txque | Compute provincial taxes for Quebec |
| txqinet | Compute net income (Quebec) |
| txqccea | Compute child care expense allowance (Quebec) |
| txqitax | Compute taxable income and individual credits (Quebec) |
| txqhstr | Compute family-related deductions or credits (Quebec) |
| txqcalc | Calculate income tax (Quebec) |

1.6 Calculate and Assign Commodity Taxes

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures at the spending unit level of analysis in the following function..

| | |
|---------|--|
| ctmod | Compute commodity taxes for individuals and households |
| txhhexp | Compute and pro-rate household taxes, rent, etc. |

1.7 Aggregation Routines

Two aggregation functions are used to calculate several reporting variables as aggregates of other modeled variables. The functions calculate all dollar denominated reporting variables up to the level of consumable income. In addition taxable filer status is determined.

| | |
|-------|----------------------------------|
| memo1 | Compute memo items for reporting |
| memo2 | Compute consumable income, etc. |

1.8 Glass Box Stub Routines

There are two empty functions in both the standard and alternate drivers (drv) that are available to

allow completely new tax or benefit programs to be developed by glass box users.

| | |
|-----|--|
| dem | Compute new taxable demogrants |
| gai | Compute new refundable credits or guarantees |

1.9 Auxiliary Functions

There are a number of auxiliary functions which are used by the functions containing the tax/transfer algorithms. These functions perform routine tasks required in simulating the tax/transfer system such as table look-ups and benefit reduction functions. The description of these functions is of use to anyone attempting to fully understand or modify the C-language source code for the tax/transfer algorithms.

| | |
|----------|--|
| classu | Compute user-defined reporting variables |
| isneg | Is argument negative ? |
| isnneg | Is argument non-negative? |
| isnzero | Is argument non-zero? |
| iszero | Is argument zero? |
| lkup1 | Table look-up with interpolation/extrapolation |
| lkup2 | Table look-up without interpolation |
| maxn | Find the maximum of two numbers |
| minn | Find the minimum of two numbers |
| nneg | Change negative numbers to zero |
| pmaddent | Define and add a parameter |
| randrnd | Randomly round a floating point number to an integer |
| round | Round to nearest integer |
| strn | Retrieve string by string number |
| taxbak1 | One level tax-back function |
| taxbak2 | Two level tax-back function |
| vardef | Define structure member as an SPSM variable |

Alphabetic Reference

adj

Perform SPSD database adjustment

SUMMARY

The `adj` function performs certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database. The function may currently be used to adjust the amount of RRSP contributions claimed. A brief description of the database adjustment in general is also included.

SPSM Implementation

The SPSD is based on surveys and administrative data collected for the 1988 calendar year. Adjustment of this data may be required for several reasons. The user may wish to use the incomes to represent the incomes in a more recent year such as 1994. As such the user would supply estimates of growth rates for income by source and expenditures from 1988 to 1994. The user may also wish to make adjustments for simulation purposes in the 1988 year. For example, known under-reporting of alcohol expenditures may be treated by scaling each household's alcohol expenses or a deduction item could be scaled down to zero to represent a restriction of a certain tax measure. Finally, the user may wish to adjust the weights of individuals and households to reflect alternate demographic assumptions.

The scaling of money items is performed in two functions inaccessible to the glass box user. Prior to the calculation of any taxes or transfers each dollar denominated database variable is multiplied by a single corresponding database adjustment parameter. There are two key exceptions to this. Employment income, comprising about 70% of total income is given more rigorous treatment due to its relative importance in the overall tax/transfer system. Employment income may be adjusted by industry specific growth rates. CPP/QPP income may be adjusted by differential rates according to age groups which allows for the phasing in of that program. Users should refer to the *Parameter Guide* in this manual for further details on specific adjustment parameters.

The `adj` function is a means for glass box users to affect the adjustment of the database in ways not currently possible. The user may add their own adjustment routines to augment or even offset current means of adjustment. For example if the user wished to grow employment income by age and sex they would set the existing employment parameter to one and enter a new algorithm in this function. One such specific database adjustment provision is currently available in black box mode and is used in the analysis of RRSP contributions.

This adjustment (which will change the value of the `idrrsp` variable) is designed to allow the user to simulate the increase in RRSP contribution limits in a rough fashion. It allows the user to increase the RRSP contributions of individuals who are near to the current

contribution limits. The facility is activated by setting the RRSPIFLAG parameter to 1. Two cases are distinguished, those who are not covered by a employer-contributed pension plan, and those who are.

If individuals had RRSP contributions but had no RPP contributions, and their RRSP contributions fell between RRSPSMIN and RRSPSMAX inclusive, their RRSP contributions will be increased by RRSPSINC.

If individuals had RPP contributions, then, for those individuals whose total pension contributions (RRSP plus RPP) fell between RRSPMIN and RRSPMAX, their RRSP contributions will be increased by RRSPEINC.

Relation to Other SPSM Routines

The `adj` function is called before `drv` and as such is only executed once for every program run. This means that database adjustments will apply to both the base and variant scenarios. The function is called after the other database adjustment routines.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-----------|---|
| DNINCFLAG | Disable no income flag for calculation |
| PROVMAP | Provincial remapping [prov] |
| RRSPEINC | Increment to rrsp if conditions & rpp>0 |
| RRSPEMAX | Maximum (rpp+rrsp) for increment if rpp>0 |
| RRSPEMIN | Minimum (rpp+rrsp) for increment if rpp>0 |
| RRSPIFLAG | RRSP increment activation flag |
| RRSPSINC | Increment to rrsp if conditions & rpp=0 |
| RRSPSMAX | Maximum (rrsp) for increment if rpp=0 |
| RRSPSMIN | Minimum (rrsp) for increment if rpp=0 |

INPUT VARIABLES:

| | |
|-------|---|
| hhnin | Number of individuals in household |
| idrpp | Registered pension plan contributions (207) |

OUTPUT VARIABLES:

| | |
|---------|---------------------------------|
| hdprov | Province |
| idninco | No income flag (SPSD variables) |
| idrrsp | RRSP calculated amount (208) |

SUMMARY

Stub function for use by glass box users who wish to modify database variables either before and/or after tax/transfer calculation. This function calls the standard driver -- drv.c.

SUMMARY

The ccept function controls multiple calls to the tax transfer calculator drv.

Program Description

There are three instances in which the entire calculation of the tax/transfer system for household is necessary. The ccept function controls such recalculations. Each case is discussed under separate headings below:

Pre-calculation of the child tax benefit.

The calculation of Employment Insurance depends in part upon an individual's Child Tax Benefit entitlement. However, Employment Insurance is calculated prior to the Child Tax Benefit. ccept is used to calculate a preliminary value for the child tax benefit which can then be used in the calculation of Employment Insurance. The final value for a family's child tax benefit may differ from the preliminary estimate used for this calculation of Employment Insurance.

Optimization of the Child Tax Credit/Child Tax Benefit

Beginning in 1988 the rules for calculating the child tax credit/child tax benefit and the child care expense credit were altered to ensure that middle income families could not receive the full benefits from both programs. In practice this is done by reducing maximum child tax credit benefits by 25% of claimed child care expenses. The resulting situation is that below a certain income level it is advantageous not to claim any child care expenses incurred. The ccept function can locate this level and thus maximize the combined benefits from the child care expense credit and the child tax credit/child tax benefit.

SPSM Implementation

ccept performs the re-calculations and optimizations in a specific sequence. The pre-calculation of the federal Child Tax Benefit for purposes of correctly calculating Employment Insurance is performed first. Next the optimization of the child care expense deduction and the federal Child Tax Benefit is performed. The SPSM implementation of each

type of optimization are described separately below:

Pre-calculation of the child tax benefit.

The first time drv is called Employment Insurance is calculated with a zero value for the federal Child Tax Benefit. This will result in no EI family supplement benefits being assigned. The first time ccept is called by drv, it first determines if a family is eligible for both EI and the Child Tax Benefit. If so, that household has its entire tax/transfer entitlements/liabilities re-calculated using the value for the federal child tax benefit calculated in the first pass.

Note that there is a circularity between the two programs in that the federal Child Tax Benefit is based, in part, on Unemployment Insurance benefits to the extent that they are included in the definition of net income which is used to clawback the child benefits.

Optimization of the Child Tax Credit/Child Tax Benefit

The default calculation first performed in txceca makes use of any child care expenses associated with the children in the family. In the ccept function cases subject to optimization are first identified as families having children aged 0-6 with associated child care expenses.

The complexities of the tax reform situation in Canada make it difficult to know how to optimize many of this type of case. Consequently, once these families have been identified, the entire tax/transfer system is recalculated, setting child care expenses for young children to zero. The value of consumable income for both runs is then compared. If the family benefits from this change, the scenario with no child care expenses is kept. Otherwise, the previous scenario is restored by again re-running the entire tax transfer system.

The algorithm is controlled by the parameter CCEZOPT, which is described in the [Parameter Guide](#).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----------|--|
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UITARGET | UI/EI target for the number of cases (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| hdageeld | Age of eldest in household |
| hdnkids | Number of children in household |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idninc | No income flag (SPSD variables) |
| iduirank | Predicted ranked likelihood of getting UI |
| imcce | Child care expenses claimed on behalf of child |
| immicons | Consumable income |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|---------|--|
| imcceni | Consumable income with CCE not zeroed |
| imccez | Is CCE zeroed? |
| imccezi | Consumable income with CCE zeroed |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |

classu Compute user-defined reporting variables

SUMMARY

The classu function is a stub routine which allows the glass-box user to compute and assign values to new or re-defined variables. Variables first must be defined appropriately in vsdu.c and vsu.h. Since this function is normally called by both the standard and alternate model drivers, assignments made in classu will be effective in both cases.

Users should note that classu should only be used when the user is unable to create the desired classification with the User Defined Variable Facility. Please see the [*User's Guide*](#) for more information on this alternative facility.

Note that classu is called at the end of drv so that variables defined in classu are not available for use in other tax/transfer algorithms. See the [*Programmer's Guide*](#) for more information.

ctmod Compute commodity taxes for individuals and households

SUMMARY

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to

observed family expenditures at the spending unit level of analysis. The resulting federal government taxes span 48 consumer expenditure (CE) categories while provincial government taxes have both CE category and provincial dimensions. Commodity taxes are also estimated for other levels of analysis such as economic families and individuals.

Program Description

The federal government has a variety of taxes which are levied on goods used in production and for final demand consumption. Some of the major federal tax types are: custom import duties, alcohol and tobacco excise taxes and excise duties, manufacturers sales tax, gasoline excise tax, air transportation tax, and energy use taxes. The provincial governments also levy taxes but with more of an emphasis on consumer goods. Major taxes include liquor commission mark-ups, gasoline taxes, tobacco taxes, and retail sales taxes.

An important characteristic of this tax system is the cascading effect. Tax cascading occurs when a tax rate is applied to the value of a commodity inclusive of another tax type. For example, when an individual makes a long distance call a federal telecommunications tax of 10% is applied to the price of the call. Provincial governments then levy their retail sales tax rates to the value of the call inclusive of the federal tax.

SPSM Implementation

Input/Output Estimation of Tax Rates

Tax costs associated with domestic production are passed to the domestic consumers is the fundamental I/O modeling assumption. For example, alcohol producers require raw materials such as grains, water, energy source etc. If these inputs are produced themselves in other industries, then their selling price may include a manufacturer's tax component. Through Input/Output (I/O) techniques we are able to associate the implicit tax share of the production process to the correct final demand good.

The macroeconomic I/O system is used to construct effective tax rates by tax type, final demand good, and by province. This enables the calculation of the tax burden implicit in each household's reported final demand expenditures.

The federal tax rates have been grouped into six tax types: custom import duties; excise duties; manufacturer's sales tax; excise taxes; other energy taxes; and federal sales tax. The federal sales tax type that has been included for user simulations is set to zero by default. The array of provincial tax rates has also been reduced to six tax types: profits on liquor commissions; liquor gallonage tax; gasoline tax; amusement tax; tobacco tax; retail sales tax.

The above rates are defined as the ratio of a particular tax to the expenditure net of all commodity taxes for a given good in a given province. Therefore, an additional input parameter rate is applied to the FAMEX observations to net out the commodity taxes implicit in the base year.

For a more complete description of the I/O methodology, calculation procedures, tax type composition, etc. see *Commodity Tax Model User's Guide*.

Notes Regarding Expenditure Adjustments

Prior to the execution of the ctmod function, two modifications of the FAMEX data have been performed by the SPSM.

The first is made necessary because of the way SNA and FAMEX treat the expenditures on motor vehicles as net expenditures. If the trade-in exceeds the value of the purchase, or a household sells a vehicle outright, then the expenditure category will contain a negative value. In this case the SPSM treats the net expenditure as an income item (net sale of durables) and it is incorporated into the income calculation. The expenditure category is then set to zero. This procedure is conducted in the two consumer expenditure categories where net sales can occur: New & used automobiles; Recreation, sporting goods, and camping equipment. This modification is not accessible to the user.

The second data modification involves correcting for under-coverage of some FAMEX expenditure components. For example, sales of alcohol and tobacco are monitored very carefully by government agencies and their data indicate roughly twice as much consumption of these two goods as reported on the FAMEX. Two other FAMEX categories report substantially lower consumption than other information sources would indicate. They are semi-durables and expenditures for restaurants & hotels. The GFFMX parameter in the .APR file enables the adjustment of raw FAMEX values to the levels of other sources. We provide users with factors to inflate expenditures to known 1984 levels.

Estimation of commodity taxes

The ctmod function initially calls the ctfx sub-function to calculate the taxes based on the expenditure patterns of FAMEX spending units. The ctmod function then computes the taxes for other levels of analysis such as individuals or economic families.

The FAMEX expenditure categories must be stripped of their original tax component before the commodity tax calculation can be performed. This is accomplished in the ctfx sub-function by applying the I/O computed CTTXRM parameter (database adjustment parameter) to the expenditure observations.

The effective commodity tax rates are then multiplied by the net expenditures to produce commodity tax levels for each spending unit. If the CTDFLAG is set to 0 then total federal level taxes by commodity and provincial level taxes by commodity and province are calculated. If CTDFLAG is set to 1 then the six detailed federal taxes and seven provincial taxes are generated. Provincial taxes applied are defined in the following input parameters:

- CTPAMU Provincial amusement tax
- CTPGAS Provincial gasoline tax
- CTPICT Provincial commodity taxes on industry
- CTPLGL Provincial liquor gallonage tax
- CTPPLQ Provincial profits on liquor commissions
- CTPRST Provincial retail sales tax
- CTPTOB Provincial tobacco tax

The model ensures that both options will produce identical results in the aggregate.

Commodity taxes are then allocated to individuals in the FAMEX spending unit via personal income shares in the ctmof function. The income of the household's head is derived by adding three variables from the FAMEX income concept not surveyed elsewhere to his/her SPSD income concept variables. These variables are: savings; other money receipts; and net sales of durables. The shares reflect the income distribution after this modification.

The CTOPT parameter controls which income concept is used in the simulation. If the parameter is set to 1 then the FAMEX income concept is used. This measure of income is not linked to other SPSD variables in any way. Therefore, if the user wishes to examine the implications to commodity tax outflows based upon changes in SPSD income variables (i.e. OAS, GIS, income tax changes) then this option should never be specified. Its use should be restricted to pure FAMEX analyses.

If CTOPT is set to 2 then the SPSD income concept is used. This income measure has been corrected for an income bias inherent in Survey of Consumer Finance (SCF) data using Department of Revenue Green Book tax data. This income adjustment is described in detail in the *Database Creation Guide*. The result is a substantial increase in household income for observations in the extreme upper tail.

The FAMEX data suffers from the same under-coverage as the SCF so the reported spending unit expenditure can be out of synch with the Green Book adjusted income. For example, the largest total expenditure observation is around \$150,000 while a large tax adjusted household income exceeds \$5,000,000.

Setting the CTOPT parameter to 2 scales the commodity tax calculated conditioned on FAMEX spending unit income by the ratio of the SPSD "shared" income concept to an equivalent FAMEX "shared" income concept. In this way tax outlays bear closer relation to the SPSD income levels. However, this leads to some outlay distortions for the extremely wealthy which are described in the Interpretation Section.

Interpretation

There are some other discrepancies between the system of national accounts (SNA) definition of consumer expenditure and that of FAMEX. Generally, SNA includes the entire personal sector whose components are households, self-employed professionals, and universities. FAMEX tracks only households and, therefore, tax levels by commodity are generally lower. For a detailed description of these differences see the *Commodity Tax Model User's Guide*

In the aggregate, differences between income SPSM income concept (CTOPT=2) and the FAMEX income concept (CTOPT=1) are almost negligible. Using 1984 base case parameters the FAMEX option produced a \$20.997 billion tax burden on Canadian families while the scaled option generated \$21.048 billion. These compare favorably with the SNA estimate of \$22.5 billion. However, the differences for the highest income households in great. The top three households show differences of over \$200,000. This implies some caution when interpreting commodity tax values for high income observations.

Relation to Other SPSM Routines

The ctmod function calls the ctfx sub-function in order to calculate spending unit commodity taxes. The ctmod function itself is called by the drv function. The ctmod function makes use of parameters derived in the mpc function. The mpc function also ensures that the ctmod function is not executed if the FAMEX data vector is not being read (i.e. if FXVFLAG=0). The calculation of commodity taxes is highly dependent on the parameters applied to the database expenditure items during the database adjustment phase of the simulator.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTDFLAG | Commodity tax detailed calculation flag |
| CTFCID | Federal custom import duties [com] |
| CTFEXD | Federal excise duties [com] |
| CTFEXT | Federal excise taxes [com] |
| CTFGST | Federal GST [com] |
| CTFLAG | Commodity tax activation flag |
| CTFMFG | Federal manufacturer's sales [com] |
| CTFOEN | Federal other energy taxes [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTLPROP | Local property taxes |
| CTNES | Expenditures NES |
| CTOPT | Commodity tax calculation method [1=FAMEX,2=SPSM] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| CTPTOT | Provincial total retail tax equivalent |
| CTSAVE | All positive savings |

INPUT VARIABLES:

| | |
|----------|--|
| ctnexp | Household expenditure net of taxes |
| ctothmon | Household money from other sources |
| cttxfc | Federal commodity taxes (total) |
| cttxpc | Provincial commodity taxes (total) |
| fxfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |

| | |
|----------|------------------------------------|
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hhnin | Number of individuals in household |
| idhhrh | Relationship to head of household |
| immdisp | Disposable income |

OUTPUT VARIABLES:

| | |
|----------|--|
| ctfcid | Federal custom import duties |
| ctfexd | Federal excise duties |
| ctfext | Federal excise taxes |
| ctfgst | Federal GST |
| ctfmfg | Federal manufacturer's sales tax |
| ctfoen | Federal other energy taxes |
| ctishrh | Shared income concept (FAMEX) |
| ctlprop | Local property taxes on owned dwellings |
| ctnes | Household expenditure not elsewhere specified |
| ctnexp | Household expenditure net of taxes |
| ctnexp_ | Household expenditure net of taxes [array] |
| ctnsna | Household expenditure net of taxes -SNA adjusted |
| ctnsna_ | Household expenditure net of taxes [array] -SNA adjusted |
| ctothmon | Household money from other sources |
| ctpamu | Provincial amusement tax |
| ctpgas | Provincial gasoline tax |
| ctplgl | Provincial liquor gallonage taxes |
| ctpplq | Provincial profits on liquor commissions |
| ctprov | Province for COMTAX calculations |
| ctprst | Provincial retail sales tax |
| ctptob | Provincial tobacco tax |
| ctsave | Household savings |
| ctseqhv | FAMEX record sequence number |
| cttxfc | Federal commodity taxes (total) |
| cttxfc_ | Federal commodity taxes [array] |
| cttxpc | Provincial commodity taxes (total) |
| cttxpc_ | Provincial commodity taxes [array] |
| imishri | Shared income concept (FAMEX & SPSD) |
| imninc | No income flag |
| imtxfc | Federal commodity taxes |
| imtxpc | Provincial commodity taxes |

dem Compute new taxable demogrants

SUMMARY

This is a stub function for use by glass box users who wish to incorporate a new program which interacts with the tax system (i.e. taxable benefits).

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|--------------------------|
| imiotg | Other taxable demogrants |
|--------|--------------------------|

| | |
|------------|-------------------------|
| drv | Tax/transfer calculator |
|------------|-------------------------|

SUMMARY

The calculation of taxes and cash transfers for any base or variant run is controlled by a function whose only task is to call all other individual tax/transfer algorithm functions. The sequence of calls is critical to the simulation due to the informational requirements of the tax/transfer functions. For example net income must be known before gis can be calculated. The following list gives the functions called by drv in the order in which they are called.

| Function | Description |
|----------|---|
| ui | Compute UI benefits |
| famod | Compute family allowance |
| oas | Compute OAS for elderly |
| dem | Stub routine for new pre-tax system programs |
| txinet | Compute net income (including payroll taxes) |
| gis | Compute GIS/SPA for elderly |
| senben | Compute senior benefit |
| gist | Compute Provincial GIS top-ups for elderly(GAINS-A, SIP, etc) |
| samod | Compute social assistance or guarantees |
| txitax | Compute taxable income |
| txhstr | Apply tax transfers between head and spouse |
| txcalc | Calculate federal income tax |
| txctc | Compute child tax credit |
| txprov | Compute provincial taxes and credits |
| txfstc | Compute federal sales tax credit |
| gai | Stub routine for new post-tax system programs |
| memo1 | Compute memo items for reporting |
| ctmod | Compute commodity taxes |
| memo2 | Compute consumable income, etc. |

ccept
Classu

Zero CCE for young children if optimal
Stub routine to compute user defined reporting variables

The calling order of the component functions of drv reflects the logical precedence between them.

- The first functions, ui, famod and oas, simulate programs whose benefits are determined by factors other than income and as such are called first.
- dem is a stub routine for glass box applications that require calculations to occur before entering the tax system routines.
- txinet calculates net income prior to certain transfers.
- gis calculates transfers to the elderly.
- senben calculates senior benefits.
- gist, txctc, and txfstc calculate income tested transfer programs.
- samod calculates social assistance or guaranteed income transfers.
- Federal and provincial taxes are calculated next in the next six functions with the tx prefix (txitax, txhstr, txcalc, txprov, txctc, and txfstc).
- gai is another stub routine that is intended for use by glass box users who wish to simulate options requiring information on all personal income taxes and cash transfers. For example users may use this function to simulate an income supplementation program.
- The memol and memo2 functions create aggregate variables for reporting.
- In the ctmod function, sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures.
- ccept optimizes income by maximizing the child care expense credit and the child tax credit.
- classu is a stub routine which allows the glass box user to compute and assign values to new or re-defined variables.

The functions called by drv call other functions and sub-functions in order to complete their calculations. The following page contains a complete list of the names of functions and sub-functions along with a short description in the order in which they are called by drv. Please refer to the specific function in this guide for a more detailed description. Sub-functions (in italic) can be found listed under the function which calls them. Thus for a complete understanding of the calculation of net income one would have to consult both the txinet and txceca functions.

As mentioned earlier, function names are printed in lower case, bold, courier font (E.g. txinet, txcalc) and correspond to a single C language source code file (E.g. txinet.c, txcalc.c). Sub-functions are defined within the function (file) that calls them and are shown in lower case, courier font, italic (e.g. uisqz, gissub). All multiple calls to the same sub-function have been shown here. All functions directly called by drv begin in the first column below, other function calls are indented.

In ccept all the functions are called a second time by drv to find if a family benefit of setting CCE to zero, if it is the case the result is kept, otherwise drv call again all the functions to reset the original values.

| | | |
|----|----------------------|---------------------|
| ui | | Compute UI benefits |
| | <i>uicl</i> <i>m</i> | Simulate a UI claim |

| | | |
|--------|-----------------|---|
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| | <i>uicl</i> | Simulate a UI claim |
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| famod | | Compute family allowance |
| oas | | Compute OAS for elderly |
| dem | | Stub routine for new pre-tax system programs |
| txinet | | Compute net income |
| | <i>txccea</i> | Compute child care expense allowance |
| gis | | Compute GIS/SPA for elderly |
| | <i>gissub</i> | Compute income used to tax back GIS/SPA |
| senben | | Compute senior benefit |
| | <i>sbsub</i> | Compute income used to tax back Seniors Benefit |
| gist | | Compute Provincial GIS top-ups for elderly |
| | <i>txhhexp</i> | Compute and pro-rate household taxes, rent, etc. |
| samod | | Compute social assistance or guarantees |
| txitax | | Compute taxable income |
| txhstr | | Apply tax transfers between head and spouse |
| txcalc | | Calculate federal income tax |
| txprov | | Compute provincial taxes |
| | <i>txnfld</i> | Compute Newfoundland provincial taxes |
| | <i>txpei</i> | Compute PEI provincial taxes |
| | <i>txns</i> | Compute Nova Scotia provincial taxes |
| | <i>txnb</i> | Compute New Brunswick provincial taxes |
| | <i>txque</i> | Compute Quebec provincial taxes |

| | | | |
|--------|--------------|--------------|--|
| | | txqinet | Compute net income (Quebec) |
| | | txqccea | Compute child care expense allowance (Quebec) |
| | | txqitax | Compute taxable income (Quebec) |
| | | txqhstr | Apply tax transfers between head and spouse (Quebec) |
| | | txqcalc | Calculate Income Tax (Quebec) |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txont | | Compute Ontario provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txman | | Compute Manitoba provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txsask | | Compute Saskatchewan provincial taxes |
| | txalta | | Compute Alberta provincial taxes |
| | txbc | | Compute BC provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| txctc | | | Compute child tax credit |
| txfstc | | | Compute federal sales tax credit |
| gai | | | Stub routine for new post-tax system programs |
| memo1 | | | Compute memo items for reporting |
| ctmod | | | Compute commodity taxes |
| | <i>ctfx</i> | | Compute commodity taxes for FAMEX spending unit |
| | | <i>ctfxd</i> | Compute commodity taxes for FAMEX spending unit (detailed) |
| | | <i>ctfxs</i> | Compute commodity taxes for FAMEX spending unit (simple) |
| memo2 | | | Compute consumable income, etc. |
| cceopt | <i>pass2</i> | | Zero CCE for young kids if optimal recalculate UI with child benefits in place |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| classu | | | Compute User Defined Reporting Variables |

SUMMARY

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

Following 1997 reform, starting in 1998 in the model, the Quebec family allowance, the Quebec new born allocation and the Quebec availability allowance are now calculated only if QFATCOPT is set to 1, otherwise the Quebec Family Allowance Tax Credit is calculated in txqcalc.

Program Description

The federal Family Allowances program was designed to provide taxable benefits to help meet the costs of raising children under the age of 18 who are resident in Canada and are maintained by their parent(s) or guardian. At least one parent or guardian must be either a Canadian citizen or a permanent resident, visitor or holder of a Minister's Permit under the Immigration Act and have been legally admitted into Canada. The parent(s) or guardian must make application for benefits and their income must be subject to Canadian income tax. Benefits cease to be payable with regard to self-supporting children (i.e. children who begin to earn a taxable income).

Family allowance benefits are generally paid at a uniform rate across Canada. However, provinces may, within certain limits, vary the amount of Family Allowances that the federal government pays to their residents according to the age and/or number of children in a family. Alberta and Quebec are the only provinces that vary the rate. Alberta varies payment based on the age of the child while Quebec varies payment based on the number of children in the family and then adds a supplement based on the age of the child.

The province of Quebec maintains a separate but linked program under the Quebec Family Allowances Act which provides for benefits to the parent or guardian of an unmarried child under the age of 18 who is not a ward of the province. The applicant must have resided in Quebec for at least one month or be paying Quebec income tax. In 1984 benefits payable were not subject to Quebec income tax, however benefits paid with respect to children aged 16 and 17 were subject to federal tax. Persons in receipt of federal family allowances automatically receive the provincial benefits without application. This program also has a supplement for handicapped children; however, this is not modeled in the SPSM.

The Quebec Newborn Allowance was implemented in 1988 and is modeled in famod from that year. Benefits are paid per child and rise from \$500.00 for each of the first two children to \$3000.00 for each subsequent child.

An option permit the user to randomly increase the rank of first and second child in order to

reflect the rank distribution of child observed by the RRQ. The program end in October 1997 and is replaced by a Child tax allocation not modeled yet.

SPSM Implementation

The famod function calculates federal and provincial family allowances based on the age of children and number of children in a family. Residency requirements are deemed to have been met in all cases as is the requirement of non self-sufficiency. The function always allocates family allowances as income of the mother unless one is not present in the nuclear family. This temporary allocation is subsequently assigned to the spouse having the higher net income in txinet and txqinet. The function outputs values for federal(imffa) and provincial(impfa) family allowances as well as the value of taxable family allowances(imtfa) for use in other functions. The function loops through each nuclear family in a household.

The function first calculates federal and provincial family allowances for residents of Quebec. Counts of numbers of children by age group are calculated and used to index into two look-up tables for federal and provincial programs as well as to scale the federal age supplement. The values are then aggregated into two local variables, taxable family allowances and federal family allowances. Taxable family allowances are equal to the sum of federal benefits for each child (as determined by that child's rank in the family) plus the federal supplement for each child aged 12-17 plus the portion of Quebec family allowances paid with respect to children aged 16 and 17.

The calculation of Quebec allowances in famod includes the Quebec availability allowance from 1988 forward. It is paid as a supplement to the Quebec family allowances and is represented by the variable imqaafa. Quebec allowances also include the calculation of the Quebec Newborn Allowance, represented by the variable imqnbfa. This benefit is calculated on the following schedule for 1988:

| Child Number | Birth | Age 1 | Age 2 | Total |
|---------------------|--------------|--------------|--------------|--------------|
| 1 | 500 | 0 | | 500 |
| 2 | 500 | 0 | | 500 |
| 3+ | 375/Quarter | 375/Quarter | | 3,000 |

Interpretation

Results obtained from the SPSM with respect to family allowance benefits differ from Health and Welfare Canada administrative data. Overall the SPSM reports 96.7% of the 1984 calendar year average health and welfare total dollars and 97.3% of children for whom benefits are received.

The SPSM has few children in part due to the non-coverage of Yukon, N.W.T., and native reservations, all of which have younger than average populations and larger than average family sizes (approximately 1.5% of children). A second source of underestimation is the special allowances for foster children and children in welfare agencies. The SPSM does not include these children or their benefits which account for .7% of total family allowances. Further, the SPSM does not take into account payments made outside Canada, although the effect of these on the total is insignificant (less than .1%).

The family allowance program requires parents of 'self-supporting' children to notify Health and Welfare Canada and have the benefits with respect to these children suspended. There are about 52,000 of such children aged 16 and 17 on the SPSD with respect to whom benefits are allocated. It is unknown how many of the parents of these children actually report their situation to Health and Welfare Canada. Lastly, no residency check is imposed on the parents and this will have an insignificant effect. It is assumed that the number of children turning age 18 during the calendar year is balanced by the number of new births. That is, full year family allowance benefits paid with respect to children born during 1984 will be overestimates to the same degree that an underestimate arises for benefits not given to 18 year olds who were 17 during calendar 1984.

Relation to Other SPSM Routines

The famod function is called by drv. The function outputs two variables that are used in txinet for deciding which parent will claim the family allowances for tax purposes: taxable family allowances(nftfa) and number of family allowance children(nfnfach).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AFAC1 | Alberta FA benefit per child aged 0 - 6 |
| AFAC2 | Alberta FA benefit per child aged 7 - 11 |
| AFAC3 | Alberta FA benefit per child aged 12- 15 |
| AFAC4 | Alberta FA benefit per child aged 16- 17 |
| FAFLAG | Family allowance flag |
| PFACFLAG | Use provincial configuration flag |
| QAAFA | Quebec availability allowance (supplement) [parity,\$] |
| QAAFAFLAG | Availability Allowance: Supplement to Quebec FA |
| QFAIFLAG | Quebec inclusion of federal family allowance in income flag |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFFSL | Federal family allowance: Quebec Configuration[parity,\$] |
| QFPSL | Quebec provincial family allowance [parity,\$] |
| QFS | Federal supplement per child 12-17 in Quebec configuration |
| QNBFA | Quebec newborn family allowance [parity,age] |
| QNBFAFLAG | Quebec newborn family allowance flag |
| QNBPOFLAG | Quebec newborn family allowance phase out flag |
| QNBPOPYR | Quebec newborn family allowance phase-out year proportion |
| QNBPOYR | Quebec newborn family allowance phase out year |
| QNRFLAG | Quebec newborn family random increase of child rank |
| STDFA | Standard federal family allowance per child |
| TARGETYEAR | Year of analysis |
| INPUT VARIABLES: | |
| hdprov | Province |
| hhnnf | Number of nuclear families in household |

| | |
|----------|---|
| idage | Age |
| idrand | Random numbers [array] |
| idsex | Sex |
| nfinch | First child in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|---------|---|
| imffa | Federal portion of family allowances |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| impfa | Provincial family allowance |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqnbfa | Quebec newborn Allowance |
| imqtfa | Quebec taxable family allowances |
| imtfa | Taxable family allowances |
| nfineld | Eldest person in nuclear family [pointer] |

fmfxopen Routines for reading FAMEX (.fxv) file

SUMMARY

The purpose of this maintenance function is to load the FAMEX variables and to grow them by the corresponding database adjustment parameter.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|---------------|--|
| CTCFALC | FAMEX reporting error adjustment: Alcohol [prov] |
| CTCFGAS | FAMEX reporting error adjustment: Gasoline [prov] |
| CTCFTOB | FAMEX reporting error adjustment: Tobacco [prov] |
| CTTXRM | Base year commodity tax removal factor [com x prov] |
| GFCQP | Adjustment Factor: CPP/QPP contributions |
| GFFABD | Adjustment Factor: Account balancing difference |
| GFFMX | Adjustment Factor: consumer expenditure categories |
| [commodity] | |
| GFFOMR | Adjustment Factor: Other money receipts |
| GFGVPEN | Adjustment Factor: Government pension plan contributions |
| GFINTAX | Adjustment Factor: Income taxes |
| GFIPAC | Adjustment Factor: Life insurance premiums and annuity |
| contributions | |
| GFNCAL | Adjustment Factor: Net change in assets and liabilities |
| GFNES | Adjustment Factor: Not elsewhere stated |

| | |
|------------|---|
| GFPRTAX | Adjustment Factor: Property tax |
| GFPVPEN | Adjustment Factor: Private pension plan contributions |
| GFRECOM | Adjustment Factor: Real estate commissions |
| GFRFEES | Adjustment Factor: Registration and license fees |
| GFRRSPT | Adjustment Factor: Total RRSP contributions (FAMEX) |
| GFTPTAX | Adjustment Factor: Transfer of property taxes |
| GFUIC | Adjustment Factor: UI contributions |
| KEEPNEGEXP | Retain negative expenditures in FAMEX |
| DBVERSION | Version of the database (x100) |
| INPFXXV | Name of FAMEX vector file (in) [string] |
| INPSPD | Name of SPSD file (in) [string] |

INPUT VARIABLES:

| | |
|----------|--|
| fhbfver | SPSD/M binary format version (x100) |
| fhdbver | SPSD/M database/year version (x100) |
| fhfiltyp | File type (extension) [string] |
| fhnum | Number of numbers in the file |
| frclhvh | Cloning factor for FAMEX exp. vector |
| frcpp | Cpp - qpp contributions |
| frfabd | Account balancing difference |
| frfomr | Other money receipts |
| frgvpen | Gvt pension plan contributions |
| frintax | Income taxes |
| frio | Expenditure on the 40 I/O categories [array] |
| fripac | Life ins prems and annuity contributions |
| frncal | Net change in assets and liabilities |
| frnes | Not elsewhere stated |
| frprtax | Property tax |
| frpvpen | Private pension plan contributions |
| frrecom | Real estate commissions |
| frifees | Registration and license fees |
| frrgvlot | Ratio of spending on government lotteries |
| frrrspt | Total RRSP contributions (FAMEX) |
| frtptax | Transfer of Property taxes |
| fruic | UI contributions |
| hdprov | Province |

OUTPUT VARIABLES:

| | |
|----------|---|
| fhhash | Hashed code of header information |
| fxclhvh | FAMEX cloning factor |
| fxcpp | Cpp - qpp contributions |
| xfabd | Account balancing difference |
| xfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxintax | Income taxes |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxncal | Net change in assets and liabilities |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |
| fxrecom | Real estate commissions |
| fxrifees | Registration and license fees |
| fxrgvlot | Ratio of spending on government lotteries |
| fxrrspt | Total RRSP contributions (FAMEX) |

| | |
|----------|---|
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| fxuic | UI contributions |
| hdfrstfx | First household in FAMEX group flag |
| hdlastfx | Last household in FAMEX group flag |
| hdwgtfx | Sum of household weight for FAMEX group |

fmspopen Routines to read SPSD file (.spd)

SUMMARY

The purpose of this maintenance function is to load the SPSD variables and to grow them by the corresponding database adjustment parameter. In addition the method of conversion for converted variables is applied. The logic for differential growth of CPP is also applied in this function. The actual code in this function is proprietary and is not released with the SPSD/M product.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|-----------|--|
| GFADDDDED | Growth Factor: Additional deductions from net income (256) |
| GFALEXP | Growth Factor: Other allowable employment expenses (229) |
| GFCAPGEX | Growth Factor: Capital gains exemptions (254) |
| GFCARRY | Growth Factor: Carrying charges (221) |
| GFC CET | Growth Factor: Child care expenses associated with child |
| GFC CETT | Growth Factor: Child care expenses (Limit A, Form T778) |
| GFCGLESS | Growth Factor: TCG Less Cap Gains Ded on Cap Prop Gifts |
| GFCCHARIT | Growth Factor: Charitable donations (340) |
| GFCLOSS | Growth Factor: Allowable other years capital loss (253) |
| GFCPP65 | Growth Factor: CPP for age 65 |
| GFCPP66 | Growth Factor: CPP for age 66 |
| GFCPP67 | Growth Factor: CPP for age 67 |
| GFCPP68 | Growth Factor: CPP for age 68 |
| GFCPP69 | Growth Factor: CPP for age 69 |
| GFCPP70 | Growth Factor: CPP for age 70 |
| GFCPP71 | Growth Factor: CPP for age 71 |
| GFCPP72 | Growth Factor: CPP for age 72 |
| GFCPP73 | Growth Factor: CPP for age 73 |
| GFCPP74 | Growth Factor: CPP for age 74 |
| GFCPP75 | Growth Factor: CPP for age 75 |
| GFCPPG75 | Growth Factor: CPP for age > 75 |
| GFCPPL65 | Growth Factor: CPP for age < 65 |

GFDALIMO Growth Factor: Alimony paid (220)
 GFDISOTH Growth Factor: Disability amount for dependants (318)
 GFDISSLF Growth Factor: Disability amount for self (316)
 GFDUES Growth Factor: Union and professional dues (212)
 GFEMPLO Growth Factor: Employee home relocation loan dedn (248)
 GFEXPLOR Growth Factor: Exploration and development expenses (224)
 GFFDSFT Growth Factor: Foreign tax credit applied to surtax (511)
 GFFORAVG Growth Factor: Forward averaging amount withdrawal (237)
 GFFORINC Growth Factor: Net foreign income (508)
 GFFORTX Growth Factor: Foreign tax paid (507)
 GFGIFTS Growth Factor: Gifts to Canada/provinces/culture (342)
 GFGSTREB Growth Factor: GST rebate (457)
 GFHOMSTU Growth Factor: College residence/resident homeowner
 assistance (558)
 GFIALIMO Growth Factor: Alimony Income
 GFICAPG Growth Factor: Capital gains (actual) (127 * 1.5)
 GFIDIV Growth Factor: Dividend income (actual) (120 / 1.5)
 GFIEMP Growth Factor: Employment income [province,sex]
 GFIINT Growth Factor: Interest income (121)
 GFILLOSS Growth Factor: Business investment losses (217)
 GFINOGV Growth Factor: Other government income (non-taxable)
 GFINOTH Growth Factor: Other money income (non-taxable)
 GFIOINV Growth Factor: Other investment income with net rental
 GFIPENS Growth Factor: Pension income (115)
 GFISA Growth Factor: Social assistance income
 GFISEFM Growth Factor: Self-employed income - farming
 GFISENF Growth Factor: Self-employed income - non-farming
 GFITC Growth Factor: Federal investment tax credits (412)
 GFITOGV Growth Factor: Other government income (taxable)
 GFITOTH Growth Factor: Other non-government income (taxable)
 GFITRRSP Growth Factor: Taxable RRSP withdrawals
 GFIVETP Growth Factor: Veterans Pensions
 GFWORKC Growth Factor: Worker's compensation
 GFLABTXG Growth Factor: Labour funds tax credit (414)
 GFMEDGRO Growth Factor: Medical expenses, gross (330)
 GFMINCAR Growth Factor: Minimum tax carryover (504)
 GFMOVEXP Growth Factor: Imputed moving expenses (219)
 GFMSCHPD Growth Factor: Manitoba school taxes paid
 GFNCLOS Growth Factor: Allowable other years non-capital loss (252)
 GFNORTH Growth Factor: Northern deductions (255)
 GFOTHDED Growth Factor: Other deductions from total income (232)
 GFOTHPE Growth Factor: Other dependant exemptions (305)
 GFPARTLO Growth Factor: Limited partnership losses (251)
 GFPOLCON Growth Factor: Federal political contributions (409)
 GFPROPTX Growth Factor: Net property taxes paid (556)
 GFPRVFTC Growth Factor: Provincial foreign tax credit (Form T2036)
 GFPRVPOL Growth Factor: Provincial political contributions (565)
 GFRENTPD Growth Factor: Total rental payments (555)
 GFRPP Growth Factor: Registered pension plan contributions (207)
 GFRRSP Growth Factor: RRSP contributions (208)
 GFSAPRED Growth Factor: Predicted benefits from Social Assistance
 GFSCFCQP Growth Factor: SCF CPP
 GFSCFCTC Growth Factor: Child tax credit
 GFSCFFTC Growth Factor: Federal tax credit
 GFSCFINT Growth Factor: SCF interest income
 GFSCFOAS Growth Factor: Old age security
 GFSCFPTC Growth Factor: SCF provincial tax credits

GFSCFSA Growth Factor: SCF social assistance
 GFSCFUIB Growth Factor: Unemployment insurance benefits
 GFSTKDED Growth Factor: Stock option deduction (249)
 GFTUITN Growth Factor: Tuition fees (320)
 GFUIPRED Growth Factor: Predicted benefits from UI
 IEMPADJ Adjustment Factor: Employment income [employment income
 breaks,province]
 IEMPBRK Adjustment Factor: Income breaks for income
 adjustment[employment income breaks]
 IMPCQPOPT Imputation method, CQP [1=none 2=rank]
 IMPINTOPT Imputation method, Interest [1=none 2=imputed]
 IMPSAOPT Imputation method, SA [1=none 2=rank]
 IMPUIBOPT Imputation method, UI [1=none 2=rank]
 PURR Ratio current:base unemployment rate [prov]
 UIBASEYRMAX Maximum insurable earnings for base year
 UITARGYRMAX Maximum insurable earnings for target year
 FXVFLAG Read FAMEX expenditure vector file
 INSPSD Name of SPSD file (in) [string]
 WGTFLAG Read weight file

INPUT VARIABLES:

fhbfver SPSD/M binary format version (x100)
 fhdbver SPSD/M database/year version (x100)
 fhfiltyp File type (extension) [string]
 fhnhh Number of households in the file
 hrclohh Number of SCF clones
 hrevmv Expenditure vector matching variable
 hrprov Province
 hrtenur Tenure
 hrurb Size of urban area
 idage Age
 idccqp Converted CPP/CQP benefit
 idcintim Converted interest income (imputed)
 idcsa Converted social assistance
 idsex Sex
 irage Age
 irccqp Converted CPP/CQP
 ircfpub SCF CF publication flag
 ircfrh Relation to census family head
 ircfseq Census family sub-sequence number
 ircintim Converted interest income (imputed)
 ircluflg Common law union flag
 ircsa Converted social assistance
 ircuib Converted UI benefit
 iredlev Educational level
 irefpub SCF EF publication flag
 irefrh Relation to economic family head
 irefseq Economic family sub-sequence number
 irestat Educational status
 irhhrh Relation to household head
 irieflag Institutionalized elderly flag
 irimmi Years since immigrant arrival
 irind Industry
 irinseq Individual sub-sequence number
 irlfst Labour force status
 irlyfp Full or part-time last year
 irlystr Stretches of unemployment last year

| | |
|------------|-------------------------------------|
| irlyun | Weeks unemployed last year |
| irlyww | Weeks worked last year |
| irmarst | Marital status |
| irnonlf | Main activity for non-lf persons |
| irocc | Occupation |
| irrklyun | Raking foundation: weeks worked |
| irrklyww | Raking foundation: weeks unemployed |
| irscfflg | SCF high-income preservation flag |
| irschtp | School type |
| irsex | Sex |
| irsynthi | Synthetic high income person |
| m0val | Money item value |
| m1val | Money item value |
| m2val | Money item value |
| m3val | Money item value |
| urbtyp | Claim type |
| urdivwk | New EI Variable |
| ureff | Base year effective weekly benefit |
| urern | Base year insurable weekly earnings |
| urexhas | Exhaustee flag |
| urgotpa | |
| urhrwk | New EI Variable |
| urmtyp | Claim type |
| urnere | New EI Variable |
| urothbr | New EI Variable |
| urothwk | New EI Variable |
| urrpeat | Repeat claim flag |
| urstart | Week claim established |
| urtpcng | Type change flag |
| urtrnbr | Training benefit weekly rate |
| urtrnwk | Weeks of training benefits |
| uruer | Local unemployment rate (x10) |
| urweeks | Claim weeks of benefits |
| urwork | Weeks of work prior to claim |
| ury1 | |
| ury2 | |
| ury3 | |
| ury4 | |
| ury5 | |
| wrwgt | Household weight (float) |
| CANCELFLAG | Cancellation request flag |
| DBVERSION | Version of the database (x100) |
| WGTTOT | Sum of weights on tax file |

OUTPUT VARIABLES:

| | |
|---------|---|
| fhash | Hashed code of header information |
| hdclohh | Number of SCF clones |
| hdevmv | Expenditure Vector Matching Variable |
| hdnpers | Number of persons in household |
| hdprov | Province |
| hdseqhh | Household sequence number |
| hdtenur | Tenure |
| hdurb | Size of urban area |
| hdwgthh | Household weight |
| hhnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idalexp | Other allowable employment expenses (229) |
| idcapgex | Capital gains exemptions (254) |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idccqp | Converted CPP/CQP benefit |
| idcfpub | SCF CF publication flag |
| idcfrh | Relationship to census family head |
| idcfseq | Census family sub-sequence number |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idcintim | Converted interest income (imputed) |
| idcross | Allowable other years capital loss (253) |
| idcluflg | Common-Law union flag |
| idcsa | Converted social assistance |
| idcuib | Converted UI benefit |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idedlev | Educational level |
| ideducm | Eligible months of education allowance |
| idefpub | SCF EF publication flag |
| idefrh | Relationship to economic family head |
| idefseq | Economic family sub-sequence number |
| idemplo | Employee home relocation loan dedn (248) |
| idestat | Educational status |
| idexplor | Exploration and development expenses (224) |
| idext | Extra numbers [array] |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idgstreb | GST rebate (457) |
| idhhrh | Relationship to head of household |
| idhomstu | College res/resdnt homeowner assist (558) |
| idialimo | Alimony income received |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idimmi | Years since immigration |
| idind | Industry |
| idinogv | Other government income (non-taxable) |
| idinoth | Other money income (non-taxable) |
| idinseq | Individual sub-sequence number |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisa | Social assistance income |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| iditogv | Other government income (taxable) |

| | |
|-----------|--|
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idivetp | Veterans pensions and allowances |
| idiworkc | Workers compensation benefits |
| idlabtxg | Gross Labour funds bought (413) |
| idlfst | Labour force status |
| idlyfp | Last year full/Part time |
| idlystr | Last year stretches unemployed |
| idlyun | Weeks unemployed |
| idlyww | Weeks worked |
| idmarst | Marital status |
| idmedgro | Medical expenses, gross (330) |
| idmincar | Minimum tax carryover (504) |
| idmovexp | Imputed moving expenses (219) |
| idmschpd | Manitoba school taxes paid |
| idnage | Age |
| idnclos | Allowable other years non-capital loss (252) |
| idninco | No income flag (SPSD variables) |
| idnonlf | Major non-LF activity |
| idnorth | Northern deductions (255) |
| idocc | Occupation |
| idothded | Other deductions from total income (232) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idproptx | Net property taxes paid (556) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrentpd | Total rental payments (555) |
| idrkllyun | Raking foundation: weeks unemployed |
| idrkllyww | Raking foundation: weeks worked |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| idscfcqp | CPP/QPP income (SCF) |
| idscfctc | Child tax credit |
| idscfflg | SCF high-income preservation flag |
| idscfftc | Federal tax credit |
| idscfint | Interest income (SCF) |
| idscfoas | Old age security |
| idscfptc | Provincial tax credits as reported on SCF |
| idscfsa | Social assistance income (SCF) |
| idscfuib | Unemployment insurance benefits |
| idschtp | School type |
| idsex | Sex |
| idstkded | Stock option deduction (249) |
| idsynthi | Synthetic high income person |
| idtuitn | Tuition fees (320) |
| iduipred | Predicted amount of UI received |
| iduirank | Predicted ranked likelihood of getting UI |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucexhas | Exhaustee flag |
| ucgotpa | Received paternity benefits |

| | |
|---------|--|
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucuero | Local unemployment rate (x10)-original value |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucy1 | Weeks on UI in first year before claim |
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

gai Compute new refundable credits or guarantees

SUMMARY

This is a stub function for use by glass-box users who wish to incorporate a new program that does not affect current programs in the tax system (i.e. a new refundable tax credit). It is called by drv after all taxes have been calculated.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|------------------------|
| imiosa | Other SA or guarantees |
|--------|------------------------|

SUMMARY

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested. The SPSM gis function is based on the age of the individual and the years since immigration as well as family net income and family type. The function can calculate GIS, SPA, Extended SPA, and Widowed SPA benefits. The functions contain one sub-function, gissub, which calculates the income on which GIS/SPA benefits are tested.

The GIS/SPA benefits are zeroed out if the Seniors Benefit is turned on. When activated, the Seniors Benefit takes precedence over OAS/GIS. Persons age 60 or over in May 1996 may elect to receive OAS/GIS rather than the seniors benefits if their benefits are higher.

Program Description

The Guaranteed Income Supplement is a monthly, non-taxable, income tested benefit paid to residents of Canada who are in receipt of a basic Old Age Security pension. Recipients must re-apply annually. The Guaranteed Income Supplement is not payable outside of Canada for periods of longer than six months. Income testing is based on net income as defined for income tax purposes with the exception of Old Age Security benefits. In the case of a married couple, including common-law, the combined income of the pensioner and his or her spouse is taken into account. Where the individual or couple have an income above a specified amount, the Guaranteed Income Supplement is reduced at a rate of either \$1 for every \$2 of income, or \$1 for every \$4 of income, dependent upon the individuals' marital status and the benefit status of their spouses (if present).

The Guaranteed Income Supplement was established in 1966 to provide monthly benefits to OAS pensioners born on or before December 31, 1910, whose income is below a specified amount. For 1967, the monthly benefit was \$40 and set at 40 percent of the OAS pension thereafter. The Guaranteed Income Supplement has been changed on various occasions, the most important of which were as follows: 1970, which extended GIS to all OAS beneficiaries who met the income criterion; 1972, provided for annual indexation of GIS based on the CPI; 1973, changed indexation to quarterly from annual; 1977, provided the payment of GIS to partial OAS recipients; 1984, provided an increase in maximum GIS benefits to recipients of partial OAS pensions in the amount of the difference between full and partial OAS benefits.

The Spouse's Allowance is a monthly benefit designed to recognize the difficult circumstances faced by those couples living on the pension of only one spouse, and by many widowed persons. The Allowance is payable to the 60 to 64 year old spouse of an Old Age Security pensioner as well as to any low-income widow or widower age 60 to 64, providing the potential recipient has been a resident of Canada for at least 10 years after reaching age 18. This benefit is income-tested based upon the combined income of both the beneficiary

and his/her spouse and must be re-applied for annually. Benefits are not considered as income for income tax purposes and are not payable outside Canada for periods of more than six months.

The Spouse's Allowance came into effect October 1, 1975 and provided for the payment of benefits to persons aged 60 to 64 inclusive who are married to and living with an OAS pensioner. The amount was set at a sum equal to the monthly OAS pension plus the maximum monthly GIS at the married rate. Significant changes to the Spouse's Allowance were made in 1977 with the provision for partial Spouse's Allowance using the same criterion as for OAS; 1979, the extension of the Spouse's Allowance to include surviving spouses of deceased Old Age Security pensioners; 1985, with the provision for Spouse's Allowance to be paid to all widows/widowers age 60 to 64 regardless of deceased spouse's prior pension status.

The GIS, and SPA programs have been designed with the overall income of elderly Canadians in mind and ensure that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. Because the programs are interrelated, a better understanding is facilitated by discussing them together across the five different family types listed below and discussed in turn. These categories define the basic structure of the SPSM implementation of these programs. In these descriptions pensioner is understood to mean a recipient of either full or partial OAS benefits.

| GIS/SPA Type | Family Status |
|---|---|
| 1. Single Pensioner: | Unattached Individual, OAS Pensioner |
| 2. Widowed Pensioner: | Unattached Individual, Age 60-64, Widowed |
| 3. Married 2 Pensioner: | Married Couple, Both OAS pensioners |
| 4. Married pensioner with SPA spouse: | Married Couple, OAS Pensioner with SPA recipient |
| 5. Married pensioner with non-pensioner spouse: | Married couple, 1 OAS pensioner, spouse ineligible for OAS or SPA |

Single Pensioner

If an individual is receiving a full Old Age Security Pension he or she may be eligible for the federal Guaranteed Income Supplement (GIS). GIS is an income tested benefit payable to OAS beneficiaries with little or no income beyond to the basic OAS benefit. In the case where a beneficiary of a full OAS pension has no additional income or income of up to a maximum of \$24 per year, his/her GIS benefit will be the maximum. For every two dollars of income in excess of \$24 annually, the GIS benefit is reduced by one dollar until the benefit is reduced to zero.

In the case where the beneficiary is eligible for only partial OAS benefits, but has little or no other income (again, to a maximum of \$24 per year), supplementary GIS is available. Supplementary GIS makes up the difference between the partial OAS benefit that the beneficiary is receiving and full OAS benefits. Thus, a beneficiary with 20 years of residence in Canada would receive 30/40 of a full OAS pension and supplementary GIS benefits up to an amount equivalent to 10/40 of a full OAS pension. This ensures that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. In addition to the partial OAS pension and the supplementary GIS benefits, an individual may also receive the regular GIS benefit. Both the regular and the supplementary GIS benefits are income tested and reduced at a rate of one dollar for every two dollars of income in excess of \$24 per year.

Widowed pensioner

The Spouse's Allowance is an income-tested benefit payable to individuals who are between 60 and 65 years of age and are spouses of Old Age Security beneficiaries. In order to qualify for this benefit, the applicant must meet the same residence requirements set out for the basic Old Age Security Pension. The guarantee for the benefit is equivalent to the sum of the full basic Old Age Security Pension plus the Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of the beneficiary's monthly income or the couple's combined monthly income until the OAS-equivalent is reduced to zero. At that point the GIS portion reduces at the rate of \$1 for every \$4 of combined income until benefits are reduced to zero.

If an individual receiving Spouse's Allowance becomes a widow or widower, they are then eligible for an Extended Spouse's Allowance until they reach the age of 65 at which time they will become eligible for a basic Old Age Security Pension and the Guaranteed Income Supplement. The amount of the Extended Spouse's Allowance is somewhat higher than the regular Spouse's Allowance to account for the fact that the beneficiary is now in a single income family.

In addition to the regular and Extended Spouse's Allowances, benefits exist for widows and widowers between 60 and 65 years of age whose spouse died prior to becoming a pensioner. The Widowed Spouse's Allowance pays benefits at the same rate as the Extended Spouse's Allowance. Both the Extended and Widowed Spouse's Allowances are reduced by \$3 for every \$4 of monthly income until the OAS-equivalent portion is reduced to zero and then by \$1 for every additional \$2 of monthly income until the GIS-equivalent portion is reduced to

zero.

The Spouse's Allowance is not considered as income for income tax purposes but may, however, affect taxes indirectly via the spousal exemption amount.

Married Couple, Both Pensioners

GIS eligibility for couples is first based upon receipt of OAS. If the applicant is not eligible for OAS, then he or she is not eligible for GIS. Once eligibility for GIS has been established, then the rate of recovery or rate at which GIS is reduced because of additional income, must be established. For two pensioner couples, where both are OAS beneficiaries, GIS is reduced by one dollar for every four dollars of the couple's combined monthly income in excess of \$48 per year. In 1984, the maximum regular GIS payable to a married beneficiary was less than that payable to a single beneficiary. As in the case of a single beneficiary receiving only partial OAS benefits, a supplementary GIS benefit is available which makes up the difference between partial and full OAS benefits.

Married Pensioner with SPA Spouse

GIS is payable to the pensioner at the same rate as is paid to an individual in married couple where both spouses are pensioners. The amount of SPA benefit is equivalent to the combination of the full basic Old Age Security Pension and Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of combined monthly income (75%) until the OAS-equivalent is reduced to zero. At that point both the remaining portion of the Spouse's Allowance, and the pensioner's Guaranteed Income Supplement are each reduced by \$1 for every additional \$4 (50%) of the couple's combined monthly income.

The benefits payable to a pensioner with a given income could vary depending on whether the couple had applied for SPA; the benefit being higher for single pensioner couples. To ensure benefits are equal in these cases the SPA couple's benefits begin to be reduced at the effective rate of 25%, \$1 for each \$4 of family income after the crossover point. This is done by holding the pensioner's benefits fixed from the crossover point until the SPA benefits are reduced to zero; then the pensioners benefits continue to be reduced at the same married rate (see following figure).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

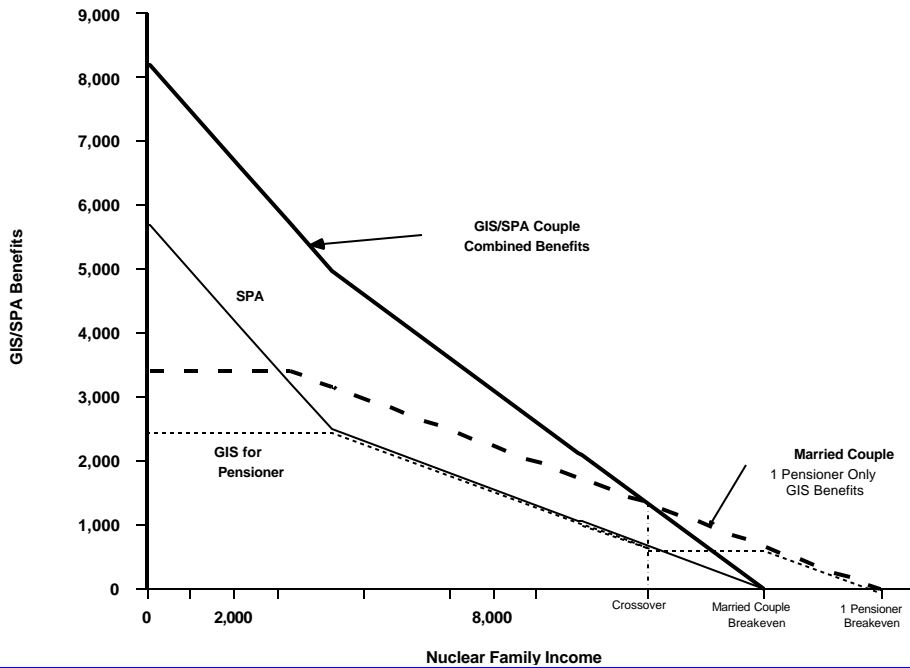


Figure 2 GIS/SPA Benefits for Married Pensioner with Non-Pensioner Spouse

Married Pensioner with Non-Pensioner Spouse

In the case of a pensioner whose spouse is under 60 years of age or is a recent immigrant, and therefore not eligible for OAS, GIS or SPA, the pensioner receives GIS at the higher single rate and benefits are reduced \$1 for every \$4 of the couple's combined monthly income with the first reduction being made only when their combined monthly income exceeds an amount equivalent to basic OAS plus \$4 per month. (see figure above)

SPSM Implementation

The gis function determines benefits based on the age of the individual, the years since immigration as reported at the time of the SCF survey in April 1985, combined family income, and family type. The function makes use of the imoasres, imoaspar variables created in the oas function to determine residential eligibility.

The function initially performs some screenings and pointer assignments for efficiency, and then makes a call to the gissub function to determine the previous years income, which will be used when calculating GIS/SPA benefits. This sub-function adds together all the components of total income listed below and multiplies them by a deflator PYINC to estimate the value of the previous year's income.

| | |
|----------------------|--|
| Net Income = PYINC * | Deflator To Simulate Previous Years Income |
| imicapgt | Taxable Capital Gains |
| + imidivt | Dividends Received |
| + idiint | Investment Income |

| | |
|-----------|--------------------------------------|
| + idiemp | Employment Income |
| + idisenf | Non-Farm Self Employment Income |
| + idisefm | Farm Self Employment Income |
| + idioinv | Other Investment Income |
| + iditoh | Other Income |
| + idicqp | CPP/QPP Benefits |
| + idipens | Private Pension Income |
| + iditogv | Other Taxable Government Transfers |
| + imiuib | Unemployment Insurance Benefits |
| - imalexp | Other allowable Employment Expenses |
| - imcqpc | CPP/QPP Contributions |
| - imuic | Unemployment Insurance Contributions |

Benefits are then calculated in each of the five groups discussed above. Every individual is assigned a value for the variables imoldtyp and ingistyp which define the type of pensioner couple and are used in the gist function.

The GIS supplement for the OAS shortfall for immigrants is calculated conditional on the setting of GISOASFLAG in all cases except the SPA recipient in a married couple. This should be set to one in years 1984 and later. No adjustment is made to account for the first quarter in 1984 for which no shortfall adjustment was made.

Take-up rates for GIS and SPA benefits are optionally applied depending on the value of the GISTURFLAG parameter. The rates are applied to individuals and to one spouse of a married couple. The algorithm assumes that the take-up rate look-up table margins are all dollar denominated GIS or SPA benefit levels.

Relation to Other SPSM Routines

GIS and SPA depends on the input parameters for basic GIS/SPA benefits and various variables calculated in the oas function. The function also makes use of parameters derived in the mpc function. The mpc function also ensures that GIS is not calculated without OAS being calculated first. The calculation of OAS and other modeled variables occurs prior to and effects the calculation of GIS and related GIS 'top-up' programs in the gist function. The gist function is called after txprov (calculation of provincial income taxes) by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-------|-----------------------------------|
| BESPA | Basic GIS portion of extended SPA |
| BGISM | Basic GIS - married |

| | |
|----------------|---|
| BGISS | Basic GIS - single |
| BOAS | Basic OAS |
| ESPAT | Extended SPA take-up rate by benefit level [benefit,rate] |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISCT | GIS take-up rate: pensioner couple by benefit level |
| [benefit,rate] | |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISOASFLAG | 1984 GIS top-up to OAS residence shortfall flag |
| GISOT | GIS take-up rate: one pensioner couple by benefit level |
| [benefit,rate] | |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| GISRRS | Basic GIS reduction rate: single pensioners |
| GISST | GIS take-up rate: single pensioner by benefit level |
| [benefit,rate] | |
| GISTURFLAG | GIS take-up flag: apply 5 take-up tables |
| PYINC | Deflator to calculate previous year income |
| SPAOSRR | OAS portion of SPA taxback rate |
| SPARL | SPA reduction point: one married/ widowed |
| SPAT | SPA take-up rate by benefit level [benefit,rate] |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |

INPUT VARIABLES:

| | |
|----------|--|
| hhnfnf | Number of nuclear families in household |
| idage | Age |
| idicqp | CPP/QPP income (114) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmarst | Marital status |
| idrand | Random numbers [array] |
| imalexp | Allowable employment expenses |
| imcqpcc | CPP/QPP contributions |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imioas | OAS benefits |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |
| imuic | UIC contributions |
| nfageeld | Age of eldest in nuclear family |
| nfnield | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imigis | GIS benefits |

| | |
|----------|--------------------------------|
| imispa | Spouse's allowance |
| imninc | No income flag |
| imoldtyp | Type of GIS/SPA nuclear family |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |

gist Compute Provincial GIS top-ups for elderly

SUMMARY

The gist function calculates benefits for eight provincial GIS supplementation programs in eight provinces; Newfoundland, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. The function requires that both OAS and GIS be calculated first. All provincial senior's programs within SPSM are in this function. Please note that the provincial programs here are not exhaustive, but all major benefits are covered.

Program Description

Eight provinces provide cash benefits to pensioners in receipt of federal OAS, GIS, and in some cases, SPA benefits. The eight programs differ in terms of the level of benefits payable, eligibility requirements, etc. Each program listed below is modeled and documented independently.

| | |
|------------------|--|
| Newfoundland | Low-income Seniors Benefit |
| Nova Scotia | Special Social Assistance |
| New Brunswick | Low-income Seniors Benefit |
| Ontario | Guaranteed Annual Income System (GAINS-A) |
| Ontario | Sales Tax Grant Program |
| Ontario | Property Tax Grant Program |
| Manitoba | Supplement for Pensioners (55+) |
| Saskatchewan | Income Plan (SIP) |
| Alberta | Assured Income Plan AAIP |
| Alberta | Alberta Seniors Benefit |
| Alberta | Widow's Pension |
| British Columbia | GAIN for Seniors Supplement (Guaranteed Available Income for Need) |

Newfoundland Low-Income Seniors Benefit

A benefit is given to seniors (aged 65 and over) with annual family income less than NFSBTD. The maximum benefit NFSBBAS is reduced by NFSBRR for each dollar of family income over NFSBTD.

Nova Scotia Special Social Assistance

Up to 1991, all residents of the province of Nova Scotia who are in receipt of GIS in March

of a given year were eligible for Special Social Assistance. Application for benefits had to be made each year. SPA recipients were not eligible. One lump-sum payment was made yearly in one of four amounts scaled to the proportional GIS of the recipient as follows:

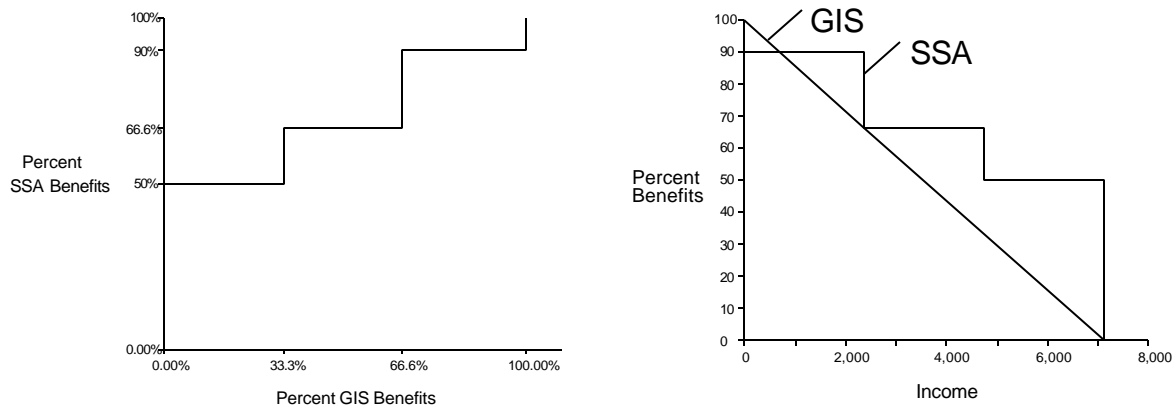


Figure 3. Nova Scotia Special Social Assistance

So, for example, a pensioner receiving maximum GIS benefits would have received maximum SSA benefits and a pensioner receiving 80% of maximum GIS benefits would have received 90% of maximum SSA benefits.

New Brunswick Low-Income Seniors Benefit

A benefit is given to seniors who receive GIS. If both spouses received GIS, the benefit is given to the spouse with the lower net income.

Ontario Guaranteed Annual Income System (GAINS-A)

GAINS-A provides a monthly benefit to Ontario residents in receipt of GIS who meet certain income and residence requirements. A person must have lived in Ontario for the year prior to applying for GAINS-A or for at least 20 years after turning 18 years of age. GIS recipients need not apply since their eligibility is reviewed automatically. SPA recipients are not eligible. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

Ontario Sales Tax Grant Program

The sales tax grant has been a flat \$50 per person over age 65 from 1984 to 1989. The maximum value of the sales tax grant is stored in the ONTSTG parameter. The variable impstg is used to store individual sales tax grants calculated by the model.

Ontario Property Tax Grant Program

The property tax grant is payable to seniors who are head of their household. The amount of the grant varies by tenure and actual costs. For years 1984 to 1989 renters receive 20% of their rental costs up to a maximum of \$500. Homeowners receive the maximum benefit. The fraction of rental costs allowed is contained in the ONTFPTG parameter while the

maximum benefit is stored in the parameter ONTPPTG. Calculated benefits are stored in the variable impptg.

Calculated benefits for both the sales tax grants and the property tax grants are also added to the variable imigist.

Manitoba Supplement for Pensioners (MSP, 55+)

The MSP provides quarterly benefits to Manitoba residents who are in receipt of certain levels of GIS and SPA benefits, including extended and widowed SPA recipients. MSP also provides benefits to persons aged 55 and over who are not in receipt of OAS benefits but whose income falls in a specified range and is derived at least 50% from pension sources. Eligibility is renewed automatically for GIS and SPA recipients, but non-GIS/SPA pensioners 55 years of age and over must apply.

In the case of GIS/SPA recipients there are two levels of benefits, single and married. An SPA recipient is treated as a single pensioner. Benefits are reduced at the same rate as GIS based on family income. Non GIS/SPA pensioners are treated in exactly the same manner except for couples benefits are reduced based on individual annual income.

Saskatchewan Income Plan

SIP provides monthly benefits to Saskatchewan residents in receipt of GIS and whose incomes don't exceed specified levels. SPA recipients are not eligible for SIP benefits. There are two levels of benefits, single and married. There are three different reduction rates. Unattached Individuals and Married Couples where both are GIS pensioners SIP benefits are reduced by \$1 for each \$1 reduction in GIS. For a pensioner whose spouse is not eligible for OAS/GIS/SPA the benefit is reduced by \$3 for each \$1 reduction in GIS benefits. The pensioner spouse of an SPA recipient has their benefit reduced by \$1 for each \$3 reduction in their spouse's SPA. There are monthly minimum benefits at both single and married levels.

Alberta Assured Income Plan

AAIP benefits are payable monthly to all Alberta residents who are in receipt of GIS benefits or who became eligible for the extended SPA prior to May 1983. Regular SPA recipients are ineligible. Since May 1983 all extended SPA recipients are referred to the Alberta Widow's pension. Application is not required. There is one individual benefit which is reduced by 50¢ for each \$1 reduction in GIS benefits to a minimum of \$10 monthly.

Alberta Seniors Benefit

Starting in 1994, the AAIP was replaced by the Alberta Seniors Benefit. When ALTASOPT is set to 2, the Alberta Seniors Benefit is calculated. Seniors are split into six categories:

- single seniors who rent their home,
- single seniors who own their home,
- seniors married to non-seniors who rent their home,
- seniors married to non-seniors who own their home,
- two senior couples who rent their home,

and two senior couples who own their home

When ASBSSOPT is set to 2, seniors married to non-seniors are treated in the same manner as two senior couples. Benefits and reduction rates vary by these categories (ASBBASIC, ASBRENT, ASBSS, ASBNSS, ASBRR). Maximum benefits are phased out using non-deductible income which is defined as last year's total income (imitot) minus OAS benefits (imioas), registered pension plan contributions (idrpp), RRSP contributions (idrrsp), and ASBEMP times idiemp.

For persons who do not qualify for OAS because of residency requirements, a proportion of the total benefit is assigned depending on marital status and household tenure (ASBNOAS). For these persons, BOAS is deducted from their non-deductible income. When ASBSSOPT is set to 1, a two senior couple in which one of the seniors does not meet the OAS eligibility requirement is treated as 1 senior couple.

Alberta Widowed Pension

The Alberta Widow's pension provides monthly benefits to widows and widowers aged 55 to 64 years who reside in Alberta. Yearly Application must be made. Maximum benefits are reduced by \$1 for each \$1 of previous year's non-exempt annual income. Extended SPA recipients may apply however their SPA benefits are included in their income when calculating entitlement.

British Columbia GAIN for Seniors Supplement

GAIN provides a monthly benefit to British Columbia residents in receipt of GIS or SPA who meet certain income and residence requirements. GIS/SPA recipients need not apply since their eligibility is reviewed automatically. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

SPSM Implementation

The user is invited to read the source code in order to examine the implementation of these programs. A subsequent update will include a written description of the implementation of these programs.

Interpretation

In general the problems of coverage, including take-up, discussed in the interpretation of OAS and GIS are also present here. Specifically there are no tests made for residential eligibility applied on Ontario GAINS-A. Currently double counting occurs for the benefits for Manitoba residents under the age of 65. This is because the calculated income is reported in one variable (imigist) and reported income from the survey is reported in another (imisa). There are plans to fix the problem; however, the dollar amounts are small in any case.

Relation to Other SPSM Routines

Provincial GIS supplement programs depend on various program specific input parameters as

well as variables calculated in the oas and gis functions. The mpc function ensures that provincial GIS supplements are not calculated without GIS being calculated first. The calculation of OAS and GIS occurs prior to and effects the calculation GIS 'top-up' programs in the gist function. The gist function is called after gis by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALTAMIN | Alberta GIS supplement minimum annual benefit |
| ALTASC | Alberta GIS supplement maximum annual benefit |
| ALTASOPT | Alberta seniors option [1=GIST,2=new seniors benefit 1994] |
| ALTAWP | Alberta widow's pension maximum annual benefit |
| ASBBASIC | Alberta seniors benefit annual basic benefit |
| ASBEMP | Alberta seniors benefit employment inclusion rate |
| ASBNOAS | Alberta seniors benefit reduction if no OAS [senior type] |
| ASBNSS | Alberta seniors benefit non-senior spouse supplement |
| ASBRENT | Alberta seniors benefit renter supplement |
| ASBRR | Alberta seniors benefit reduction rate [senior type] |
| ASBSS | Alberta seniors benefit senior spouse supplement |
| ASBSSOPT | Alberta seniors benefit 1 senior couple option [1=model separately,2=model as senior couples] |
| BCC | British Columbia GIS supplement: married pensioners |
| BCS | British Columbia GIS supplement: single pensioners |
| BOAS | Basic OAS |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISTFLAG | Provincial GIS top-up flag |
| MANC | Manitoba GIS supplement: married pensioners |
| MANCNPF | Manitoba GIS supplement reduction point: married |
| MANS | Manitoba GIS supplement: single pensioners |
| MANSNPF | Manitoba GIS supplement reduction point: single |
| NBSB | New Brunswick Low-Income Seniors' Benefit |
| NBSBSPA | N.B. Low-Income Seniors' Benefit - SPA eligibility |
| NFSBBAS | NFLD Low-Income Seniors' Benefit base amount |
| NFSBRR | NFLD Low-Income Seniors' Benefit reduction rate |
| NFSBTD | NFLD Low-Income Seniors' Benefit turndown |
| NS13 | Nova Scotia GIS supplement for 1/3 GIS |
| NS23 | Nova Scotia GIS supplement for 2/3 GIS |
| NSLT13 | Nova Scotia GIS supplement for less than 1/3 GIS |
| NSMAX | Nova Scotia maximum GIS supplement level |
| ONTC | Ontario GIS supplement: married pensioners |
| ONTFPTG | Ontario property tax grant (fraction of rent) |
| ONTPTG | Ontario property tax grant for seniors |
| ONTS | Ontario GIS supplement: single pensioners |
| ONTSTG | Ontario sales tax grant for seniors |
| PYINC | Deflator to calculate previous year income |
| SASKC | Saskatchewan GIS supplement: married pensioners |
| SASKMINC | Saskatchewan GIS supplement minimum benefits: married |

| | |
|------------|--|
| SASKMINS | Saskatchewan GIS supplement minimum benefits: single |
| SASKRR1 | Saskatchewan GIS supplement reduction rate: regular |
| SASKRR2 | Saskatchewan GIS supplement reduction rate: 1 GIS |
| SASKRR3 | Saskatchewan GIS supplement reduction rate: SPA |
| SASKS | Saskatchewan GIS supplement: single pensioners |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|--|
| hdageeld | Age of eldest in household |
| hdprov | Province |
| hdtenur | Tenure |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawls |
| idmarst | Marital status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imalexp | Allowable employment expenses |
| imcqqpc | CPP/QPP contributions |
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imicapgt | Capital gains (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoasres | Partial OAS fraction |
| imrentpd | Imputed rent paid |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|---------|---|
| imiasb | Alberta seniors benefit |
| imigist | GIS provincial top-up |
| imninc | No income flag |
| impptg | Provincial property tax grant for seniors |
| impstg | Provincial sales tax grant for seniors |

isneg Is argument negative ?

SUMMARY

```
int isneg(var);
```

```
NUMBER var
```

The `isneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a negative value. If the argument is zero or positive, a value of zero is returned. Note that, unlike a function, the `isneg` macro cannot take an expression as an argument. The expression `isneg(var)` is functionally equivalent to an expression of the form `(var < 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnneg Is argument non-negative?

SUMMARY

```
int isnneg(var);
```

```
NUMBER var;
```

The `isnneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-negative value. If the argument is negative, a value of zero is returned. Note that, unlike a function, the `isnneg` macro cannot take an expression as an argument. The expression `isnneg(var)` is functionally equivalent to an expression of the form `(var > 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnzero Is argument non-zero?

SUMMARY

```
int isnzero(var);
```

```
NUMBER var;
```

The `isnzero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-zero value. If the argument is zero, a value of zero is returned. Note that, unlike a function, the `isnzero` macro cannot take an expression as an argument.

The expression `iszero(var)` is functionally equivalent to an expression of the form `(var != 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

iszero Is argument zero?

SUMMARY

```
int iszero(var);
```

```
NUMBER var;
```

The `iszero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains the value zero. If the argument is non-zero, a value of zero is returned. Note that, unlike a function, the `iszero` macro cannot take an expression as an argument. The expression `iszero(var)` is functionally equivalent to an expression of the form `(var == 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

lkup1 Table look-up with interpolation/extrapolation

SUMMARY

```
NUMBER lkup1(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The `lkup1` function is used to perform table look-ups with interpolation. Expressed another way, `lkup1` evaluates continuous piecewise linear functions.

The first argument (`tbl`) is the address of an SPSM look-up table, which is an $n \times 3$ array of floating point numbers. The first two columns of `tbl` contain the (X,Y) pairs that define the piece-wise linear function. The third column of `tbl` contains the slope of the segment that starts at the (X,Y) pair. SPSM look-up tables are defined in parameter input files, and come in two varieties, as perceived by the user. One variety allows the user to specify the (X,Y) pairs, and computes the slopes automatically. The other variety allows the user to specify all the X values, the first Y value, and the slopes, and computes the remaining Y values automatically. In both cases the internal representation of the lookup table is identical and is the same as that expected by the `lkup1` function.

The second argument of `lkup1` is an integer giving the number of rows in `tbl`. Generally this value is another member of the same parameter structure in which the `tbl` is defined.

The third argument of lkup1 is the X value whose corresponding Y value is to be determined. lkup1 returns the corresponding Y value.

lkup2 Table look-up without interpolation

SUMMARY

```
NUMBER lkup2(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The lkup2 function is used to perform table look-ups without interpolation. Expressed another way, lkup2 evaluates step functions.

The first argument (tbl) is the address of an SPSM look-up table, which is an n x 3 array of floating point numbers. The first two columns of tbl contain the (X,Y) pairs that define the left-most point of each step in the step function. The third column of tbl contains the slope of the segment that starts at the (X,Y) pair, but the lkup2 function only makes use of the (X,Y) pairs in the look-up table. The slopes, though always present in look-up tables, are not used.

The second argument of lkup2 is an integer giving the number of rows in tbl. Generally this value is another member of the same parameter structure in which the tbl is defined.

The third argument of lkup2 is the X value whose corresponding Y value is to be determined. lkup2 returns the corresponding Y value.

maxn Find the maximum of two numbers

SUMMARY

```
NUMBER maxn(x, y);
```

```
NUMBER x;  
NUMBER y;
```

The maxn function returns the value of the larger of its two input arguments.

memo1 Compute memo items for reporting

SUMMARY

The memo1 function is used to calculate several reporting variables as aggregates of other

modeled variables. The function calculates all dollar denominated reporting variables up to the level of disposable income. In addition taxable filer status is determined.

SPSM Implementation

The `memo1` function operates at the individual level of analysis and skips individuals with no income. The algorithm first assigns filer status as relevant/non-relevant and taxable/non-taxable based on taxes paid and credits received. The function then calculates several reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|---|
| <code>imiemp =</code> | <code>idiemp;</code> |
| <code>imiself =</code> | <code>idisenf + idisefm;</code> |
| <code>imfoth =</code> | <code>iditogv + idinogv;</code> |
| <code>impoth =</code> | <code>ZERO;</code> |
| <code>imicqp =</code> | <code>idicqp;</code> |
| <code>immemp =</code> | <code>idiemp + idisenf + idisefm;</code> |
| <code>imminv =</code> | <code>idiint + ididiv + idicapg + idioinv;</code> |
| <code>immoth =</code> | <code>idipens + iditoth + idinoth;</code> |
| <code>immmkt =</code> | <code>immemp + imminv + immoth;</code> |
| <code>imftran =</code> | <code>imffa + imioas + imiotg + imigis + imispa + imctc + imfcben + imicqp + imfoth + imiuib + imfstc + imqtar + imfsa + imiosa + imfortc;</code> |
| <code>imctcben =</code> | <code>imctc + imfcben;</code> |
| <code>imfothtr =</code> | <code>imfoth + imfortc;</code> |
| <code>imfnewpg =</code> | <code>imiotg + imiosa;</code> |
| <code>imigispa =</code> | <code>imigis + imispa;</code> |
| <code>impfp =</code> | <code>impfa + imqaafa + imqnbfa + imiafetc + imnbcben + imibcfb + imoccea + imqfatc + imscb + imses + imnscb + imibceib;</code> |
| <code>imptran =</code> | <code>impfp + imigist + imptc + impsa + importc + iminsda;</code> |
| <code>immtran =</code> | <code>imptran + imftran;</code> |
| <code>immtot =</code> | <code>immmkt + immtran;</code> |
| <code>imftax =</code> | <code>imuic + imcqppc + imrepay + imtxf;</code> |
| <code>imptax =</code> | <code>imtxp;</code> |
| <code>immtax =</code> | <code>imftax + imptax;</code> |
| <code>immdisp =</code> | <code>immtot - immtax;</code> |
| <code>immicons =</code> | <code>immdisp; (initial assignment, may be re-assigned in memo2)</code> |

Relation to Other SPSM Routines

The `memo1` function is called by `drv` immediately after the income tax and cash transfer algorithms have executed. It is called just before the execution of the commodity tax model (`ctmod`) which makes use of some of the aggregated output variables. The `memo2` function follows `ctmod` to add information to the reporting variables calculated in the `memo1` function.

CROSS REFERENCE

| Function | Description |
|-----------------------|---|
| INPUT VARIABLES: | |
| <code>hhnin</code> | Number of individuals in household |
| <code>idialimo</code> | Alimony income received |
| <code>idicapg</code> | Capital gains (actual) |
| <code>idicqp</code> | CPP/QPP income (114) |
| <code>ididiv</code> | Dividend income (actual) |
| <code>idiemp</code> | Wages & salaries |
| <code>idiint</code> | Interest income (121) |
| <code>idinogv</code> | Other government income (non-taxable) |
| <code>idinoth</code> | Other money income (non-taxable) |
| <code>idioinv</code> | Other investment income with net rental |
| <code>idipens</code> | Pension income (115) |
| <code>idisefm</code> | Self-employed income - farming |
| <code>idisenf</code> | Self-employed income - non-farming |
| <code>iditogv</code> | Other government income (taxable) |
| <code>iditoth</code> | Other non-government income (taxable) |
| <code>idivetp</code> | Veterans pensions and allowances |
| <code>idiworkc</code> | Workers compensation benefits |
| <code>imbft</code> | Basic federal tax |
| <code>imcqqpc</code> | CPP/QPP contributions |
| <code>imctc</code> | Child tax credit |
| <code>imfcben</code> | Total Federal Child Benefits |
| <code>imffa</code> | Federal portion of family allowances |
| <code>imfortc</code> | Federal other refundable tax credits |
| <code>imfsa</code> | Federal social assistance |
| <code>imfstc</code> | Federal sales tax credit |
| <code>imheatrl</code> | Federal relief for heating expenses |
| <code>imiafetc</code> | Alberta Family Employment Tax Credit Benefits |
| <code>imibceib</code> | B.C. Earned Income Benefit |
| <code>imibcfb</code> | B.C. Family Bonus |
| <code>imigis</code> | GIS benefits |
| <code>imigist</code> | GIS provincial top-up |
| <code>iminet</code> | Net income |
| <code>iminsda</code> | NS Direct Assistance Program |
| <code>imioas</code> | OAS benefits |
| <code>imiosa</code> | Other SA or guarantees |
| <code>imiotg</code> | Other taxable demogrants |
| <code>imispa</code> | Spouse's allowance |

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imnbcben | Total NB child tax Benefits |
| imnccb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnscb | Nova Scotia Child Benefit |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| impfa | Provincial family allowance |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| importc | Other refundable provincial tax credits |
| impsa | Provincial social assistance |
| imptc | Refundable provincial tax credits |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqnbfa | Quebec newborn Allowance |
| imqtar | Quebec tax abatement (refundable) |
| imrepay | Social Benefits Repayments |
| imscb | Saskatchewan Child Benefit |
| imses | Saskatchewan Employment Supplement |
| imtxf | Federal income tax payable |
| imtxp | Provincial income tax payable |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|---|
| imctcben | Federal child tax credit and child benefits |
| imfiler | Taxable filer status |
| imfnewpg | Federal new programs |
| imfoth | Federal other government income |
| imfothtr | Federal other trans income and ref. credits |
| imftax | Federal taxes |
| imftran | Federal transfer income |
| imicqp | CPP/QPP payable |
| imiemp | Wages and salaries |
| imigispa | GIS and spouse's allowance |
| imiself | Total self-employment income |
| immdisp | Disposable income |
| immemp | All employment income |
| immicons | Consumable income |
| imminv | Investment income |
| immmkt | Market income |
| immoth | Other income |
| immtax | All taxes |
| immtot | Total income |
| immtran | All transfer income |
| impalltc | All refundable provincial tax credits |
| impfp | Provincial family programs |
| impoth | Provincial other government income |
| imptax | Provincial taxes |
| imptran | Provincial transfer income |

SUMMARY

The `memo2` function is used to calculate several reporting variables as aggregates of other modeled variables. The function calculates all dollar denominated reporting variables up to the level of consumable income.

SPSM Implementation

The `memo2` function operates at the individual level of analysis and skips individuals with no income. Aspects of the function are not executed if the commodity tax model has not been run (`CTMOD=0`). The function first adjusts several reporting variables calculated in `memo1` as follows.

| Reporting Variable | Formula |
|-------------------------|--|
| <code>imftax =</code> | <code>imftax + imtxfc</code> |
| <code>imptax =</code> | <code>imptax + imtxpc</code> |
| <code>immtax =</code> | <code>immtax + imtxfc + imtxpc</code> |
| <code>immicons =</code> | <code>immdisp - imtxfc - imtxpc</code> |

The function next calculates additional reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|--------------------------------------|
| <code>imnettr =</code> | <code>immtran - immtax</code> |
| <code>imothrep =</code> | <code>imrepay - imuibr</code> |
| <code>imqta =</code> | <code>imqtaa + imqtar</code> |
| <code>imfedbal =</code> | <code>imftax - imftran</code> |
| <code>imprvbal =</code> | <code>imptax - imptran</code> |
| <code>impovinc =</code> | <code>immtot - imctc - imfstc</code> |

Relation to Other SPSM Routines

The `memo2` function is called by `drv` immediately after the commodity tax algorithms (`ctmod`) have executed. The function adds information to the reporting variables calculated in the `memo1` function.

Please refer to the [Variable Guide](#) for detailed descriptions of the variables listed above.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

CTFLAG Commodity tax activation flag

INPUT VARIABLES:

hhnin Number of individuals in household
imftran Federal transfer income
immdisp Disposable income
immtot Total income
immtran All transfer income
imninc No income flag
imptran Provincial transfer income
imqtaa Quebec tax abatement (applied)
imqtar Quebec tax abatement (refundable)
imrepay Social Benefits Repayments
imtxfc Federal commodity taxes
imtxpc Provincial commodity taxes
imuibr UI benefit recovery

OUTPUT VARIABLES:

efin First person in economic family [pointer]
idef Person's economic family [pointer]
imfedbal Federal taxes less transfers
imftax Federal taxes
immicons Consumable income
immtax All taxes
imnettr Net transfers to person
imothrep Other federal repayments
impovinc Income for low income measurement
imprvbal Provincial taxes less transfers
imptax Provincial taxes
imqta Quebec tax abatement (total)

minn Find the minimum of two numbers

SUMMARY

NUMBER minn(x,y);

NUMBER x;

NUMBER y;

The minn function returns the value of the smaller of its two input arguments.

mpc Calculate derived model parameters and do edits

SUMMARY

The mpc function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters. The function currently calculates derived parameters for

use in the commodity tax (`ctmod`) function, the Guaranteed Income Supplement (`gis`) function, and the head/spouse transfer (`txhstr`) function. Performing the calculations in `mpc` increases the efficiency of the program by avoiding multiple calculations for every household. Edit checks are performed for aspects of the commodity tax model and the old age income system. Please refer to the appropriate section in the [Algorithm Guide](#) for details of the specific social and tax programs.

SPSM Implementation

Calculation of Derived Parameters

Two derived parameters for use in the `ctmod` are calculated: a total federal government effective commodity tax rate (CTFTOT) and a total provincial government effective rate (CTPTOT). The federal rate is calculated by adding together the six detailed federal rates produced by the Input/Output model: CTFCID, CTFEXT, CTFMFG, CTFEXT, CTFOEN, and CTFGST. The aggregate provincial rate is calculated in the identical fashion, summing up the 6 provincial rates: CTPRST, CTPLGL, CTPPLQ, CTPTOB, CTPGAS, and CTPAMU.

These parameters are used to ensure equivalent results between the detailed and non-detailed commodity tax model options. When the detailed option is turned off (i.e. the CTDFLAG parameter is set to zero), commodity tax revenues are produced by multiplying the two aggregate rates by the total expenditure of each household. This requires a fraction of the operations for each household when compared to the detailed method.

A single derived parameter, UIBRA, is calculated for use in the `txitax` function. This parameter contains the individual's UIC repayment base amount and is derived from two further parameters: UIBAF, the UI benefit recovery base amount factor, and UIERNMAX, the dollar value of maximum insurable earnings. Please refer to section in this manual for further information on the `txitax` function.

Three derived parameters are calculated for use in the `gis` function. The income breakeven points for GIS/SPA couples and married 1 pensioner couples are calculated here as GISBE1 and GISBE2 respectively. The breakeven points represent the level of family income at which combined GIS/SPA benefits are reduced to zero based on combined family income. They in turn are used to calculate an income crossover point (SPAXO) for the two types of pensioner couples (see following Chart).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

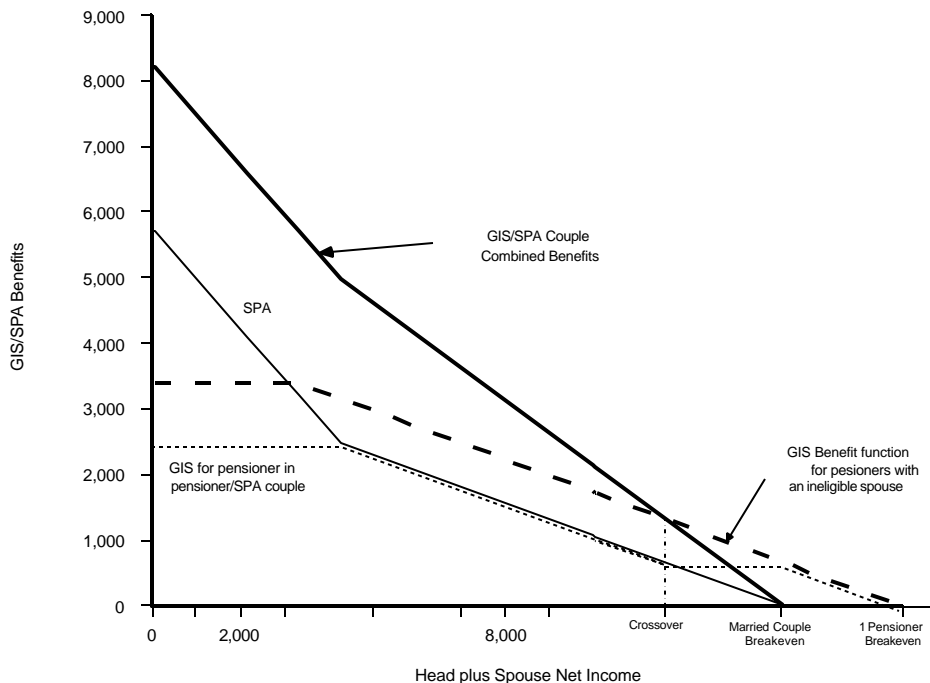


Figure 1 GIS/SPA Benefits for One OAS Pensioner Couples

GISBE1 represents the level of family income at which the GIS benefits of a pensioner married to a non pensioner have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "1 Pensioner Breakeven". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{GISBE1} = \text{BGISS} / \text{GISRRM} + \text{BOAS} + \text{GISRLS}$$

GISBE2 represents the level of family income at which the combined GIS and SPA benefits of a pensioner married to a SPA recipient have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "Married Couple Breakeven".

$$\text{GISBE2} = (\text{BGISM} * 2) / (\text{GISRRM} * 2) + \text{BOAS} / \text{SPA} + \text{OASRR} + \text{GISRLM}$$

SPAXO represents the level of family income at which the dollar benefits for GIS to a single pensioner married to a non-pensioner spouse exactly equal the combined GIS/SPA dollar benefits payable to a GIS/SPA married couple. On the figure above this is the point on the X axis labelled "Crossover". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{SPAXO} = 2 * \text{GISBE2} - \text{GISBE1}$$

Please refer to the Guaranteed Income Supplement Section of this guide for further details on the use of these derived parameters.

For all of the parameters described above users may refer to the [Parameter Guide](#) for further information.

Edit Checks

Three parameter edit checks are currently implemented in the `mpc` function.

- A check is made to ensure that the tax credit rate parameter `FNTCR` is non-zero. If zero, an error message is issued but processing continues.
- A similar check is made to ensure that the tax credit rate is non-zero. Error handling is also the same as above.
- If the `CTFLAG` parameter is set to 1 (thereby specifying that commodity taxes will be calculated) and the `FXVFLAG` parameter is set to 0 (indicating no FAMEX expenditure data is to be read) then an error message will result and `CTFLAG` will be reset to 0 and no commodity taxes will be calculated.
- If the OAS algorithm is switched off (`OASFLAG=0`) and the GIS algorithm is switched on (`GISFLAG=1`) GIS benefits will be incorrectly calculated as they depend on variables calculated in the `oas` function. If this condition is met an error message will result and `GISFLAG` will be set to 0 and consequently no GIS benefits will be calculated.
- If the GIS algorithm is switched off (`GISFLAG=0`) and the provincial GIS supplement algorithm is switched on (`GISTFLAG=1`) provincial GIS supplement benefits will be incorrectly calculated as they depend on variables calculated in the `gis` function. If this condition is met an error message will result and `GISTFLAG` will be set to 0 and consequently no provincial GIS supplement benefits will be calculated.

Relation to Other SPSM Routines

The `mpc` function is called before `drv` and as such is only executed once for every program run. The function currently calculates parameters and performs edits which can effect a number of functions directly; the `ctmod` function, the `gis` function, the `gist` function, the `txitax` function, and the head/spouse transfer `txhstr` function.

CROSS REFERENCE

| Function | Description |
|----------------------|------------------------------------|
| INPUT PARAMETERS: | |
| <code>FXVFLAG</code> | Read FAMEX expenditure vector file |
| <code>BGISM</code> | Basic GIS - married |
| <code>BGISS</code> | Basic GIS - single |
| <code>BOAS</code> | Basic OAS |
| <code>CTFCID</code> | Federal custom import duties [com] |
| <code>CTFEXD</code> | Federal excise duties [com] |
| <code>CTFEXT</code> | Federal excise taxes [com] |
| <code>CTFGST</code> | Federal GST [com] |
| <code>CTFMFG</code> | Federal manufacturer's sales [com] |

| | |
|-----------|---|
| CTFOEN | Federal other energy taxes [com] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| OASFLAG | Old age security flag |
| QNTCR | Quebec nominal tax credit rate |
| SPAOSRR | OAS portion of SPA taxback rate |
| UIBAF | UI benefit recovery base amount factor (UI and EI) |
| UIBAFNR | UI EI benefit recovery base amount factor for non-repeaters |
| (EI only) | |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIERNMAX | Maximum insurable earnings (UI and EI) |

OUTPUT PARAMETERS:

| | |
|----------|--|
| CTFLAG | Commodity tax activation flag |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| GISBE1 | Breakeven for GIS one pensioner couple |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISTFLAG | Provincial GIS top-up flag |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |

nneg Change negative numbers to zero

SUMMARY

NUMBER nneg(arg);

NUMBER arg;

The nneg function returns either zero or the value of arg, whichever is larger. In other words, nneg changes negative values to zero, leaving positive values unchanged.

SUMMARY

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. Benefits are either full or partial depending on a person's history of residency in Canada. The program is not income tested. The SPSM oas function is based on the age of the individual and, for immigrants, the years since immigration as reported at the time of the SCF survey in April 1985.

The Seniors Benefit program was added to the model based on the description provided with the 1996 Federal Budget. The Seniors Benefit will replace the OAS/GIS benefits in 2001. It will be a tax-free; income tested benefit which will be determined on the basis of the incomes from both spouses. The maximum benefits will be \$120 more than the maximum OAS/GIS for 2001. These rates are fully indexed for inflation.

People aged 60 or over on December 31, 1995 will be able to choose to move to the Seniors Benefit or keep the existing OAS/GIS payments. The SPA program remains in place but is enriched by \$120.

Program Description

As amended in 1957 and 1965 the OAS program provides full benefits to persons born in Canada or those having immigrated to Canada more than 10 years before their 65th birthday with no provisions for partial benefits. In June 1977 the program was modified to provide partial benefits to immigrants having resided in Canada for between 10 to 39 years at the time of their 65th birthday. These individuals are eligible for benefits in proportion to the number of years in Canada at age 65 divided by 40. Note that years of eligibility do not increase after the year of the beneficiary's 65th birthday. Thus an immigrant of twenty years at his/her 65th birthday would be eligible for 20/40 or 50% of full OAS benefits. Persons having immigrated to Canada less than ten years prior to their 65th birthday were ineligible for OAS until 1987. In that year the OAS program was modified to allow for immigrants from certain countries having reciprocal arrangements with Canada to use years of residency in the country of emigration to count towards meeting the minimum 10 years residency requirement. However, in these cases it is only the years of residence in Canada which are used to determine the rate of partial benefits.

SPSM Implementation

The oas function determines benefits based on the age of the individual and the years since immigration as reported at the time of the SCF survey in April 1985. Because OAS provides an individually determined benefit the simulation operates at the level of a household assigning benefits to all eligible individuals. The model first adjusts years since immigration in two ways:

1. It determines the years since immigration at the time of the potential beneficiary's 65th

birthday. This is done by subtracting the difference between the individual's age and 65 years from the reported years since immigration. [immi = immi - (idage-65)]

2. It adjusts the immigration status of persons who were eligible for Full OAS under the original program specifications but would qualify for only partial benefits since 1977. This is done by setting the years since immigration to 40 for persons having 10 or more years since immigration at the time of their 65th birthday if that birthday was in 1977 or earlier. [immi =40 if(immi >=10 and TARGETYEAR- idage <= 12)]

Notice that the years since immigration for any given individual after adjustment number 1 will remain the same regardless of the year for which the simulation is being run. For example an immigrant of 38 years, age 73, would have an adjusted years since immigration of 30 years, (immi = (38-(73-65)=30). Because of adjustment 2 above that individual would receive full OAS benefits in simulations run for 1984 but would receive 75% partial benefits in simulations run for 1988. In other words, a pensioner who is 73 years old in 1984 would have been 65 years old in 1976; the year before partial benefits were introduced. However a 73 year old in 1988 would have been age 65 in 1980; after partial benefits were introduced.

The model next determines if full eligibility requirements have been met for benefits and if so the full year equivalent of maximum OAS benefits are assigned (see BOAS in the *Parameter Guide*). Next, persons ineligible for OAS are screened out. Lastly, the model assigns partial benefits to persons with an adjusted years since immigration of between 10 and 39 years.

With the new Senior Benefit program, first, the seniors benefit (senben.c) is calculated. Then ccept calls drv again, and the benefit is zeroed out and OAS/GIS is calculated instead. For persons who lost under this change, drv is called a third time with the seniors benefit package.

Interpretation

The results of the model are not directly comparable with and thus will not match administrative OAS expenditure figures. The discrepancy arises due to administrative irregularities as well as survey data deficiencies.

There are five major sources of underestimation by the oas function. The benefits of persons having received benefits during 1984, yet who had died before the date of the survey, will not be accounted for in the SPSD/M. The survey coverage excludes native Canadians on reservations as well as persons living in the Yukon and North West Territories; thus the OAS benefits of these persons are excluded from SPSM totals. Published figures include payments to persons not residing in Canada as well as retroactive lump-sum payments for late applicants. A further provision not accounted for in this algorithm is the use of years of residence in another country to meet minimum residency requirements. This will not affect the model results if run in years before 1988. The effect is small in any case.

Due to the discrepancy between reported age on the SCF and actual age in 1984 overestimation of aggregate OAS benefits for persons aged 65 and 66 arises. For example 25% of those reporting their age as 65 in March of 1985, and thus receiving full OAS

Benefits in SPSM, would actually have been born between January and March 1985 (assuming births are distributed approximately evenly by month). As such they would have actually received no OAS. Furthermore, the other 75% of the 65 year olds and 17% of 66 year olds would have actually received OAS for only part of 1984. Currently, the SPSM makes no stochastic adjustments for such cases.

Relation to Other SPSM Routines

OAS depends on the input parameters for basic OAS benefits and years since immigration. The calculation of OAS and other modeled variables occurs prior to and affects the calculation of net income and related GIS and GIS 'top-up' programs. The modeled benefits are reported in net income, elderly income, disposable income, transfer income, total income, consumable income. The oas function is called before txinet (calculation of individual net income) by drv.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|------------|-----------------------|
| BOAS | Basic OAS |
| OASFLAG | Old age security flag |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| hdageeld | Age of eldest in household |
| hdseqhh | Household sequence number |
| hhnin | Number of individuals in household |
| idage | Age |
| idimmi | Years since immigration |

OUTPUT VARIABLES:

| | |
|----------|----------------------------|
| imioas | OAS benefits |
| imninc | No income flag |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |

| | |
|-----------------|----------------------------|
| pmaddent | Define and add a parameter |
|-----------------|----------------------------|

SUMMARY

The pmaddent function is used to define a new parameter to the SPSM parameter manipulation facilities. Please see the [Programmer's Guide](#) for more information.

randrnd Randomly round a floating point number to an integer

SUMMARY

The `randrnd()` function can be used to round fractional quantities to integer values in such a way that the sum of the values will remain (virtually) unchanged. Conventional rounding techniques do not have this property. For example, say that we have a set of 1000 numbers, each of which has the value 0.1. The sum of this set of numbers is 100.0. If we round each member of this set to the nearest integer, the sum of values would become 0.0. If we rounded randomly up or down, the sum would be 500. Neither of these rounding processes preserve the original sum. What we wish to do is to round 100 of the values up to 1.0 and 900 of the numbers down to 0.0. The `randrnd()` function simplifies this process.

The first argument to `randrnd()` is the value which is to be integerized, while the second is a uniformly distributed random number between 0.0 and 1.0 used to perform the rounding. The second argument is normally one of the built-in random number streams created by the SPSM Random Number Facility (see the [Users' Guide](#) for more details on this facility). The result of `randrnd()` is an unbiased, randomly rounded integerized value. In the following example, the variable `intval` has the value 2.0 for 30% of the time and 3.0 for 70% of the time.

```
intval = randrnd(2.7, idrand0);
```

The `randrnd()` function can be used to simplify operations such as the production of alternate weight files. For a specific example, see the description of the `bldwgt.exe` utility found in the *SPSM Tools Users Manual*.

The `vardef` function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.

round Round to nearest integer

SUMMARY

```
NUMBER round(arg);
```

```
NUMBER arg;
```

The `round` function converts its argument to the nearest whole number.

SUMMARY

Social assistance payments are not currently calculated by the SPSM. Data requirements are too great for a detailed micro-simulation. For example, the database contains no information on the holding or recent sale of liquid or fixed assets. This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here. It is also intended as a function in which algorithms for social assistance or other guarantees can be developed by glass box users.

Program Description

There are a number of federal, provincial and municipal programs which provide some form of social assistance payments to various target groups. The SPSM simulates six GIS supplementation programs (see the description of the gist function) which are classified with the other social assistance programs by the SCF. In fact the SCF records benefits received from over 30 provincial and municipal social assistance programs under one title of which six are simulated by the SPSM. This algorithm is designed to ensure no double counting of provincial GIS supplement program benefits occurs between simulated social assistance (imisa) and the provincial GIS supplement programs (imigist).

SPSM Implementation

If the function is deactivated with SAFLAG, no social assistance benefits are reported for any individual. If the function is turned on the database values of reported Social Assistance payments is used as the reported value of social assistance for all persons under the age of 65. For persons aged 65 and over there are three possible means of calculating social assistance which are controlled by the SAELDOPT parameter. These options are as follows.

- Social assistance is set to zero for all persons aged 65 and over.
- For individuals over age 64 who received simulated Provincial GIS supplementation benefits Social Assistance benefits are set to zero. If no Provincial GIS supplement is assigned to an individual over age 64, the simulated social assistance reported by the SPSM is the same as the reported value on the database.
- For all individuals over the age of 64 the value of simulated social assistance is set to the positive difference between reported and simulated social assistance.

In addition to performing the calculations for Social Assistance, samod computes the splitting of payments between the Federal and Provincial governments. This splitting corresponds to the federal/provincial cost sharing agreements in the Canada Assistance Plan.

The payment splitting is controlled by the parameter SAFS which is the federal proportional share of SA benefits. This parameter is available to be changed in black box mode and will determine the value of the variable imfsa which represents the value of the federal share. The provincial share of SA benefits is calculated as the difference between total SA benefits and the calculated federal amount and is represented by the variable impsa.

Relation to Other SPSM Routines

The samod function is called by drv after the calculation of provincial GIS supplements in gist.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|--|
| SAELDOPT | SA for elderly calculation method [1=~SA,2=GIST->~SA,3=diff] |
| SAFLAG | Social assistance flag |
| SAFS | Federal share of social assistance [prov] |
| SAPFLAG | Social assistance predicted value flag |
| SATARGET | Social assistance target for predicted SA |
| SFAOUT | Proportion of social assistance to eliminate |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hhncf | Number of census families in household |
| idage | Age |
| idisa | Social assistance income |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| imigist | GIS provincial top-up |

OUTPUT VARIABLES:

| | |
|--------|--|
| imfsa | Federal social assistance |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |
| impsa | Provincial social assistance |

SUMMARY

The strn function is used by the SPSM to print prompts and error messages in a language-independent way. The argument to the function identifies which string is to be retrieved. strn retrieves the string from a language-specific database of strings into an internally-maintained buffer and returns a pointer to the retrieved string. This function is not intended to be used by the SPSM user, and is documented here for reference purposes only.

taxbk1One level tax-back function

SUMMARY

```
NUMBER taxbk1(inc, exmpt, lvl1, rr1);

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level of benefit                       */
NUMBER rr1;          /* reduction rate for tax-back           */
```

The taxbk1 function is used to reduce a benefit at a fixed rate based on income in excess of a specified exemption level. If the benefit (*lvl1) is reduced to zero, taxbk1 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the income in excess of the break-even income for the benefit.

taxbk2Two level tax-back function

SUMMARY

```
NUMBER taxbk2(inc, exmpt, lvl1, rr1, lvl2, rr2)

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level (#1) of benefit                 */
NUMBER rr1;          /* reduction rate (#1) for tax-back      */
NUMBER *lvl2;        /* level (#2) of benefit                 */
NUMBER rr2;          /* reduction rate (#2) for tax-back      */
```

The taxbk2 function is used to reduce a two-tiered benefit at a fixed rates based on income in excess of a specified exemption level. The first tier benefit (*lvl1) is first reduced at rate rr1 based on income (inc) in excess of the specified threshold (exmpt). If the first tier benefit is reduced to zero, the second tier of benefit (*lvl2) is reduced at rate rr2 based on remaining income. If the second tier benefit (*lvl2) is reduced to zero, taxbk2 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the

income in excess of the break-even income for the benefit.

SUMMARY

Program Description

Calculation of the Alberta taxes.

When ATXFLG is off, Basic Alberta Tax (imbpt) is a proportion (APTF) of Basic Federal Tax (imbft). A tax reduction is calculated as a basic amount (ATRBC) minus a proportion (ATRF) of Basic Alberta Tax (imbpt). Alberta Tax Payable (imtxp) is calculated as Basic Alberta Tax (imbpt) minus the tax reductions.

The 2000 budget stated that Alberta would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (ATXFLG), a provincial tax table (APTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (APNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (ABXM) |
| impatxc | Age amount tax credit | (AAXM, AAXRR, AAXTD, AAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (AMXM, AMXMT, AEMXM, AEMXMT) |
| impcgtc | Caregiver tax credit | (ACGTC, ACGTCFLG, ACGTCTC, ACGTCTD, ACGTCTK) |
| impchrtc | Charitable donations | (ACHATL1, ACHATR1, ACHATR2) |
| impcppte | CPP/QPP contribution | |
| impdistc | Disability tax credit | (AMAXDX) |
| impdtxc | Dividend tax credit | (ADTCR) |
| impedtxc | Education tax credit | (AEDXPM, AMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (AYPNDL) |
| imptutxc | Tuition Tax credit | (AMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using AAMTOPT.

Calculation of the Alberta Family Employment Tax Credit.

When the parameter AFETCFLAG is set to 1, the value of imiafetc variable is calculated as a percentage (AFETCBR) of nuclear family employment income above a threshold (AFETCCI) to a maximum dollar level which is calculated as AFETCBPC times the number of eligible children (nfnkids) up to a maximum number of children of AFETCNC. The maximum benefit is reduced by a percentage (AFETCRR) of nuclear family net income in excess of the threshold AFETCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AAMTOPT | Alta alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| AAMTPCTF | Alta amt rate as pct of additional fed tax due to minimum tax |
| AAMTPCTM | Alta amt rate as pct of federal minimum tax amount |
| AAMTTX | Alta amt rate as tax on adjusted income |
| AAXM | Alta Age Amount |
| AAXPI | Alta Age Amount phase in rate for 1994 and beyond |
| AAXRR | Alta Age Amount credit reduction rate |
| AAXTD | Alta Age Amount net income turndown |
| ABXM | Alta Basic Personal Exemption/amount |
| ACGTC | Alta Caregiver Tax Credit |
| ACGTCFLG | Alta Caregiver Tax Credit activation flag |
| ACGTCTC | Alta Caregiver tax credit take-up rate by age of elderly [age,rate] |
| ACGTCTD | Alta Caregiver Tax Credit Turn Down Income |
| ACGTCTK | Alta Caregiver tax credit take-up rate by income level [employment income,rate] |
| ACHATL1 | Alta Charitable Donations amount level 1 |
| ACHATR1 | Alta Charitable Donations tax credit rate 1 |
| ACHATR2 | Alta Charitable Donations tax credit rate 2 |
| ADTCR | Alta dividend tax credit rate |
| AEDXPM | Alta Education Amount per month |
| AEMXM | Alta equivalent to married amount |
| AEMXMT | Alta equivalent to married turndown level |
| AFETCBPC | Alberta Family Employment Tax Credit Benefit Per Child |
| AFETCBR | Alberta Family Employment Tax Credit Benefit Rate |
| AFETCCI | Alberta Family Employment Tax Credit Benefit Cut-in Level |
| AFETCFLG | Alberta Family Employment Tax Credit Activation Flag |
| AFETCNC | Alberta Family Employment Tax Credit Maximum Number of Children |
| AFETCRR | Alberta Family Employment Tax Credit Reduction Rate |
| AFETCTD | Alberta Family Employment Tax Credit Turndown Level |
| AFTAX | Alberta flat surtax rate on taxable income |
| AHEATFLG | Alberta Energy Tax Refund activation flag |
| AHEATREB | Alberta Energy Tax Refund amount |

| | |
|---------|--|
| AMAXDX | Alta Maximum Disability deduction/amount |
| AMAXET | Alta maximum on transfer of education and tuition amount |
| AMXM | Alta married amount |
| AMXMT | Alta married amount turndown level |
| APNTCR | Alta provincial non-refundable tax credit rate |
| APTC | Alberta political contribution table [total donations, donation allowed] |
| APTCBEN | Maximum Alberta political tax credit allowed |
| APTF | Alberta provincial tax fraction |
| APTX | Alta tax table [taxable income, basic provincial tax] |
| ASCI | Alberta surtax cut-in |
| ASF | Alberta surtax fraction |
| ATRBC | Alberta tax reduction basic claim |
| ATRF | Alberta tax reduction fraction |
| ATXFLG | Alta tax on taxable income activation flag |
| AYPNDL | Alta Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |

| | |
|----------|--|
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| imiafetc | Alberta Family Employment Tax Credit Benefits |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txbc Compute provincial taxes for British Columbia

SUMMARY

When CTXFLG is turned off, the Basic British Columbia Tax (imbpt) is a proportion (CPTF)

of Basic Federal Tax (imbft). British Columbia Tax Payable (imtxp) is the Basic Tax plus the BC Surtax plus the BC Health Care Maintenance Surtax.

The BC Surtax is a proportion (CSF) of Basic BC Tax (imbpt) exceeding the surtax level (CSCI).

The 2000 budget announced that British Columbia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (CTXFLG), a provincial tax table (CPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (CPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (CBXM) |
| impatxc | Age amount tax credit | (CAXM, CAXRR, CAXTD, CAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (CMXM, CMXMT, CEMXM, CEMXMT) |
| impcgtc | Caregiver tax credit | (CCGTC, CCGTCFLG, CCGTCTC, CCGTCTD, CCGTCTK) |
| impchrtc | Charitable donations | (CCHATL1, CCHATR1, CCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (CMAXDX) |
| impdtxc | Dividend tax credit | (CDTCR) |
| impedtxc | Education tax credit | (CEDXPM, CMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (CYPNDL) |
| imptutxc | Tuition Tax credit | (CMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using CAMTOPT.

The British Columbia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The BC provincial credit is modelled as CLVCRT times the gross amount up to CLVCMAX. The credit cannot be more than provincial taxes (imtxp).

B.C. Family Bonus

Total benefits received under the British Columbia Family Bonus program commencing in July 1996.

When the parameter BCFBFLAG is set to one the value of this variable is calculated as BCFBBAS times the number of children in the nuclear family (nfnkids) reduced by a proportion of head plus spouse net income (iminet + imisa) above the turndown of BCFBTD. This proportion for families with one child is BCFBRRS and for multiple child families is BCFBRR. The value calculated in this manner is multiplied times the parameter BCFBPI.

B.C. Family Bonus benefits (imibcfb) are assigned to the mother if present, or if not to the head of the nuclear family.

The calculation of the B.C. Family Bonus was changed to include the level of the National Child Supplement beginning in 1998. The flag BCFBIFS was added to turn on or off the inclusion of the National Child Supplement in the calculation of the B.C. Family Bonus.

The British Columbia Earned Income Benefit which was also introduced in 1998, was added to the code. When BCEIBFLG is assigned a value of 1, the calculation of the British Columbia Earned Income Benefit is activated, depending on the presence of children in the family. For families with lower incomes, the benefit starts to be phased in at BCEIBPI, and reaches its maximum at incomes of BCBEMX. The slope of the phase in is therefore calculated as the maximum working income supplement a family can receive divided by (BCBEMX – BCEIBPI).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BCBEIS1 | B.C. Earned Income Benefit for first child |
| BCBEIS2 | B.C. Earned Income Benefit for second child |
| BCBEIS3 | B.C. Earned Income Benefit for each additional child |
| BCBEITD | B.C. Earned Income Benefit Turndown |
| BCBEMX | B.C. Earned Income Benefit Income Reduction |
| BCBERR1 | B.C. EIB reduction rate for families with 1 child |
| BCBERR2 | B.C. EIB reduction rate for families with 2 children |
| BCBERR3 | B.C. EIB reduction rate for families with 3+ children |
| BCEIBFLG | Activate B.C. Earned Income Benefit Program |
| BCEIBPI | B.C. Earned Income Benefit Income Phase In |
| BCFBBAS | B.C. Family Bonus amount per child |
| BCFBFLAG | Activate B.C. Family Bonus Program |
| BCFBIFS | Activate B.C. Family Bonus to include Federal NCS |
| BCFBNCS1 | B.C. Family Bonus National Child Supplement for first child |
| BCFBNCS2 | B.C. Family Bonus National Child Supplement for second child |
| BCFBNCS3 | B.C. Family Bonus National Child Supplement for each additional child |

| | |
|-------------------------------------|---|
| BCFBNCSSRR1 child | B.C. Family Bonus NCS reduction rate for families with 1 child |
| BCFBNCSSRR2 children | B.C. Family Bonus NCS reduction rate for families with 2 children |
| BCFBNCSSRR3 children | B.C. Family Bonus NCS reduction rate for families with 3+ children |
| BCFBNCSTD | B.C. Family Bonus National Child Supplement Turndown |
| BCFBPI | B.C. Family Bonus phase-in |
| BCFBRR | B.C. Family Bonus multiple child reduction rate |
| BCFBRRS | B.C. Family Bonus single child reduction rate |
| BCFBTD | B.C. Family Bonus Turndown |
| CAMTOPT adj inc, 4=% min amt) | B.C. alternative minimum tax option (1=none, 2=% fed, 3=fed) |
| CAMTPCTF tax | B.C. amt rate as pct of additional fed tax due to minimum tax |
| CAMTPCTM | B.C. amt rate as pct of federal minimum tax amount |
| CAMTTX | B.C. amt rate as tax on adjusted income |
| CAXM | B.C. Age Amount |
| CAXPI | B.C. Age Amount phase in rate for 1994 and beyond |
| CAXRR | B.C. Age Amount credit reduction rate |
| CAXTD | B.C. Age Amount net income turndown |
| CBXM | B.C. Basic Personal Exemption/amount |
| CCGTC | B.C. Caregiver Tax Credit |
| CCGTCFLG | B.C. Caregiver Tax Credit activation flag |
| CCGTCTC [age,rate] | B.C. Caregiver tax credit take-up rate by age of elderly |
| CCGTCTD | B.C. Caregiver Tax Credit Turn Down Income |
| CCGTCTK [employment income,rate] | B.C. Caregiver tax credit take-up rate by income level |
| CCHATL1 | B.C. Charitable Donations amount level 1 |
| CCHATR1 | B.C. Charitable Donations tax credit rate 1 |
| CCHATR2 | B.C. Charitable Donations tax credit rate 2 |
| CDTCR | B.C. dividend tax credit rate |
| CEDXPM | B.C. Education Amount per month |
| CEMXM | B.C. equivalent to married amount |
| CEMXMT | B.C. equivalent to married turndown level |
| CHEATFAM | British Columbia Refundable Energy Credit for families |
| CHEATFLG | British Columbia Refundable Energy Credit activation flag |
| CHEATSNG | British Columbia Refundable Energy Credit for singles |
| CLVCMAX | Maximum B.C. labour-sponsored funds tax credit allowed |
| CLVCRT credit | Percent of B.C. labour-sponsored funds cost allowed as credit |
| CMAXDX | B.C. Maximum Disability deduction/amount |
| CMAXET | B.C. maximum on transfer of education and tuition amount |
| CMXM | B.C. married amount |
| CMXMT | B.C. married amount turndown level |
| CPNTRC | B.C. provincial non-refundable tax credit rate |
| CPTCBEN | Maximum B.C. political tax credit allowed |
| CPTCT allowed] | B.C. political contribution table [total donations, donation allowed] |
| CPTF | British Columbia provincial tax fraction |
| CPTX | B.C. tax table [taxable income,basic provincial tax] |
| CRFLAG | British Columbia rental reduction flag |
| CRTRB | British Columbia renter tax reduction basic credit |
| CRTRD dependants | British Columbia renter tax reduction credit for other dependants |

| | |
|----------|---|
| CRTRP | British Columbia renter tax reduction proportion of rent allowed |
| CRTRPN | British Columbia renter tax reduction proportion of net income |
| CRTRS | British Columbia renter tax reduction credit for spouse |
| CRTRT | B.C. renter tax reduction base amount turndown [dependants, amount] |
| CSCI | British Columbia surtax first cut-in level |
| CSCI2 | British Columbia surtax second cut-in level |
| CSDC | British Columbia provincial surtax dependant credit |
| CSF | British Columbia surtax first level rate |
| CSF2 | British Columbia surtax second level rate |
| CSTC | British Columbia stc amount |
| CSTCFLAG | British Columbia sales tax credit flag |
| CSTCR | British Columbia stc reduction rate |
| CSTHINC | British Columbia family head income threshold (stc) |
| CSTKINC | British Columbia kid income threshold top-up (stc) |
| CSTSINC | British Columbia spousal income threshold top-up (stc) |
| CTCINC | CTC family income scaling factor |
| CTXFLG | B.C. tax on taxable income activation flag |
| CYPNDL | B.C. Pension Income Deduction Amount |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |

| | |
|----------|---|
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchclm | Number of dependent children claimed |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imibceib | B.C. Earned Income Benefit |
| imibcfb | B.C. Family Bonus |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |

| | |
|----------|--|
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txcalc Calculate federal income tax

SUMMARY

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Federal Labour Sponsored Venture Capital Tax credit
- Basic Federal Tax (including tax credits transfers from dependants or spouse)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement
- Federal refundable medical expense supplement
- Caregiver Tax Credit

Federal Dividend Tax Credit

If the filer declared dividends from taxable Canadian corporations, he or she is eligible to claim the Dividend Tax Credit which amounts to a fixed proportion of taxable dividends. This credit is non-refundable, i.e., it may be used to reduce Basic Federal Tax, but an unused portion is not refunded.

SPSM Implementation

The Federal Dividend Tax Credit (imfdtxc) is calculated as a proportion (FDTCR) of Net Taxable Dividends (imidivt). The amount is added to Total Non-transferable Tax Credits (imtaxcr) which is applied to reduce Basic Federal Tax (imbft).

Federal Dividend Tax Credit

The Labour-sponsored venture capital funds tax credit is modeled from the imputed gross amount purchased (idlbtxg). The credit (imlbtxc) is equal to FLVCRT times the gross

amount (idlabt_{xg}) up to a maximum (FLVCMAX). The rate is provincially based.

Basic Federal Tax

Basic Federal Tax is defined as Federal Tax Payable on Taxable Income minus certain tax credits.

SPSM Implementation

Basic Federal Tax (imbft) is calculated the same way whether or not the tax credits proposed by the White Paper are applied. First, Federal Tax Payable on Taxable Income (imfedtax) is calculated using the interpolating lookup function lkup1 to determine taxes payable on Taxable Income (imitax) from the table FTX.

Dependants are treated separately from the head and spouse since the rules applying to the transfer of deductions from dependant to parent differ from those applying to the transfer of deductions from the spouse.

Transfers from Dependant to Parent

In calculating the dependant's Basic Federal Tax, the following nontransferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Age Tax Credit (imatxc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Federal Dividend Tax Credit (imfdtxc)
- Medical Expense Tax Credit (immedatc)
- Pension Income Tax Credit (impentxc)
- UI Contributions Tax Credit (imuictc)

A dependant may transfer an unused portion of certain tax credits to a supporting parent. Since a limit may be imposed on the amount of the combined Education Tax Credit and Tuition Tax Credit, these are treated separately from the Disability Tax Credit.

If a dependant requires all transferable tax credits to further reduce Basic Federal Tax, i.e., Basic Federal Tax (imbft) exceeds Total Transferable Tax Credits, then the tax credits are subtracted from imbft and no transfer occurs.

If the dependant's Total Transferable Tax Credits (txcrt) exceeds Basic Federal Tax, imbft is reduced to zero and the amount potentially transferable to a supporting parent is calculated as the amount of Disability Tax Credit (imdisatc) not required to reduce Basic Federal Tax plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred ($imttxcrt$) is calculated by reducing the amount potentially transferred ($ttxcrt$) by a proportion ($FNTCR$) of Net Income ($iminet$) exceeding the Tax Credit Transfer Reduction Level (BXM).

The total amount of tax credits transferable from all dependants is accumulated in the variable $ctxcrt$ which is subsequently used to reduce Basic Federal Tax for the parent with the higher Net Income ($iminet$).

These algorithms do not allow the partitioning of the dependant's tax credits between both supporting parents and, therefore, in some cases, the total taxes paid by the family may not be minimized.

Transfers From Spouse

In calculating the Basic Federal Tax of the head and spouse, the following non-transferable credits are subtracted from $imbft$:

- Basic Personal Tax Credit ($imbtc$)
- Charitable Donations Tax Credit ($imchartc$)
- CPP/QPP Contributions Tax Credit ($imcppctc$)
- Tax Credit for Dependant Children ($imctxcs$)
- Federal Dividend Tax Credit ($imfdtxc$)
- Married Tax Credit ($immartxc$)
- Medical Expense Tax Credit ($immedatc$)
- UI Contributions Tax Credit ($imuictc$)

An unused portion of certain transferable tax credits may be transferred from the spouse. The transferable tax credits are:

- Age Tax Credit ($imatxc$)
- Disability Tax Credit ($imdisatc$)
- Pension Income Tax Credit ($impentxc$)
- Education Tax Credit ($imedtxc$)
- Tuition Tax Credit ($imtutxc$)

Since a limit may be imposed on the amount of the combined Education and Tuition Tax Credits, these are treated separately from the others.

If the filer requires all Transferable Tax Credits ($txcrt$) to reduce Basic Federal Tax (i.e., $imbft$ exceeds $txcrt$) then the tax credits are subtracted from Basic Federal Tax and no transfer occurs.

If the filer's Transferable Tax Credits ($txcrt$) exceed Basic Federal Tax, then $imbft$ is reduced to zero and the remainder of the Potentially Transferable Tax Credits ($ttxcrt$) is calculated as the sum of:

- Disability Tax Credit ($imdisatc$)
- Age Tax Credit ($imatxc$)
- Pension Income Tax Credit ($impentxc$)

which is not required to reduce Basic Federal Tax to zero plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imtxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

Although this value is calculated for both head and spouse, the one with the higher Net Income (iminet) actually receives the transfer. The amount transferred from the spouse is stored in the variable imstxcrt. The amount transferred from all dependants is stored in imctxcrt.

Federal Surtax

In 1985 a Federal Surtax was introduced as an additional tax based on Basic Federal Tax payable.

SPSM Implementation

The model allows for two surtax levels and two surtax rates. The total Federal Surtax (imfsur) is calculated as:

- a proportion (FSURR1) of Basic Federal Tax exceeding Surtax Level 1 (FSURL1), plus
- a proportion (FSURR2) of Basic Federal Tax exceeding Surtax Level 2 (FSURL2), minus
- the amount of the additional Federal Foreign Tax Credit from 1986 forward (represented by variable (idfdsft)).

The result is then added to Federal Taxes (imftax) (minus certain federal tax credits) to derive Federal Taxes Payable (imtxf).

Federal Surtax Reduction

The Federal Surtax reduction (imfsurtr) announced in the 1998 federal budget is calculated. The maximum value that the reduction may reach is FSURTRMX. The reduction is reduced by a proportion (FSURTRRR) of basic federal tax (imbft) which exceeds a certain level (FSURTRRL). This reduction is then subtracted from the federal surtax (imfsur).

Federal Taxes Payable

Federal Taxes Payable (imtxf) is defined as Federal Tax (imftax) plus the Federal Surtax (see above) minus the following tax credits:

- Federal Other Tax Credits
- Federal Political Contribution Tax Credit (imfptc), and

Alternate Minimum Tax

In 1986, a minimum tax on individuals was introduced with the intention of increasing the tax liability of those high income individuals who use the tax incentives provided by the current law to structure their affairs so as to pay little or no tax.

The Alternative Minimum Tax requires the calculation of an adjusted taxable income disallowing certain deductions, a list of which follows, which are added back to taxable income.

- Pension Income Deduction
- Interest and Dividend Income Deduction
- Disability Deduction Transferred from Dependant
- Education Deduction Transferred from Dependant
- Deductions Transferred from Spouse
- Employee Home Relocation Loan Deduction
- Stock Option and Shares Deduction
- Contribution to Deferred Income Plans (RPP and RRSP contributions)
- non-taxable portion of capital gains
- capital cost allowance on MURBS and Canadian Films

The grossed-up portion of taxable dividends and Allowable Business Investment Loss are subtracted from taxable income.

The minimum tax is then calculated as a proportion of this adjusted taxable income exceeding the exemption level.

SPSM Implementation

If the Minimum Tax Rate (AMTTX) is not set to zero, the minimum tax algorithms are executed.

The first step recalculates an adjusted taxable income for minimum tax purposes (imamtinc) by adding the following items to imitax:

- RPP Contributions (idrpp) when AMTRPFLG is set to 1
- RRSP Contributions (idrrsp) when AMTRPFLG is set to 1
- Other Deductions from Total Income (idothded, representing Capital Cost Allowances)
- the non-taxable portion of Capital Gains (idicapg * (AMTINCRT - CAPGIR))
- exploration and development expenses (idexplor)
- employee home relocation loan deduction (idemplo)
- stock option and shares deduction when AMTSTK is set to 1
- limited partnership losses (idpartlo)
- allowable other years non-capital losses (idnclos)

The taxable portion of dividends (imidivt) times AMTDIV, net non-deductible capital losses, the allowable portion of business investment losses (imiloss) times the applicable rates defined as $((AMTINCRT - CAPGIR)/CAPGIR)$ and the basic exemption (AMTEX) are subtracted from this value.

The Basic Minimum Tax (ambft) is calculated as a proportion (AMTTX) of Adjusted Taxable Income (imamtinc).

The second step in this process adjusts the Basic Minimum Tax (ambft) to account for allowable tax credits. This requires subtracting the following tax credits from Basic Minimum Tax:

- Basic Tax Credit (imbtc)
- Spouse or Equivalent Tax Credit (immartxc)
- Age Tax Credit (imatxc)
- Tax Credit for Dependant Children (imctxcs)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)
- Medical Expense Tax Credit (immedatc)
- Charitable Donations Tax Credit (imchartc)
- Disability Tax Credit (imdisatc) for self
- Other Dependent Tax Credit (imothpe)
- CPP/QPP Contribution Tax Credit (imcppctc)
- UI Contribution Tax Credit (imuictc)
- Basic Personal Amount Supplement (imbts)
- Caregiver Tax Credit (imcgtc)

If the value of the Basic Minimum Tax (ambft) exceeds Basic Federal Tax (imbft), Federal Tax Payable (imtxf) is recalculated as Basic Minimum Tax (ambft) plus any federal surtaxes on ambft. The federal surtax is calculated in the same manner as on Basic Federal Tax, previously described.

The database does not contain sufficient detail to accurately represent some of the deductions specified in the regulations concerning the calculation of the Minimum Tax. The Disability Deduction and Education Deduction transferred from dependants are not differentiable from those deductions claimed on behalf of the filer. The variable idothded (Other Deduction's from Total Income) includes Capital Cost Allowances on MURBS and Canadian Films but it also contains amounts for moving expenses and alimony payments. It is difficult to estimate the impact of these inaccuracies except to say that they are likely small compared to the large amounts of income and other deductions for the high income persons for whom the Minimum Tax is intended.

Quebec Tax Abatement

The Quebec Tax Abatement is a refundable credit on federal taxes provided to Quebec residents in lieu of direct cost-sharing by the federal government under the federal-provincial fiscal arrangements. It reduces the federal income tax payable by Quebec residents and may provide a refund. The abatement amounts to 16.5% of Basic Federal Tax.

SPSM Implementation

If the filer resides in Quebec, the full Quebec Tax Abatement (qta) is calculated as a proportion (QTAP) of Basic Federal Tax (imbft). This is divided into two portions for

accounting purposes:

- imqtaa is the Quebec Tax Abatement Applied to reduce federal taxes
- imqtar is the Quebec Tax Abatement Refunded

If the Quebec Tax abatement exceeds the Federal Tax payable then a refund is made for the balance of the abatement (imqtar) and the amount of Federal tax payable is reduced by the amount of the abatement. Users may wish to note that this abatement refund was an interesting side effect of the Federal Tax reduction in effect prior to 1986 (see notes in this section).

Federal Refundable Medical Expense Supplement

SPSM Implementation

The refundable medical expense supplement (immedref) was added to imfortc. The program is only available to persons aged 18 and over who have earnings over MEDREMIN and who had allowable medical expenses (immeda). The maximum supplement is calculated as the minimum of MEDRRATE times the allowable medical expenses and MEDRMAX. The benefit is reduced by MEDRRR times the family income over the turndown which is the sum of the basic exemption (BXM), the married exemption (MXM) and the maximum disability amount (MAXDX).

Caregiver Tax Credit

The calculation of the Caregiver Tax Credit (imcgtc) is activated by the flag CGTCFLG. The credit reduces federal taxes and started in 1998. The base level of the credit is CGTC. A take-up rate CGTCTC based on age of the potential parent assigns individuals with idefrh =3 as a parent according to SCF 1994 data. Users have access to a take-up rate CGTCTK based on employment income to select the appropriate number of beneficiaries.

The benefit, imcgtc, is reduced for each dollar of net income, iminet, in excess of CGTCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AMTDIV | Alternative minimum tax: percentage of taxable dividends |
| AMTEX | Alternate minimum tax: exemption level |
| AMTFORTX | Alternative minimum tax: Foreign Income Tax Rate |
| AMTINCRT | Alternative minimum tax: Inclusion Rate |
| AMTNEGTI | Alternative minimum tax: Allow Negative Taxable Income Flag |
| AMTPRVDF | Alternative minimum tax: prov. tax difference |
| definition[prov] | |
| AMTRPFLG | RRSP/RPP included in Alternate minimum tax (1=included) |
| AMTSTK | Alternative minimum tax: Stock Option Proportion |

| | |
|------------|---|
| AMTTX | Alternate minimum tax rate |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CGTC | Caregiver Tax Credit |
| CGTCFLG | Caregiver Tax Credit activation flag |
| CGTCTC | Caregiver tax credit take-up rate by age of elderly [age,rate] |
| CGTCTD | Caregiver Tax Credit Turn Down Income |
| CGTCTK | Caregiver tax credit take-up rate by income level [employment income,rate] |
| FDTCR | Federal dividend tax credit rate |
| FLVCMAX | Maximum labour-sponsored funds tax credit allowed |
| FLVCRT | Percent of labour-sponsored funds cost allowed as credit [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| FPTC | Federal political contribution table [total donations,donation allowed] |
| FPTCBEN | Maximum federal political tax credit allowed |
| FSURL1 | Federal surtax level 1 |
| FSURL2 | Federal surtax level 2 |
| FSURR1 | Federal surtax rate 1 |
| FSURR2 | Federal surtax rate 2 |
| FSURTRMX | Maximum federal surtax reduction |
| FSURTRRL | Federal surtax reduction reduction level |
| FSURTRRR | Federal surtax reduction reduction rate |
| FTX | Federal tax table [taxable income,basic federal tax] |
| GSTREBFLAG | Database variable(gstreb) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MAXET | Maximum on transfer of education and tuition amount |
| MEDREMIN | Minimum earnings for refundable medical expense supplement |
| MEDRMAX | Maximum expenses allowed for medical expense supplement |
| MEDRRATE | Proportion of expenses allowed for medical expense supplement |
| MEDRRR | Reduction rate for the medical expense supplement |
| MXM | Married exemption/amount |
| QTAP | Quebec tax abatement proportion of basic federal tax |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |

| | |
|----------|--|
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgstreb | GST rebate (457) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnclos | Allowable other years non-capital loss (252) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imbtcs | Basic personal tax credit supplement |
| imcapgx | Modelled capital gains deduction (254) |
| imchartc | Charitable donations tax credit |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imctxcs | Dependent children tax credits |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |
| imtutxc | Tuition tax credit |
| imuic | UIC contributions |
| imuictc | UIC contributions tax credit |

OUTPUT VARIABLES:

| | |
|----------|---|
| imamtdf | Difference due to minimum tax |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |

| | |
|----------|---|
| imatxcrt | Total tax credits applied |
| imbft | Basic federal tax |
| imcgtc | Caregiver Tax Credit Level |
| imcgtcp | Dependant caregiver tax credit amount |
| imctxcrt | Tax credits transferred from children |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imfdtxc | Federal dividend tax credit |
| imfedtax | Federal tax before tax credits |
| imfortc | Federal other refundable tax credits |
| imfortxc | Federal foreign tax credit (509) |
| imfptc | Federal Political Contribution Tax Credit |
| imfsur | Federal surtax |
| imfsurtr | Federal surtax reduction |
| imlabtxc | Federal labour-sponsored funds tax credit |
| immedref | Refundable medical expense supplement (452) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imoftca | Other federal tax credits applied (416) |
| imqtaa | Quebec tax abatement (applied) |
| imqtar | Quebec tax abatement (refundable) |
| imstxcrt | Tax credits transferred from spouse |
| imtaxcr | Total tax credits |
| imttxcrt | Total tax credits transferred |
| imtxf | Federal income tax payable |

txccea Compute child care expense allowance

SUMMARY

The txccea function calculates the value of the child care expense deduction.

Description of tax measure

Child care expenses are amounts paid for child care services to allow the parent or "supporting person" to:

- a) earn income from employment or self-employment, (this does not include a period of unemployment) or
- b) take an occupational training course for which the person received an adult training allowance, or
- c) carry on research or similar work for which the person received a grant.
- d) go to school full-time

A filer is eligible to claim child care expenses if:

- a) there is no other supporting person
- b) there is a supporting person with a higher net income (excluding child care expenses) than the filer
- c) there is a supporting person with a net income lower than the filer but
 - i. the filer and supporting person were separated for at least 3 months, or

- ii. the supporting person was in full-time attendance at a designated educational institution, or
- iii. the supporting person was infirm or in prison for at least 2 weeks.

A combination of limitations is applied to the amount claimable:

1. Two-thirds of earned income, and
2. a fixed amount per eligible child up to a fixed maximum is applied if the net income of the filer is less than that of a supporting person (conditions (a) and (b) above).

Under condition (c) above, i.e., the income of the supporting person is lower than that of the filer, the following additional limitation applies:

3. fixed weekly amount per child up to a maximum, multiplied by the number of weeks of separation, attendance at an educational institution, infirmity or imprisonment.

In 1982, the Child Care Expense Deduction was always taken by the mother of the child if she was present. Since then, the deduction or tax credit is normally allocated to the spouse with the lower net income, exclusive of the child care expense deduction, unless that person is separated, in school, infirm or in prison.

SPSM Implementation

The amount of Child Care Expenses Allowed is derived from income tax records during the database creation process (see the *Database Creation Guide*). This value represents the amount allowed according to the base year regulations. Though this amount may be grown or diminished by a fixed factor (GFC CET), the rules described above cannot be easily altered in the current version of SPSM.

The parameter CCEROPT determines which spouse in a two-parent family claims the Child Care Expense Deduction. If CCEROPT is given a value of 1, the deduction is always taken by the mother. With a value of 2, the deduction is taken by the parent with the lower Net Income (iminet).

The condition for a temporarily absent, lower income spouse (condition c. above) is not checked.

On the database, only one spouse of a two-parent family will have been attributed a value for Child Care Expense Deduction Allowed. The assignment of this value is done before we have complete information about the relative net incomes and may therefore be given to an inappropriate person. The model uses the current value of Net Income (iminet) to re-allocate the deduction if necessary.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| CCEAEMPF | CCEA fraction of employment income (Limit `B') |
| CCEALIM | CCEA overall limit |
| CCEAOAGE | CCEA Maximum eligible age for oldest child |
| CCEAOLD | CCEA old child limit |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| CCEAYNG | CCEA young child limit |
| CCEROPT | Child care expense deduction recipient [1=mother,2=lower income] |
| CCESFLAG | CCE full-time student flag |
| CCESOLD | CCEA old child limit for full-time students |
| CCESYNG | CCEA young child limit for full-time students |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| INPUT VARIABLES: | |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| ideducm | Eligible months of education allowance |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idsex | Sex |
| imccez | Is CCE zeroed? |
| imisa | Social assistance (or replacement program) |
| OUTPUT VARIABLES: | |
| imcce | Child care expenses allowed |
| imcce | Child care expenses claimed on behalf of child |
| imdedft | Deductions from total income |
| iminet | Net income |
| imninc | No income flag |

SUMMARY

The federal Child Tax Credit and the Child Tax Benefit provide benefits to help low and middle income families meet the costs of raising children under the age of 18. The txctc function calculates benefits from the federal Child Tax Credit (CTC) program based upon the number of children in a family and the net income of the family. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

The level of benefits varies with the number of children.

Program Description

The federal Child Tax Credit provides benefits to help low and middle income families meet the costs of raising children under the age of 18. It was implemented in 1979 and is administered by Revenue Canada, Taxation, through the income tax system.

Any person who receives Family Allowances is eligible to apply for the Child Tax Credit. The credit is available on behalf of a child for whom Family Allowances were paid for in the month of January following a given taxation year. An eligible person who voluntarily refrains from receiving Family Allowances may still claim the Child Tax Credit. The CTC must be applied for by filing an income tax return regardless of the income of the eligible parent or guardian. A foster parent in receipt of Special Allowances is not eligible for the CTC. Canadian residents living outside Canada, but paying Canadian taxes may apply for the credit.

The amount of the CTC is determined by the number of eligible children and the family's income. Family income is defined as the net income (as defined for income tax purposes) of both parents, whether married or not (provided they are living together), or the net income of a single parent. The net income of any other person who is claiming a personal exemption for a dependent child (whether or not the person lives with the claimant of the CTC) must also be included in family income. For families with taxable incomes the refundable credit to which they are entitled reduces the tax which must be paid; families whose taxes are less than the credit, or who pay no taxes at all receive a non-taxable lump sum payment.

The maximum annual credit is payable if net family annual income is less than a specified level of income called a benefit reduction level or turndown. Families with net incomes above this turndown are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum CTC for eligible parent(s) is zero. In 1993, the CTC was replaced by the Child Tax Benefit. This program is comprised of two parts: the basic Child Tax Benefit, and the Earnings supplement (also called the Working income supplement). The basic child tax benefit consists of \$1,020 per child, plus \$75 for the third child and subsequent children. There is an additional \$213

for each child under 7 with no child care expenses. The benefit is reduced at family incomes over \$25,921 at a 5% rate (or 2.5% if only 1 child).

The Working Income Supplement was a maximum of \$500 per family. It started at earnings of \$3,750, reached the maximum at earnings of \$10,000, and was then reduced, reaching \$0 at family incomes of \$25,921.

In 1997, the Working Income Supplement was enriched. Instead of \$500 per family, the benefit was \$605 for the first child, \$405 for the second child, and \$330 for the third and subsequent children. It was phased in at family earnings of \$3,750, reached a maximum at \$10,000, and was phased out starting at family incomes of \$20,921. The reduction rates were 12.1% for families with 1 child, 20.2% for families with 2 children, and 26.8% for families with 3 or more children.

In 1998, the program was renamed the Canada Child Tax Benefit (CCTB). The basic benefit has the same level and structure of the Child Tax Benefit. The Working Income Supplement was replaced by the CCTB National Child Benefit Supplement. It is no longer dependent on earnings, and therefore is not phased in. Otherwise, it follows the same rules as the 1997 Working Income Supplement.

SPSM Implementation

The `txctc` function calculates the federal Child Tax Credit based on the number of children in a family and the net income of the family. Residency requirements are deemed to have been met in all cases. The function always allocates the Child Tax Credit to the mother unless one is not present in the nuclear family. The function only outputs a value for the federal child tax credit and this reflects the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txctc` function operates at the nuclear family level. It first calculates a local variable for the family's net income by adding the eldest member's net income and that of their spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are then obtained by multiplying the number of children in the nuclear family by the maximum benefit per child (`nfkids * CTCPC`). The maximum CTC is then reduced at the specified reduction rate (`CTCRR`) applied to family net income in excess of the CTC turndown (`CTCTD`). This reduction is performed using the `taxbak1` function. Finally the federal Child Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

When the `FCBEIE` flag is turned on, the Working Income Supplement has a different rate according to the number of children in the household, `FCBEIS1`, `FCBEIS2`, `FCBEIS3` and is also reduced at varying rates, `FCBERR1`, `FCBERR2`, `FCBERR3`. The enriched WIS is phased in starting at family incomes `FCBECI` and reaches its maximum at `FCBEMX`. The phase in rate is linear and depends again on the number of children in the family.

There was also a fix for the Quebec child tax benefits. The benefits (`QCBC3`) are now being assigned to the third and each additional child in a family.

Interpretation

Results obtained from the SPSM with respect to Child Tax Credit benefits differ from Revenue Canada administrative data. Overall the SPSM reports 101.9% more 1984 tax year benefits than does Revenue Canada for provincial Canada. However, the number of children for which the credit is paid is 99.6% of Revenue Canada's figures. One would expect the number of children on the SPSD to be low due to the non-coverage of persons residing on reservations and outside Canada. Thus there would seem to be a small deficit on the SPSD in the net income of families with eligible children.

Relation to Other SPSM Routines

The txctc function is called by drv. The function outputs one dollar value variable that is used in memo1 for reporting purposes.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| ACBC1 | Alberta Child benefit per child aged 0 - 6 |
| ACBC2 | Alberta Child benefit per child aged 7 - 11 |
| ACBC3 | Alberta Child benefit per child aged 12- 15 |
| ACBC4 | Alberta Child benefit per child aged 16- 17 |
| CTCERF | CTC child care expense reduction fraction |
| CTCINC | CTC family income scaling factor |
| CTCOPT | Child tax credit option |
| CTCPC | Child tax credit per child |
| CTCREF | CTC post-reform rules flag |
| CTCRR | Child tax credit reduction rate |
| CTCSUP | CTC young child supplement |
| CTCTD | Family income child tax credit turndown |
| CTCTUR | CTC take up rate table [benefit,rate] |
| FCBBAS | Basic child benefit (per child) |
| FCBECE | Child benefits earning supplement cut-in level |
| FCBEIE | Flag for WIS dependent on number of children |
| FCBEIS | Child benefits earned income supplement |
| FCBEIS1 | Enriched WIS for first child |
| FCBEIS2 | Enriched WIS for second child |
| FCBEIS3 | Enriched WIS for each additional child |
| FCBEMX | Earnings where WIS phase-in is at maximum |
| FCBERR | Child benefits earning supplement reduction rate |
| FCBERR1 | WIS reduction rate for families with 1 child |
| FCBERR2 | WIS reduction rate for families with 2 children |
| FCBERR3 | WIS reduction rate for families with 3+ children |
| FCBESR | Child benefits earned income supplement rate |
| FCBETD | Child benefits earning supplement turndown level |
| FCBLRG | Supplement for 3rd and subsequent kids |
| FCBRR | Multi-children family income reduction rate |

| | |
|-------------|---|
| FCBRRS | Single-child family income reduction rate |
| FCBTD | Federal child benefits family income turndown |
| FCBYNG | Supplement for children under age 7 |
| FCBYNGR | Child care expense reduction rate |
| PYINC | Deflator to calculate previous year income |
| QCBC1 | Quebec Child benefit for 1st child |
| QCBC2 | Quebec Child benefit for 2nd child |
| QCBC3 | Quebec Child benefit for 3rd child |
| QCBCFLG | Quebec Child benefit flag for Quebec calculation |
| methodology | |
| QCBCS | Quebec Child benefit supplement child aged 12- 17 |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idrand | Random numbers [array] |
| idsex | Sex |
| imcce | Child care expenses claimed on behalf of child |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--|
| imctc | Child tax credit |
| imfcben | Total Federal Child Benefits |
| imfcbenb | Total Federal Child Benefits Base |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imninc | No income flag |

txfstc Compute federal sales tax credit

SUMMARY

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales

Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

Program Description

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. It was implemented for the 1986 and subsequent tax years and is administered by Revenue Canada, Taxation, through the income tax system.

Upon application, through the filing of an income tax return, the federal sales tax credit is available to any individual who at the end of the year was married, had a child, or was over 18 years of age. Eligible individuals may claim the credit for themselves, their qualified relations, and one spouse. Individuals who are not subject to tax in Canada or who were confined to a prison or similar institution for a period of over six months in the year for which a claim is made may not claim the credit. A married couple may make only one claim.

Maximum family benefits are a function of the type and number of individuals in the family as well as the net income of the family. There are three individual credit maximums; one for the filer; one for a spouse with whom the filer resided at the end of the year; and one for any other person under the age of 18 at the end of the year who was a child of the individual or their spouse or was a person in respect of whom the individual or his spouse has claimed a personal deduction. Family net income is the net income, for tax purposes, of the head of the family and their spouse if present.

The maximum annual credit is payable if net family annual income is less than a specified level of income (called turndowns, exemptions, or benefit reduction levels). Families with net incomes above this reduction point are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum STC is zero. In 1986 the maximum credit was \$50 per adult and \$25 per dependent child, the reduction point was \$15,000 and the reduction rate was 5%. So, for example, a family with a spouse and two eligible children and a net income of \$17,000 would receive a tax credit of \$100.00. (The 1986 credit becomes zero for families of this type with a net income at or above \$18,000.)

SPSM Implementation

The `txfstc` function calculates the federal Sales Tax Credit based on the number, age, and type of persons in a family and the net income of the family. The function always allocates the Sales Tax Credit to the spouse with the higher net income in the nuclear family. The function outputs values for the federal Sales Tax Credit and these reflect the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txfstc` function operates at the nuclear family level. It first increments two local variables based on information on the eldest member of the nuclear family; one for the family's net income by adding the eldest member's net income; and one for the maximum family benefits by adding the maximum entitlement for a filer. The program next increments both local

variables for the spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are incremented last by multiplying the number of children in the nuclear family by the maximum benefit per child ($\text{nfnkids} * \text{FSTCC}$). The maximum STC is then reduced at the specified reduction rate (FSTCR) applied to family net income in excess of the STC reduction point (FSTCL). This reduction is performed using the `taxbak1` function. Finally the federal Sales Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

The federal sales tax credit is claimable at age 19. Parents may claim additional amounts for children aged 18 and younger. When calculating the GST credit, the income concept used is the previous year's incomes. The GST credit for a given year, say 1992, would represent the amounts paid from July 1992 to July 1993.

Interpretation

Results obtained from the SPSM with respect to Sales Tax Credit benefits have no valid Revenue Canada administrative data with which to compare the results. In general, the SPSM should be slightly low due to certain coverage issues. Further analysis will be required to correctly estimate who in a married couple is claiming the benefit. Take-up issues may also be relevant.

Relief for Heating Expenses

When `HEATRLFLG` is turned on, persons will receive a transfer from the federal government for the relief of heating expenses (`imheatrl`). In order to receive it, a person has to have received a GST credit (`imfstc`). Qualifying persons who live with a spouse or children receive `HEATFAM` and others receive `HEATSNG`.

Note that, as indicated in the federal economic statement 2000, in order to receive a check in 2001 a person had to qualify for the GST credit in January 2001 or June 2000. In the SPSM this is the modeled GST credit for 2000 (we assume that the entire check is given in June), based on 1999 income. In order to simplify the code, we used receipt of the 2001 GST credit as a proxy for receipt of the 2000 GST credit. Given the fact that there was no change in the rules governing the GST credit in these two years, this should have a small effect.

Relation to Other SPSM Routines

The `txfstc` function is called by `drv`. The function outputs one variable that is used in `memo1` for reporting purposes. The function makes use of (calls) the `taxbak1` function.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| FSTCC | Federal sales tax credit amount for dependant |
| FSTCF | Federal sales tax credit amount for filer |
| FSTCL | Federal sales tax credit reduction level |
| FSTCR | Federal sales tax credit reduction rate |
| FSTCS | Federal sales tax credit amount for spouse |
| GSTAC | GST additional credit amount |
| GSTAR | GST additional credit rate of net income |
| GSTASPFLAG | Maximum GST additional credit for single parents flag |
| GSTAXM | GST additional credit exemption |
| GSTCTUNC | GST credit take up by number of children |
| GSTFLAG | GST credit activation flag |
| HEATFAM | Federal relief for heating expenses for families |
| HEATRLFLG | Federal relief for heating expenses activation flag |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| INPUT VARIABLES: | |
| cfageeld | Age of eldest in census family |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idrand | Random numbers [array] |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| OUTPUT VARIABLES: | |
| imfstc | Federal sales tax credit |
| imheatrl | Federal relief for heating expenses |
| imninc | No income flag |

SUMMARY

When IMSHTOPT is set to 1, imputation of provincial paid rents and property taxes are calculated based on Greenbook data, when set to .2 they are based on FAMEX. The rent and property tax are imputed to head's of census families and census family spouses reporting positive net income.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| IMSHTOPT | Paid rent and property tax imputation option |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| fxio | I/O expenditure categories [array] |
| fxprtax | Property tax |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hnnin | Number of individuals in household |
| idcfrh | Relationship to census family head |
| idhhrh | Relationship to head of household |
| idproptx | Net property taxes paid (556) |
| idrentpd | Total rental payments (555) |

OUTPUT VARIABLES:

| | |
|----------|---------------------------|
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |

SUMMARY

This function calculates exemptions or tax credits for dependants as well as performing transfers of deductions between spouses. The algorithms included in this function are:

- calculate and allocate Tax Credits for Wholly Dependant Children
- calculate and allocate Spouse (or Married) Tax Credit
- calculate Spouse (or Married) Equivalent Tax Credit
- calculate Deductions Transferred from Spouse

Calculate and Allocate Tax Credits for Wholly Dependant Children

Before 1988, filers with dependant children were eligible to claim a personal exemption based upon the age and net income of the child. The exemption was calculated as a fixed amount (adjusted annually) minus a proportion of the child's income exceeding the reduction level. The amounts varied with the age of the child. Children under 18 years of age were treated differently from children 18 and over. This claim could be split between supporting parents or grandparents.

The June 1987 White Paper on Tax Reform proposed the conversion of the exemption on behalf of children under 18 into a tax credit and the elimination of the exemption for children 18 and over.

SPSM Implementation

(Note: this paragraph needs to be rewritten.) The amount of the tax credit on behalf of dependants under 18 is calculated by subtracting a proportion (YCTCR) of the child's Net Income (iminet) which exceeds the Reduction Level (YCTCT) from the Maximum Young Child Tax Credit (YCTC).

The amounts for all children are accumulated in ctxct which may later be adjusted by the calculation of the Spouse Equivalent Tax Credit. If a spouse is present, the one with the higher Net Income iminet receives the full amount of the tax credit for all dependent children (imctxcs) which is used to reduce Basic Federal Tax imbft in the function txcalc.

There is no tax credit for dependent children 18 and over. The model has no provision for a tax credit for infirm dependants aged 18 and over.

The model does not partition exemptions for wholly dependant children between spouses as is allowed in tax regulations. If it were partitioned, certain families would pay slightly lower taxes.

Spouse Tax Credit

Persons legally married during the taxation year are eligible to claim a non-refundable Spouse Tax Credit. The tax credit amounts to a fixed amount reduced by a proportion of the spouse's net income exceeding a specified level. Net income for this purpose includes the spouse's GIS/SPA benefits.

SPSM Implementation

The Spouse Tax Credit (immartxc) amounts to a fixed value (MXM) reduced by the amount of the spouse's Net Income (imdepmi) exceeding the reduction level (MXMT). This is

calculated only for the spouse with the higher Net Income.

The Spouse Tax Credit (immartxc) is used to reduce Basic Federal Tax in the function txcalc.

Although the regulations allow special considerations for persons who changed marital status during the taxation year, they are not implemented in the model.

Equivalent-to- Spouse Tax Credit

Filers who are single, divorced, separated or widowed and supported a relative related by blood, marriage or adoption are eligible to claim that relative for the Equivalent-to-Spouse Tax Credit, amounting to a fixed value reduced by a proportion of the relative's net income exceeding a reduction level.

SPSM Implementation

The SPSM calculates the Equivalent-to-Spouse Tax Credit on behalf of dependant children, not other relatives who may be eligible. If a non-claimable dependant is present, he or she is chosen to be claimed for the credit. If there is no such dependant, then the one with the lowest Net Income (iminet) is claimed.

The credit is calculated as a fixed amount (EMXM) reduced by the amount of the dependant's Net Income (imdepni) exceeding the reduction level (EMXMT). If the credit is being claimed on behalf of a dependant who is also eligible for the Wholly Dependant Child Tax Credit, the amount claimed for that dependant is subtracted from the total Wholly Dependant Child Tax Credit and the total number of children claimed is reduced by one.

The Spouse Equivalent Tax Credit is added to Total Nontransferable Tax Credits (imtaxcr) which is subtracted from Basic Federal Tax (imbft) in the function txcalc.

Calculate supplement to the basic personal tax credit

The supplement to the basic personal tax credit announced in the 1998 federal budget is calculated by reducing the maximum supplement (BXMS) by a proportion (BXMSRR) of taxable income above the level of the basic exemption (BXM) plus the maximum supplement (BXMS). The supplement is added to the basic personal tax credit (imbtc). Persons who claim the married amount or equivalent-to-spouse amount get an additional supplement. This program was cancelled in the 1999 federal budget.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----|---------------------------------|
| BXM | Basic personal exemption/amount |
|-----|---------------------------------|

| | |
|--------|--|
| BXMS | Basic personal exemption supplement |
| BXMSPI | Basic personal exemption supplement phase in |
| BXMSRR | Basic personal exemption supplement reduction rate |
| EMXM | Married equivalent exemption/amount |
| EMXMT | Married equivalent exemption/amount turndown level |
| FNTCR | Federal non-refundable tax credit rate |
| MXM | Married exemption/amount |
| MXMT | Married exemption/amount turndown level |
| YCXM1 | Dependent child amount (1st child) |
| YCXM2 | Dependent child amount (2nd child) |
| YCXM3 | Dependent child amount (3rd ,etc.) |
| YCXMT | Dependent child exemption/amount turndown level |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imbtcs | Basic personal tax credit supplement |
| imcchc | Child's non-refundable credit |
| imcemc | Child's equivalent to married credit |
| imchclm | Number of dependent children claimed |
| imctxcs | Dependent children tax credits |
| imdepni | Dependant's net income |
| immartxc | Married tax credit claimed |

txinet Compute net income

SUMMARY

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures which are discussed in order in terms of the description of the tax measure and its SPSM implementation.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Calculate Taxable Dividends
- Calculate Taxable Capital Gains
- Calculate Total Income
- CPP/QPP Contributions Tax Credit

- Unemployment Insurance Contributions Tax Credit
- Tuition Fees Tax Credit
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

Program Description

Other Allowable Employment Expenses

Certain special employment expenses not claimable elsewhere are allowed.

According to the 1984 definition, these expenses include:

- employee's expenses for travel, office and wages to assistants,
- commission sales employees may claim certain expenses paid to earn their income,
- transport employees may deduct the cost of meals and lodging while away from home, and
- power saw operators may claim expenses incurred in operating the power saw.

This is a special deduction from employment income and is not available to most employees.

SPSM Implementation

The value for Other Allowable Employment Expenses (idalexp) already exists on the database. This value is derived from actual taxation statistics. For more details, please see the *Database Creation Guide*. This value is multiplied by the parameter ALEXPP (Proportion of Other Allowable Expenses to Use as a Deduction) to obtain imalexp, the modeled amount for Other Allowable Expenses.

Calculate Taxable Capital Gains

Capital Gains arise when an individual sells a property for more than it originally cost. If a property is sold for less than it cost, a capital loss may be claimable.

Only a portion of Capital Gains received are considered taxable. Similarly only a portion of capital losses may be claimed as a loss. The value of idicapg represents the actual amount of the Capital Gain or Loss Allowed. Losses, in 1984, were limited to \$2,000. This represents the lower limit of the variable idicapg. Modeled Taxable Capital Gains or Losses imicapgt are calculated by multiplying idicapg by the Capital Gains Inclusion Rate (CAPGIR).

Calculate Taxable Dividends

To avoid double taxation of dividends earned in Canadian business, the dividends from taxable Canadian corporations are treated differently from other sources of income. Before taxation, these dividends are "grossed-up" or increased to an amount which approximates the underlying corporate tax already paid on these earnings. A Dividend Tax Credit is paid based on the grossed-up amount and approximated the corporate taxes already paid.

The gross-up tax credit system ensures that income earned by Canadian corporations and then distributed in the form of dividends bears the same amount of total tax as if the income were earned directly by the shareholders.

SPSM Implementation

Total Dividends Received is represented on the database by the variable `idivid`. The taxable amount (`imidivt`) which is added to total income is calculated by multiplying `idivid` by the Federal Dividend Gross-up Rate (FDGUR).

Calculation of Total Income

At this point, the SPSM is able to calculate a first approximation of total income for tax purposes. This is not a final value since Family Allowances cannot be allocated to the mother or father until the Net Income of both is known. This temporary value of Total Income (`itot`) is the sum of:

| | |
|------------------------|--|
| <code>idiemp:</code> | Earnings From Employment |
| <code>idisenf:</code> | Self-employment Earnings (Non-farm), optionally scaled by the parameter <code>FACTISENF</code> |
| <code>idisefm:</code> | Self-employment Earnings (Farm) |
| <code>idiint:</code> | Interest Income |
| <code>idioinv:</code> | Other Investment Income |
| <code>idicqp:</code> | CPP/QPP Benefits Received |
| <code>iditogv:</code> | Other Taxable Government Income |
| <code>idipens:</code> | Pension Income |
| <code>iditoth:</code> | Other Taxable Income |
| <code>imiuib:</code> | Modeled Unemployment Insurance Benefits Received |
| <code>imiotg:</code> | Modeled New Taxable Demogrants |
| <code>imioas:</code> | Modeled OAS Benefits |
| <code>imidivt:</code> | Modeled Taxable Amount of Dividends |
| <code>imicapgt:</code> | Modeled Taxable Capital Gains and Losses |

Calculate CPP/QPP Contribution Tax Credit

All Canadians aged 18 to 64 and in the labour force are covered by either the Canada Pension Plan (CPP) or the Quebec Pension Plan (QPP). The pension plans provide retirement benefits as well as survivor benefits for a widow or dependant when the contributor dies prematurely, a death benefit and disability benefits. The plans are publicly funded, based on contributions from all employed persons aged 18 to 70 with pensionable earnings.

Contributions to the Canada and Quebec Pension Plans are based on employment income and are usually made through payroll deductions. Self-employed persons make their contribution through the tax system, the amount of the contribution is added to federal taxes payable.

The amount contributed is not subject to taxation and is therefore either deducted from total income or treated as a tax credit.

In most cases, an employee and his or her employer will contribute the same amount to the employee's pension plan. Self-employed persons contribute a twice the rate of employees.

Although employees have their CPP/QPP contribution deducted from their paycheck, refunds for overpayment are made through the personal income tax system.

SPSM Implementation

CPP/QPP Contributions are calculated separately on employment and self-employment earnings. Employment earnings subject to contribution are calculated by subtracting the amount of exemptable earnings (CPPXM) from Earnings from Employment (*idiemp*). This amount cannot exceed the Maximum Earnings Subject to Contribution (YMPE minus CPPXM). Earnings Subject to Contribution are then multiplied by the CPP/QPP contribution rate (WSCF) to derive the amount of the contribution (*wscon*).

Contributions from self-employment earnings (*secon*) is a proportion (SECF) of Earnings from Employment (*idiemp*) plus Earnings from Self-employment (*idisenf* + *idisefm*) that are in excess of the Annual Exemption Level (CPPXM) and less than the year's Maximum Pensionable Earnings Level, less a multiple (WSCM) of contributions made on Earnings from Employment (*wscon*). WSCM is the ratio of the contribution rate on earnings from self-employment to the rate on earnings from employment.

The total CPP/QPP Contribution is the sum of the Contribution Payable on Earnings from Employment (*wscon*) plus the Contribution Payable on Earnings from Self-employment (*secon*).

There is no information in the database concerning the actual amount deducted through payroll deductions; therefore, refunds for overpayment cannot be calculated.

The CPP/QPP Contribution tax credit (*imcppctc*) is calculated as a proportion (FNTCR) of the total contributions (*imcqqpc*). The tax credit is applied in the function *txcalc*.

When CPPSEDEDFLG is turned on, a fraction (CPPSEDFRC) of a person's contributions to

the CPP/QPP in regards to their self employment earnings are treated as an exemption (imcppse) and is added to imdedft. The rest, along with the contributions on wages and salaries, can still be claimed as a tax credit (imcppct).

Unemployment Insurance Contributions

Unemployment Insurance is intended to provide short-term financial support to the unemployed. It also provides benefits for those suffering from extended sickness, for women leaving the labour force temporarily because of pregnancy and childbirth, and supplementary benefits to unemployed fishermen and to persons undertaking manpower training courses. The program is given its mandate by the Unemployment Insurance Act (1971). The act covers nearly all members of the labour force except self-employed persons and those who earn less than the minimum insurable earnings. The program is funded by employee and employer contributions as well as additional revenue from the consolidated revenue fund.

Contributions are calculated as a proportion of weekly earnings. Only earnings above the minimum insurable earnings and less than the maximum insurable earnings are subject to contribution.

Unemployment Insurance premiums are deducted from the employee's paycheck by the employer. Reimbursements for overpayment are made through the tax system. The amount contributed is not subject to tax. Before 1988, UI contributions were deducted from total income. The June 1987 White Paper on Tax Reform proposed the conversion of this deduction into a non-refundable tax credit.

Two major Employment Insurance Reforms were added, the difference in contributions, and the benefits repayable.

SPSM Implementation

The database contains no detail on an individual's weekly distribution of earnings throughout the year. Weekly earnings are estimated by dividing the annual Earnings from Employment (idiemp) by the Number of Weeks Worked (idlyww). This assumes that the earnings were evenly distributed throughout the year. It also assumes that the earner worked at least 20 hours during each week.

If average weekly earnings are less than $UIMINPCT * UIERNMAX$, no UI contributions are made. Otherwise, the annual UI Contribution (imuic) are calculated as a proportion (UIPF) of average weekly earnings not exceeding the Maximum Weekly Earnings Subject to Contribution (UIERNMAX), multiplied by the number of weeks worked.

The UI Contribution Tax Credit (imuictc) is calculated as a proportion (FNTCR) of the contributions. This tax credit is later applied to reduce Basic Federal Tax in the function txcalc.

When Employment Insurance is activated (UIEIOPT = 2), then the EI contributions (imuic) are calculated using the UI contribution rate on earnings (UIPF) with no weekly maximums and no exemptions for low income. The EI contribution refund (imuicrf) is then calculated

and subtracted from the contributions.

The method of calculating UI/EI benefit recovery (imuiobr) is also changed when UIEIOPT is activated. When UIEIREPOPT is set to 1, it now depends on the amount of previous weeks of EI received. If employment insurance benefits (imiuib) have been received and net income is in excess of: (a) UIBRA for persons with previous EI receipt, or (b) UIBRANR for persons with little previous benefits or for persons not on regular EI claims; UIEIRPR is applied to the lower of (a) total EI benefits and (b) the excess net income up to a maximum percent of their total benefits (UIEIBRP), to calculate the repayment.

When UIEIREPOPT is set to 2, sickness, maternity, and parental benefits are exempt from benefit repayment. Persons who claim EI for the first time are also exempt from benefit repayments. For the rest, the repayment is equal to the UIEIRPR times the minimum of net income in excess of UIBRANR and EI benefits.

See UIEIRPR, UIBRANR, UIEIBRP, UIBRA, and UIEINRT for more details.

Tuition Fees

Tuition fees paid to an educational institution may be claimed as a tax credit by the student or may be transferred to a spouse or supporting parent.

SPSM Implementation

A value for Tuition Deduction Allowed in the base year (idtuitn) exists on the database. This value is imputed from income tax records (see the *Database Creation Guide*). To calculate the Tuition Tax Credit, idtuitn, is multiplied by the Federal Non-Refundable Tax Credit Rate FNTCR and the result (imtutxc) is later applied as a tax credit in the function txcalc.

Assign Taxable Family Allowance

For tax purposes, Family Allowances are attributed to the person who claims a personal exemption (or post-reform, a tax credit) for the child. The model assumes that the exemptions are allocated to the spouse with the higher net income (iminet, excluding FA) if present. This is the spouse who would benefit most from claiming the children and, therefore, this is the one who also must claim Taxable Family Allowances.

Calculate Net Income

Net Income (iminet) is calculated as Total Income (imitot) minus All Deductions from Total Income (imdedft). imdedft is the sum of:

| | |
|----------|--|
| idrpp: | Registered Pension Plan Contributions |
| idrrsp: | Registered Retirement Savings Plan Contributions |
| iddues: | Union and Professional Dues |
| imiloss: | Allowable Business Investment Loss |

idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions
imuic: optionally, UI Contributions
idtuitn: optionally, Tuition Fees
imcceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txceca)

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALEXPP | Proportion of other allowable employment expenses to use as deduction |
| CAPGIR | Capital gains inclusion rate |
| CPP60T64 | CPP/QPP Contributions Take up (60 - 64) by earnings with CPP income |
| CPPGT64 | CPP/QPP Contributions Take up (over 64) by earnings with CPP income |
| CPPLT60 | CPP/QPP Contributions Take up (under 60) by earnings with CPP income |
| CPPSEDEDFLG | CPP/QPP contribution deduction for self-employed earnings flag |
| CPPSEDFRC | CPP/QPP contribution deduction fraction for self-employed earnings |
| CPPXM | CPP/QPP exemptible earnings |
| FACTISENF | Scale-up factor for non-farm self-employment income |
| FARR | Family allowance repayment rate |
| FATBPI | Family allowance take-back phase in |
| FATD | Family allowance turndown income |
| FDGUR | Federal dividend gross-up rate |
| FNTCR | Federal non-refundable tax credit rate |
| NETOASFLG | Net the clawback from Old Age Security |
| OASRR | OAS reduction rate |
| OASTBPI | OAS take-back phase in |
| OASTD | OAS turndown income |
| REPNETFLAG | Social program repayments reduce net income flag |
| SECF | CPP/QPP contribution rate on self-employment earnings |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |
| UIBRP | UI benefit recovery portion (UI only) |

| | |
|------------|--|
| UIEIBRP | Maximum clawback under EI reform [Past Wks ben][Rate] (EI only) |
| UIEINRT | UI EI Non repeater level for higher clawback turndown (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIREF | EI contribution refund cut-in (EI only) |
| UIEIREFTK | EI contribution refund take up |
| UIEIREPOPT | EI Benefit repayment option (1=repeaters have higher rate,2=one rate)(EI only) |
| UIEIRPR | UI EI benefit clawback rate (EI only) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIMINPCT | Exemption limit (percent of maximum insurable earnings) (UI only) |
| UIPF | UI contribution rate on earnings (UI and EI) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| WSCF | CPP/QPP contribution rate on employment earnings |
| WSCM | Ratio of self-employed to employed contribution fraction |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|----------|--|
| hdprov | Province |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcarry | Carrying charges (221) |
| iddalimo | Alimony paid (220) |
| iddues | Union and professional dues (212) |
| idexplr | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idlyww | Weeks worked |
| idmovexp | Imputed moving expenses (219) |
| idothded | Other deductions from total income (232) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idtuitn | Tuition fees (320) |
| iduirank | Predicted ranked likelihood of getting UI |
| imiotg | Other taxable demogrants |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| nfineld | Eldest person in nuclear family [pointer] |
| nfnspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |
| ubcalpd | Benefits paid in calendar year |

| | |
|---------|---------------------------|
| ubeiwbp | Weeks of past EI benefits |
| ucbtyp | Claim type |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|----------|---|
| imalexp | Allowable employment expenses |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedft | Deductions from total income |
| imfar | Family allowance recovery |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imioas | OAS benefits |
| imitot | Total income |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imtfa | Taxable family allowances |
| imtutxc | Tuition tax credit |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |
| imuicrf | UI EI contribution refund |
| imuictc | UIC contributions tax credit |

txitax Compute taxable income and individual credits

SUMMARY

The process of computing taxable income is divided into two separate routines. Deductions and tax credits which are not dependent upon information from other members of the family (e.g., Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

The algorithms contained in txitax are:

- Basic Personal Tax Credit
- Age Tax Credit
- Pension Income Deduction
- Medical Expense Tax Credit, Charitable Donations Tax Credit
- Disability Tax Credit
- Education Tax Credit
- Capital Gains Deduction

- UI Benefit Repayment Payable
- Family Allowance and OAS Repayment Payable (optional)
- Employee Home Relocation Loan Deduction
- Stock Option Deduction

Basic Personal Tax Credit

The non-refundable Basic Personal Tax Credit is calculated by assigning the value of the parameter BXM (Basic Personal Tax Credit) to the variable imbtc (Modeled Basic Personal Tax Credit) which is applied to reduce Basic Federal Tax in the function txcalc.

Age Tax Credit

All Canadians who were 65 years of age or older on December 31st of the taxation year would be eligible to claim the Age Tax Credit.

When the Age Tax Credit is calculated, imatxc (Modeled Age Tax Credit) receives the value assigned to the parameter AXM. The function txcalc performs any applicable transfer of the tax credit from the spouse and applies the tax credit to reduce Basic Federal Tax.

Pension Income Tax Credit

Certain pension income from a pension plan or upon the death of a spouse qualifies for a Pension Income Tax Credit. The deduction amounted to the lesser of the maximum deduction (fixed at \$1,000) and eligible income. Any amount of this deduction not required to reduce taxable income to zero is transferable to the spouse.

The June, 1987 White Paper on Tax Reform proposed the conversion of this deduction into a tax credit amounting to a proportion of eligible income up to a maximum of \$170. This tax credit would also be transferable.

SPSM Implementation

The Modeled Pension Income Tax Credit (impentxc) is assigned the minimum of:

- a) qualified pension income (idipens) and
- b) the Maximum Allowable Tax Credit (YPNDL),
times the Tax Credit Rate (FNTCR).

Any portion of the Pension Income Tax Credit not required to reduce a filer's Basic Federal Tax to zero is transferable to the spouse. The transfer is calculated in the function txcalc.

Medical Expense Tax Credit

The filer is allowed a non-refundable tax credit for certain medical expenses paid on behalf of the filer, spouse or dependants. All medical expenses claimed require supporting proof to be allowed as a tax credit and only medical expenses in excess of 3% of net income are claimable.

SPSM Implementation

The value of Medical Expenses Allowed (immeda) is calculated as the value of the gross medical expenses from the database (idmedgro) less either MEDANF percent of net income or MEDALL, whichever is less. The Medical Expense Tax Credit (immedatc) is calculated as a proportion (FNTCR) of the value of Medical Expenses Allowed (immeda). The Medical Expense Tax Credit is applied to reduce Basic Federal Tax in the function txcalc.

Although medical expenses paid on behalf of dependants are claimable by either spouse, no transfers between spouses are made for this tax credit.

Charitable Donations Tax Credit

The filer is allowed a non-refundable tax credit on behalf of charitable donations and gifts to Canada or a province. SPSM Implementation

The database contains a value for gross charitable donations (idcharit). The allowable charitable donations (imchara) are calculated as the lesser of idcharit and CHATNF percent of net income. The value of gifts or donations to Canada, a province or a cultural institution are then added to imchara.

A two-tier, non-refundable Charitable Donation Tax Credit (imchartc) is calculated. Allowable Donations (imchara) up to a set amount (CHATL1) are converted at the first tax credit rate (CHATR1) and the remainder is converted at the second rate (CHATR2).

The Charitable Donations Tax Credit is a component of the total non-refundable tax credits used to calculate Basic Federal Tax in the function txcalc.

Disability Tax Credit

Disabled persons whose impairment has markedly restricted or is expected to restrict their activities of daily living for a continuous period of at least 12 months are eligible to claim a special Disability Tax Credit. SPSM Implementation

The Disability Tax Credit (imdisatc) is assigned the value of the parameter MAXDX (Maximum Disability Tax Credit) for filers with reported disability amounts for self (iddisslf) or other dependents (iddisoht). Any portion of the tax credit not required to reduce Basic Federal Tax to zero may be transferred to the spouse or a supporting parent in the function txcalc.

Education Tax Credit

The Education Tax Credit represents the amount that students with full-time attendance at a designated post-secondary institution may claim. The number of eligible months is multiplied by a maximum allowable amount per month. The filer may transfer to a spouse, parent or grandparent the part of the education tax credit that is not needed to reduce the federal income tax to zero.

SPSM Implementation

The Education Tax Credit (*imedtxc*) is calculated as the number of eligible months of education amount (*ideducm*) multiplied by the Education Tax Credit per Month (*EDXPM*). The function *txcalc* may transfer unused amounts of the tax credit to a parent or spouse.

Capital Gains Deduction

Since 1985, a deduction has been allowed on behalf of capital gains income. The Capital Gains Deduction is being phased in with an increasing annual deduction limit amounting to \$10,000 in 1985 and \$25,000 in 1986. The amount an individual may claim during his or her lifetime is limited to a fixed amount. These measures were introduced in the May, 1985 Budget Papers and subsequently modified in the June, 1987 White Paper on Tax Reform.

SPSM Implementation

The Capital Gains Deduction is calculated as the minimum of:

- a) the Annual Capital Gains Deduction Limit (The Annual Limit based on gross Capital Gains, *CAPGAL*, times the Capital Gains Inclusion Rate, *CAPGIR*, and
- b) Taxable Capital Gains (*imicapgt*) minus:
 - Allowable Business Investment Loss (*idcloss*)
 - Net Capital Losses of Other Years (*imiloss*)

The resultant deduction is added to Total Deductions from Net Income (*imdedfn*).

The database contains no information on the filer's previous Capital Gains Deduction and therefore, the lifetime limit cannot be applied.

Unemployment Insurance Benefit Repayment Payable

If an individual has received Unemployment Insurance Benefits and his or her Net Income exceeds a fixed amount (\$38,610 in 1986), a portion of the benefits must be repaid. This repayment is added to Federal Taxes Payable. The amount repaid becomes a deduction from Net Income.

SPSM Implementation

The amount repayable is a proportion (*UIBRP*) of the UI Benefits received (*imiuib*) or a proportion of Net Income exceeding the Repayment Level (*UIBRA*) whichever is less. The Repayment Amount (*imuibr*) is a proportion (*UIBRP*) of the lesser of:

- (a) *imiuib*: Modeled UI Benefits
- (b) *iminet* *UIBRA*: the amount by which Net Income exceeds the Repayment Level

The value of *imuibr* is added into the variable *imrepay* which accumulates modeled repayment amounts. *imrepay* is added to Total Deductions from Net Income (*imdedfn*).

Family Allowance and OAS Repayments

The SPSM includes optional algorithms which allow the analysis of certain modifications to Family Allowances and the Old Age Supplement. These algorithms are presented with the SPSD/M for illustrating a glass box application. Users may consult the *Programmer's Guide* for further details.

The Family Allowance Repayment is calculated if the parameter FARR (Family Allowance Repayment Rate) is non-zero. The repayment is calculated as the lesser of:

- a) a proportion (FARR) of family net income (the net income of the head plus the net income of the spouse) exceeding the Family Allowance Reduction Level (FATD), and
- b) Taxable Family Allowances Received (imtfa).

The OAS repayment is based on the filer's own Net Income and is computed as the lesser of:

- a) OAS Received (imioas), and
- b) a proportion (OASRR) of Net Income (iminet) exceeding the OAS Repayment Reduction Level (OASTD).

Neither the FA nor the OAS repayments are stored in separate variables. They are accumulated into the variable imrepay which is applied as a deduction from Net Income in the function txitax and is added to Taxes Payable in the function memo1.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AXM | Age amount |
| AXPI | Age amount phase in rate for 1994 and beyond |
| AXRR | Age amount credit reduction rate |
| AXTD | Age amount net income turndown |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CHATL1 | Charitable donations amount level 1 |
| CHATNF | Charitable donations maximum net income fraction |
| CHATR1 | Charitable donations tax credit rate 1 |
| CHATR2 | Charitable donations tax credit rate 2 |
| EDXPM | Education amount per month |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MEDALL | Medical allowance maximum lower limit |
| MEDANF | Medical allowance lower limit net income fraction |
| REPNETFLAG | Social program repayments reduce net income flag |
| YPNDL | Maximum pension income deduction/amount |
| INPUT VARIABLES: | |
| hnnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idcapgex | Capital gains exemptions (254) |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idclose | Allowable other years capital loss (253) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idemplo | Employee home relocation loan dedn (248) |
| idforavg | Forward averaging amount withdrawal (237) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idipens | Pension income (115) |
| idmedgro | Medical expenses, gross (330) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idstkded | Stock option deduction (249) |
| imicapgt | Capital gains (taxable) |
| iminet | Net income |
| imninc | No income flag |
| imrepay | Social Benefits Repayments |

OUTPUT VARIABLES:

| | |
|----------|---|
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imcapgex | Modelled capital gains deduction (254) |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchartc | Charitable donations tax credit |
| imdedfn | All deductions from net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |

txman Compute provincial taxes for Manitoba

SUMMARY

When MTXFLG is turned off, Manitoba Basic Provincial Tax (imbpt) is calculated as a proportion (MPTF) of Basic Federal Tax (imbft).

The Manitoba Surtax is calculated based on a series of family credits. The surtax is added to Basic Provincial Tax to derive Manitoba Tax (imtxp).

When the tax on taxable income flag is turned on (MTXFLG), a provincial tax table (MPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax).

Non-refundable tax credits are calculated using the non-refundable tax credit rate (MPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (MBXM) |
| impatxc | Age amount tax credit | (MAXM, MAXRR, MAXTD, MAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (MMXM, MMXMT, MEMXM, MEMXMT) |
| impcgtc | Caregiver tax credit | (MCGTC, MCGTCFLG, MCGTCTC, MCGTCTD, MCGTCTK) |
| impchrctc | Charitable donations | (MCHATL1, MCHATR1, MCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (MMAXDX) |
| impdtxc | Dividend tax credit | (MDTCR) |
| impedtxc | Education tax credit | (MEDXPM, MMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (MYPNDL) |
| imptutxc | Tuition Tax credit | (MMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using MAMTOPT.

The refundable learning tax credit (immanltc) is equal to MANLTCF times (the tuition amount (idtuin) plus the education amount (imeducm * EDXPM) plus the education amounts transferred from a spouse or kids (imedrv) minus the education amounts which have been transferred to a spouse or parents (imedtrf)). It is included in the refundable tax credits (imptc). Beginning in 1998, the credit is limited to MANLTMAX for each student.

The Manitoba labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Manitoba provincial credit is modelled as MLVCRT times the gross amount up to MLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Manitoba homeowner's school tax assistance was introduced in 1993 and is part of the total property tax credit (impptxtc). MSCHFLAG turns it on or off. In order to qualify for assistance, Manitoba residents must be homeowners and be older than MSCHAGE. The basic credit is MSCHBXM which is reduced by income over the turndown MSCHTD by a rate MSCHRR. The value of the benefit is also rounded (see MSCHRND). The benefit may not exceed school taxes paid (idmschpd) less the minimum threshold of MSCHMNTH. The school tax assistance is added to the basic property tax credit and applied against occupancy

costs in order to derive the total property tax credit (impptxtc).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| EDXPM | Education amount per month |
| MAMTOPT | Man. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| MAMTPCTF | Man. amt rate as pct of additional fed tax due to minimum tax |
| MAMTPCTM | Man. amt rate as pct of federal minimum tax amount |
| MAMTTX | Man. amt rate as tax on adjusted income |
| MANLTCF | Manitoba learning tax credit factor |
| MANLTMAX | Manitoba learning tax credit maximum amount per student |
| MAXM | Man. Age Amount |
| MAXPI | Man. Age Amount phase in rate for 1994 and beyond |
| MAXRR | Man. Age Amount credit reduction rate |
| MAXTD | Man. Age Amount net income turndown |
| MBXM | Man. Basic Personal Exemption/amount |
| MCAXM | Manitoba cost-of-living age credit |
| MCBXM | Manitoba cost-of-living basic credit |
| MCDISEX | Manitoba cost-of-living disability credit |
| MCEMXM | Manitoba cost-of-living married equivalent credit |
| MCFINCR | Manitoba cost-of-living family income reduction rate |
| MCGTC | Man. Caregiver Tax Credit |
| MCGTCFLG | Man. Caregiver Tax Credit activation flag |
| MCGTCTC | Man. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| MCGTCTD | Man. Caregiver Tax Credit Turn Down Income |
| MCGTCTK | Man. Caregiver tax credit take-up rate by income level [employment income,rate] |
| MCHATL1 | Man. Charitable Donations amount level 1 |
| MCHATR1 | Man. Charitable Donations tax credit rate 1 |
| MCHATR2 | Man. Charitable Donations tax credit rate 2 |
| MCMXM | Manitoba cost-of-living married credit |
| MCODISEX | Manitoba cost-of-living old disabled dependant credit |
| MCSAXM | Manitoba cost-of-living spouse age credit |
| MCSDISEX | Manitoba cost-of-living spouse disabled credit |
| MICYCXM | Manitoba cost-of-living young dependants credit |
| MDTCR | Man. dividend tax credit rate |
| MEDXPM | Man. Education Amount per month |
| MEMXM | Man. equivalent to married amount |
| MEMXMT | Man. equivalent to married turndown level |
| MHMASOPT | Manitoba homeowner assistance option (1=Model 2=database) |
| MLVCMAX | Maximum Man. labour-sponsored funds tax credit allowed |
| MLVCRT | Percent of Man. labour-sponsored funds cost allowed as credit |
| MMAXDX | Man. Maximum Disability deduction/amount |
| MMAXET | Man. maximum on transfer of education and tuition amount |

| | |
|----------|---|
| MMXM | Man. married amount |
| MMXMT | Man. married amount turndown level |
| MNITR | Manitoba net income tax rate |
| MPAXM | Manitoba property tax credit senior citizen credit |
| MPBXM | Manitoba property tax credit basic credit |
| MPFINCRR | Manitoba property tax credit family income reduction rate |
| MPMINC | Manitoba property tax credit minimum credit |
| MPMNTH | Manitoba property tax minimum threshold |
| MPNTR | Man. provincial non-refundable tax credit rate |
| MPRIR | Manitoba property tax credit rental inclusion rate |
| MPTC | Manitoba political contribution table [total donations,donation allowed] |
| MPTCBEN | Maximum Manitoba political tax credit allowed |
| MPTF | Manitoba provincial tax fraction |
| MPTX | Man. tax table [taxable income,basic provincial tax] |
| MRAXM | Manitoba tax reduction age credit |
| MRBXM | Manitoba tax reduction basic credit |
| MRDISEX | Manitoba tax reduction disability credit |
| MREMXM | Manitoba tax reduction married equivalent credit |
| MRMXM | Manitoba tax reduction married credit |
| MRODISEX | Manitoba tax reduction old disabled dependant credit |
| MRSAXM | Manitoba tax reduction spouse age credit |
| MRYCXM | Manitoba tax reduction young dependants credit |
| MSAXM | Manitoba surtax age credit |
| MSBXM | Manitoba surtax basic credit |
| MSCHAGE | Manitoba school tax minimum age |
| MSCHBXM | Manitoba school tax basic amount |
| MSCHFLAG | Manitoba school tax assistance activation flag |
| MSCHMNTH | Manitoba school tax minimum threshold |
| MSCHRND | Manitoba school tax assistance rounding unit |
| MSCHRR | Manitoba school tax reduction rate |
| MSCHTD | Manitoba school tax turndown |
| MSDISEX | Manitoba surtax disability credit |
| MSEMXM | Manitoba surtax married equivalent credit |
| MSMXM | Manitoba surtax married credit |
| MSODISEX | Manitoba surtax old disabled dependant credit |
| MSSAXM | Manitoba surtax spouse age credit |
| MSYCXM | Manitoba surtax young dependants credit |
| MTCINCFL | Manitoba tax credit income definition flag |
| MTRNIO | Manitoba tax reduction net income offset |
| MTXFLG | Man. tax on taxable income activation flag |
| MYPNDL | Man. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdtenur | Tenure |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |

| | |
|----------|---|
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idmschpd | Manitoba school taxes paid |
| idothpe | Other dependant exemptions (305) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imatxc | Age tax credit |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imstxcrt | Tax credits transferred from spouse |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------|
| imbpt | Basic provincial tax |
| immanltc | Manitoba learning tax credit |
| immhmas | Manitoba Homeowners Assistance |

| | |
|-----------|---|
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impptxtc | Provincial Property tax tax credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impттxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnb Compute provincial taxes for New Brunswick

SUMMARY

When BTXFLG is turned off, the basic Provincial Tax (imbpt) for New Brunswick is simply a proportion (BPTF) of Basic Federal Tax (imbft).

The 2000 budget announced that New Brunswick would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (BTXFLG), a provincial tax table (BPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (BPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|---------|-----------------------|----------------------|
| impbtc | Basic amount | (BBXM) |
| impatxc | Age amount tax credit | (BAXM, BAXRR, BAXTD, |

| | | |
|-----------|--|--|
| | | BAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (BMXM, BMXMT, BEMXM, BEMXMT) |
| impcgtc | Caregiver tax credit | (BCGTC, BCGTCFLG, BCGTCTC, BCGTCTD, BCGTCTK) |
| impchrctc | Charitable donations | (BCHATL1, BCHATR1, BCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (BMAXDX) |
| impdtxc | Dividend tax credit | (BDTCR) |
| impdtxc | Education tax credit | (BEDXPM, BMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (BYPNDL) |
| imptutxc | Tuition Tax credit | (BMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using BAMTOPT.

The New Brunswick labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The New Brunswick provincial credit is modeled as BLVCRT times the gross amount up to BLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Child Tax Benefit

When NBCTBFLG is assigned a value of 1, the New Brunswick Child Tax Benefit calculation is activated. imnbcben is the total benefits received under the New Brunswick Child Benefits program announced in the 1997 New Brunswick Budget and commencing in April 1997. A first component is the base amount, imnbcbb, which is calculated as the base amount per child, NBCBBAS, times the number of children. The level of benefit is reduced, based on family income, at a rate NBCBRRS for families with only one child, and at rate NBCBRR for the others.

If the family gross employment income is higher than a threshold, NBCBECI, then the maximum supplement is NBCBEIS. The supplement is reduced at a rate NBCBESR for each \$ of employment income exceeding the threshold FCBECI. If the family income is higher than NBCBETD then the supplement is reduce at a rate NBCBERR. The final value of the work income supplement is stored in imnbwis.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BAMTOPT | N.B. alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| BAMTPCTF | N.B. amt rate as pct of additional fed tax due to minimum tax |
| BAMTPCTM | N.B. amt rate as pct of federal minimum tax amount |
| BAMTTX | N.B. amt rate as tax on adjusted income |
| BAXM | N.B. Age Amount |
| BAXPI | N.B. Age Amount phase in rate for 1994 and beyond |
| BAXRR | N.B. Age Amount credit reduction rate |
| BAXTD | N.B. Age Amount net income turndown |
| BBXM | N.B. Basic Personal Exemption/amount |
| BCGTC | N.B. Caregiver Tax Credit |
| BCGTCFLG | N.B. Caregiver Tax Credit activation flag |
| BCGTCTC | N.B. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| BCGTCTD | N.B. Caregiver Tax Credit Turn Down Income |
| BCGTCTK | N.B. Caregiver tax credit take-up rate by income level [employment income,rate] |
| BCHATL1 | N.B. Charitable Donations amount level 1 |
| BCHATR1 | N.B. Charitable Donations tax credit rate 1 |
| BCHATR2 | N.B. Charitable Donations tax credit rate 2 |
| BDCR | N.B. dividend tax credit rate |
| BEDXPM | N.B. Education Amount per month |
| BEMXM | N.B. equivalent to married amount |
| BEMXMT | N.B. equivalent to married turndown level |
| BLVCMAX | Maximum N.B. labour-sponsored funds tax credit allowed |
| BLVCRT | Percent of N.B. labour-sponsored funds cost allowed as credit |
| BMAXDX | N.B. Maximum Disability deduction/amount |
| BMAXET | N.B. maximum on transfer of education and tuition amount |
| BMXM | N.B. married amount |
| BMXMT | N.B. married amount turndown level |
| BPNTCR | N.B. provincial non-refundable tax credit rate |
| BPTC | New Brunsw. political contribution table [total donations,donation allowed] |
| BPTCBEN | Maximum New Brunswick political tax credit allowed |
| BPTF | New Brunswick provincial tax fraction |
| BPTX | N.B. tax table [taxable income,basic provincial tax] |
| BSCI | New Brunswick provincial tax above which surtax applies |
| BSF | New Brunswick provincial surtax rate |
| BTRBAS | Base N.B. low income tax reduction |
| BTRRR | N.B. low income tax reduction Reduction Rate |
| BTRSP | N.B. low income tax reduction for spouse or equivalent-to-spouse |
| BTRTD | N.B. low income tax reduction Turndown |
| BTXFLG | N.B. tax on taxable income activation flag |
| BYPNDL | N.B. Pension Income Deduction Amount |

| | |
|----------|---|
| CTCINC | CTC family income scaling factor |
| NBCBBAS | NB Basic child benefit (per child) |
| NBCBECI | NB Child benefits earning supplement cut-in level |
| NBCBEIS | NB Child benefits earned income supplement |
| NBCBERR | NB Child benefits earning supplement reduction rate |
| NBCBESR | NB Child benefits earned income supplement rate |
| NBCBETD | NB Child benefits earning supplement turndown level |
| NBCBPI | NB Child benefits phase-in rate |
| NBCBRR | NB Multi-children family income reduction rate |
| NBCBRRS | NB Single-child family income reduction rate |
| NBCBTD | NB child benefits family income turndown |
| NBCTBFLG | NB child benefit activation flag |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtsg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |

| | |
|-----------|--|
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnbcbb | NB child tax Benefits base amount |
| imnbcben | Total NB child tax Benefits |
| imnbwis | NB child tax Benefits WIS |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transferred |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnfld Compute provincial taxes for Newfoundland

SUMMARY

When NTXFLG is turned off, Basic Provincial Tax (imbpt) for Newfoundland is simply a

proportion (NPTF) of Basic Federal Tax (imbft).

For Newfoundland, the SPSM calculates provincial surtax (impsur) as NSF percent of provincial taxes (imtxp) above the level NSCI.

The 2000 budget stated that Newfoundland would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (NTXFLG), a provincial tax table (NPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (NPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (NBXM) |
| impatxc | Age amount tax credit | (NAXM, NAXRR, NAXTD, NAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (NMXM, NMXMT, NEMXM, NEMXMT) |
| impcgtc | Caregiver tax credit | (NCGTC, NCGTCFLG, NCGTCTC, NCGTCTD, NCGTCTK) |
| impchrctc | Charitable donations | (NCHATL1, NCHATR1, NCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (NMAXDX) |
| impdtxc | Dividend tax credit | (NDTCR) |
| impedtxc | Education tax credit | (NEDXPM, NMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (NYPNDL) |
| imptutxc | Tuition Tax credit | (NMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using NAMTOPT.

A new refundable sales tax credit was modeled and added to the provincial tax credit (imptc). Similar to the federal credit, it allows for NSTCA dollars for each adult, NSTCC dollars for each child, and it reduced starting at family incomes over NSTCL at a rate of NSTCR.

Newfoundland and Labrador Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget. The Newfoundland and Labrador Child Benefit (imncb) is a tax-free monthly payment to help low-income families with the cost of raising children under age 18. Benefits from this program are combined with the Canada Child Tax Benefit into a single monthly payment. The program was implemented in July 1999.

SPSM Implementation

This benefit is turned by NCBFLG. Under the Newfoundland and Labrador Child Benefit program, you may be entitled to receive a benefit of NCB1 for the first child, NCB2 for the second child, NCB3 for the third child, and NCB4 for each additional child. The benefit is reduced when net family income is greater than NCBTD and is completely phased out when net family income is at least NCBPO. The benefit (imncb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| NAMTOPT | NFLD alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| NAMTPCTF | NFLD amt rate as pct of additional fed tax due to minimum tax |
| NAMTPCTM | NFLD amt rate as pct of federal minimum tax amount |
| NAMTTX | NFLD amt rate as tax on adjusted income |
| NAXM | NFLD Age Amount |
| NAXPI | NFLD Age Amount phase in rate for 1994 and beyond |
| NAXRR | NFLD Age Amount credit reduction rate |
| NAXTD | NFLD Age Amount net income turndown |
| NBXM | NFLD Basic Personal Exemption/amount |
| NCB1 | Nfld. child benefit for first child |
| NCB2 | Nfld. child benefit for second child |
| NCB3 | Nfld. child benefit for third child |
| NCB4 | Nfld. child benefit for 4th and subsequent child |
| NCBFLG | Newfoundland child benefit activation flag |
| NCBPI | Nfld. child benefit program phase in |
| NCBPO | Nfld. child benefit family income phase out |
| NCBTD | Nfld. child benefit family income turndown |
| NCGTC | NFLD Caregiver Tax Credit |
| NCGTCFLG | NFLD Caregiver Tax Credit activation flag |
| NCGTCTC | NFLD Caregiver tax credit take-up rate by age of elderly [age,rate] |
| NCGTCTD | NFLD Caregiver Tax Credit Turn Down Income |
| NCGTCTK | NFLD Caregiver tax credit take-up rate by income level [employment income,rate] |
| NCHATL1 | NFLD Charitable Donations amount level 1 |
| NCHATR1 | NFLD Charitable Donations tax credit rate 1 |
| NCHATR2 | NFLD Charitable Donations tax credit rate 2 |
| NDTCR | NFLD dividend tax credit rate |
| NEDXPM | NFLD Education Amount per month |
| NEMXM | NFLD equivalent to married amount |
| NEMXMT | NFLD equivalent to married turndown level |
| NHEATFLG | Newfoundland home heating fuel rebate activation flag |

| | |
|----------|---|
| NHEATREB | Newfoundland home heating fuel rebate amount |
| NLVCMAX | Maximum NFLD labour-sponsored funds tax credit allowed |
| NLVCRT | Percent of NFLD labour-sponsored funds cost allowed as credit |
| NMAXDX | NFLD Maximum Disability deduction/amount |
| NMAXET | NFLD maximum on transfer of education and tuition amount |
| NMXM | NFLD married amount |
| NMXMT | NFLD married amount turndown level |
| NPNTCR | NFLD provincial non-refundable tax credit rate |
| NPTC | Newfoundland political contribution table [total donations, donation allowed] |
| NPTCBEN | Maximum Newfoundland political tax credit allowed |
| NPTF | Newfoundland provincial tax fraction |
| NPTX | NFLD tax table [taxable income, basic provincial tax] |
| NSCI | Newfoundland provincial tax above which surtax applies |
| NSCI2 | Newfoundland provincial surtax level 2 |
| NSF | Newfoundland provincial surtax rate |
| NSF2 | Newfoundland provincial surtax rate 2 |
| NSTCA | NFLD sales tax credit amount for adults |
| NSTCC | NFLD sales tax credit amount for children |
| NSTCFLAG | NFLD sales tax credit activation flag |
| NSTCL | NFLD sales tax credit reduction level |
| NSTCR | NFLD sales tax credit reduction rate |
| NTXFLG | NFLD tax on taxable income activation flag |
| NYPNDL | NFLD Pension Income Deduction Amount |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfageeld | Age of eldest in census family |
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| fxio | I/O expenditure categories [array] |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |

| | |
|----------|---|
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| imigist | GIS provincial top-up |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imncb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |

impuictc Prov UI/EI contributions tax credit
 imtxp Provincial income tax payable

txns Compute provincial taxes for Nova Scotia

SUMMARY

This function calculates provincial taxes and credits for Nova Scotia. The programs simulated are as follows:

- Basic provincial tax
- Two level surtax
- Family tax reduction
- Phamacare tax and tax credits
- Provincial foreign tax credit
- Provincial political tax credit
- Provincial labour-sponsored venture capital tax credit
- Stock savings plan tax credit
- Home ownership savings plan tax credit
- Direct Assistance

Basic Provincial Tax

When VTXFLG is turned off, the algorithm first calculates basic provincial tax. Basic provincial tax (imbpt) for Nova Scotia is calculated as a proportion (VPTF) of Basic Federal Tax (imbft). Provincial taxes payable (imtxp) are then initialized to the value of basic provincial tax (imbpt).

The 2000 budget announced that Nova Scotia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (VTXFLG), a provincial tax table (VPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (VPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (VBXM) |
| impatxc | Age amount tax credit | (VAXM, VAXRR, VAXTD, VAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (VMXM, VMXMT, VEMXM, VEMXMT) |
| impcgtc | Caregiver tax credit | (VCGTC, VCGTCFLG, VCGTCTC, VCGTCTD, VCGTCTK) |
| impchrtc | Charitable donations | (VCHATL1, VCHATR1, |

| | | |
|-----------|-----------------------------|------------------|
| | | VCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (VMAXDX) |
| impdtxc | Dividend tax credit | (VDTCR) |
| impedtxc | Education tax credit | (VEDXPM, VMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (VYPNDL) |
| imptutxc | Tuition Tax credit | (VMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using VAMTOPT.

Provincial Surtax

The Nova Scotia surtax (impsur) is calculated as VSF percent of provincial taxes (imtxp) above the level VSCI plus VSF2 percent of provincial taxes above the level VSCI2. This amount is then added to provincial taxes payable (imtxp).

Family Tax Reduction

Program Description

The Nova Scotia tax reduction for low income individuals and families was introduced in 1994. To be eligible for the reduction a filer must be either over age 18, or have a spouse, or be a parent. This a family based tax reduction and only one person of a married couple may claim the reduction. The reduction has prescribed maximum amounts for the claimant, a spouse and children. There is an equivalent to married amount in cases where a claimant has filed for the federal equivalent to married non-refundable tax credit. The total of these amounts is then subject to a family income test.

SPSM Implementation

The calculation closely follows the structure on form T1C (N.S.). Individuals are first tested for eligibility on the basis of age (idage), marital status (idspoflg), and parental status. Parental status is only relevant for young (<19) families and single parents and so is tested using relation to head (idcfrh == 0) and presence of young children (nfnkids).

Persons without a spouse are assigned the basic amount (VTRBAS). Heads of census families with a spouse are assigned the basic and spouse amounts (VTRBAS + VTRSP). Equivalent to married amounts (VTREM) are given to spouseless heads who claim the federal married tax credit (immartxc). Amounts for children are given to the head of the census family. No child amounts are given with respect to children who triggered the equivalent to married amount.

The maximum deduction is then reduced by a fixed proportion (VTRRR) of the net income (iminet) of the head plus spouse (if present) in excess of the income base amount (VTRTD). This calculation is performed for persons without spouses or heads of census families with

spouses. The amounts for families with spouses are then assigned to the spouse with the higher net income. The tax reduction thus calculated is written to the non-refundable provincial tax reduction variable (imptr) and is used to decrease provincial taxes payable (imtxp).

Pharmacare Program

Program Description

Introduced in the 1995 provincial budget, the pharmacare program consists of an annual pharmacare premium payable by all seniors and a refundable tax credit for low income seniors.

SPSM Implementation

The pharmacare premium (VPHPREM) is assigned to the variable impeht for all Nova Scotians age 65 or older. This amount is then used to increase provincial taxes payable (imtxp).

The pharmacare refundable tax credit (impehtc) is calculated for all Nova Scotia seniors in receipt of GIS benefits (imigis). It is calculated as the basic tax credit (VPHTC) less a fixed proportion (VPHRR) of income (imgisinc) above a threshold (VPHTD). The pharmacare refundable tax credit (impehtc) is added to the variable for refundable provincial tax credits (imptc).

Starting in 1996, the tax credit no longer depended on whether or not a person received GIS. Instead, the credit is taxed back depending on family income. When VPHOPT is set to 1, the program depends on GIS receipt, and when it is set to 2 it depends on family income. There are now two turndowns, VPHTD for singles (also used in the original program) and VPHTDC for couples.

Provincial Foreign Tax Credit

The provincial foreign tax credit is imputed from the Greenbook (idprvftc). Only the amount of the foreign tax credit required to reduce provincial tax payable (imtxp) to zero is applied to the variable for non-refundable provincial tax credits (imnptc). Provincial tax payable (imtxp) is then reduced by the amount imnptc.

Political Contribution Tax Credit

Labour Sponsored Venture Capital Tax Credit

The Nova Scotia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Nova Scotia provincial credit is modeled as

VLVCRT times the gross amount up to VLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Direct Assistance

Program Description

Introduced in the 1997 provincial budget, direct assistance gives a benefit to low income Nova Scotians who would not be otherwise eligible for the tax reduction.

Beginning in 2000, direct assistance is only granted to families with children.

SPSM Implementation

Nova Scotia residents 19 and over are eligible for direct assistance if their income is below the cut-off (VDACI for families or VDASI for single individuals). The benefits are VDACB for families and VDASB for single individuals.

Differences between the SPSM estimate and reality will primarily come from two problems. Persons are eligible for Direct Assistance if they were full time students for 4 months or less or if they received Social Assistance for three months or less. In the SPSM model, anyone who is a full-time student in March (idestat==1) or anyone who receives Social Assistance was deemed ineligible for the program. This should lower estimates. But since people have to apply for the program, the take-up is probably not going to be 100% which will increase the SPSM estimate.

Nova Scotia Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget.

SPSM Implementation

The benefit is turned on by the flag VCBFLG, and families whose net income is less than VCBTD are eligible. They receive VCBBAS1 for their first child, VCBBAS2 for their second child, and VCBBAS3 for their third and each additional child. The benefit is completely phased out when the family net income reaches VCBPO. The benefit (imnscb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

CTCINC CTC family income scaling factor
 PYINC Deflator to calculate previous year income
 VAMTOPT N.S. alternative minimum tax option (1=none, 2=% fed, 3=fed
 adj inc, 4=% min amt)
 VAMTPCTF N.S. amt rate as pct of additional fed tax due to minimum
 tax
 VAMTPCTM N.S. amt rate as pct of federal minimum tax amount
 VAMTTX N.S. amt rate as tax on adjusted income
 VAXM N.S. Age Amount
 VAXPI N.S. Age Amount phase in rate for 1994 and beyond
 VAXRR N.S. Age Amount credit reduction rate
 VAXTD N.S. Age Amount net income turndown
 VBXM N.S. Basic Personal Exemption/amount
 VCBBAS1 NS child benefit for first child
 VCBBAS2 NS child benefit for second child
 VCBBAS3 NS child benefit for third or additional child
 VCBFLG NS child benefit activation flag
 VCBPO NS child benefit family income phase out
 VCBTD NS child benefit turndown
 VCGTC N.S. Caregiver Tax Credit
 VCGTCFLG N.S. Caregiver Tax Credit activation flag
 VCGTCTC N.S. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 VCGTCTD N.S. Caregiver Tax Credit Turn Down Income
 VCGTCTK N.S. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 VCHATL1 N.S. Charitable Donations amount level 1
 VCHATR1 N.S. Charitable Donations tax credit rate 1
 VCHATR2 N.S. Charitable Donations tax credit rate 2
 VDACB NS Direct assistance benefit for couples
 VDACI NS Direct assistance maximum income for couples
 VDAFLAG NS Direct assistance benefit flag
 VDAFWC NS Direct assistance benefit for families with children
 flag
 VDASB NS Direct assistance benefit for singles
 VDASI NS Direct assistance maximum income for singles
 VDTCR N.S. dividend tax credit rate
 VEDXPM N.S. Education Amount per month
 VEMXM N.S. equivalent to married amount
 VEMXMT N.S. equivalent to married turndown level
 VLVCMAX Maximum N.S. labour-sponsored funds tax credit allowed
 VLVCRT Percent of N.S. labour-sponsored funds cost allowed as
 credit
 VMAXDX N.S. Maximum Disability deduction/amount
 VMAXET N.S. maximum on transfer of education and tuition amount
 VMXM N.S. married amount
 VMXMT N.S. married amount turndown level
 VPHOPT Nova Scotia pharmacare premium option (1=GIS, 2=income)
 VPHPREM Nova Scotia pharmacare premium
 VPHRR Nova Scotia pharmacare tax credit reduction rate
 VPHTC Nova Scotia pharmacare refundable tax credit
 VPHTD Nova Scotia pharmacare tax credit turndown
 VPHTDC Nova Scotia pharmacare tax credit turndown for couples
 VPNTCR N.S. provincial non-refundable tax credit rate
 VPTC Nova Scotia political contribution table [total
 donations,donation allowed]
 VPTCBEN Maximum Nova Scotia political tax credit allowed

| | |
|--------|---|
| VPTF | Nova Scotia provincial tax fraction |
| VPTX | N.S. tax table [taxable income,basic provincial tax] |
| VSCI | Nova Scotia provincial tax above which surtax applies |
| VSCI2 | Nova Scotia provincial tax above which surtax applies (2nd level) |
| VSF | Nova Scotia provincial surtax rate |
| VSF2 | Nova Scotia provincial surtax rate (2nd level) |
| VTRBAS | Nova Scotia tax reduction basic amount |
| VTREM | Nova Scotia tax reduction equivalent to spouse amount |
| VTRKID | Nova Scotia tax reduction child amount |
| VTRRR | Nova Scotia tax reduction family income reduction rate |
| VTRSP | Nova Scotia tax reduction spouse amount |
| VTRTD | Nova Scotia tax reduction family income turndown |
| VTXFLG | N.S. tax on taxable income activation flag |
| VYPNDL | N.S. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idestat | Educational status |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtvg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imcemc | Child's equivalent to married credit |
| imchara | Allowable charitable donations and gifts (calculated) |

| | |
|----------|--|
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imgisinc | Individual's income for GIS/SPA reduction |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| idinspo | Person's spouse [pointer] |
| imbpt | Basic provincial tax |
| iminsda | NS Direct Assistance Program |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imnscb | Nova Scotia Child Benefit |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impeht | Provincial elderly health tax |
| impehtc | Provincial elderly health tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |

imtxp Provincial income tax payable

txont Compute provincial taxes for Ontario

SUMMARY

When OTXFLG is turned off, the Ontario Provincial Tax (imbpt) is calculated as a proportion (OPTF) of Basic Federal Tax (imbft). Added to Basic for some years is the Social Services Maintenance Tax which is a proportion (OSSMR) of Basic Provincial Tax (imbpt) exceeding the tax level (OSSML).

When the tax on taxable income flag is turned on (OTXFLG), a provincial tax table (OPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (OPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (OBXM) |
| impatxc | Age amount tax credit | (OAXM, OAXRR, OAXTD, OAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (OMXM, OMXMT, OEMXM, OEMXMT) |
| impcgtc | Caregiver tax credit | (OCGTC, OCGTCFLG, OCGTCTC, OCGTCTD, OCGTCTK) |
| impchrctc | Charitable donations | (OCHATL1, OCHATR1, OCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (OMAXDX) |
| impdtxc | Dividend tax credit | (ODTCR) |
| impdtxc | Education tax credit | (OEDXPM, OMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (OYPNDL) |
| imptutxc | Tuition Tax credit | (OMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using OAMTOPT.

Ontario provides a tax reduction for persons with a low taxable income. This reduction amounts to a proportion (OTRF) of taxable income (imitax) below the Ontario Tax Reduction Level (OMTY). This is subtracted from Basic Provincial Tax to derive Provincial

Tax Payable (imtxp).

The Ontario labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Ontario provincial credit is modeled as OLVCRRT times the gross amount up to OLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Employer Health Tax (imonteht) only applies to self-employed persons, and is calculated when OEHTFLAG is set to 1. When a person's income from self-employment is less than OEHTTD1, the Employer Health Tax is calculated using the rate OEHTRR1 on self-employment earnings over the exemption OEHTEX. When a person's income from self-employment is less than this value, but greater than OEHTTD1, the Employer Health Tax is calculated by adding OEHTRR1 times the difference between the first turndown (OEHTTD1) and the exemption rate (OEHTEX) and OEHTRR2 times the difference between earnings from self-employment and OEHTTD1. When self-employment earnings are greater than OEHTTD2, the Ontario Employer Health Tax is calculated as OEHTRR3 times earnings from self-employment which are greater than the exemption OEHTEX.

When the parameter OCCEAFLG is set to 1, the child care expense credit is calculated. The maximum amount of the benefit is calculated as the lower of either OCCEAPCT times actual child care expenses (imccea), or of a specified amount per child (OCCEAYNG) times the number of children age 6 and under in the census family. Maximum family benefits are then reduced by a proportion (OCCEARR) of family net income above the threshold (OCCEATD). The model assigns the imputed Child Care credit (imoccea) to the mother, if present.

When OCWISFLG is set to 1, the supplement for working families is calculated as a percentage (OCWISRR) of family income over a threshold OCWISTD. The percentage depends on the number of children under the age of 7 in the family. The Supplement cannot exceed OCCEAYNG times the number of children under the age of 7. In single parent families, the maximum cannot exceed OCWISSP times the number of children under the age of 7 as announced in the Ontario 2000 Budget. The benefit which is given is the maximum value of either the supplement or the childcare expenses credit.

The taxpayer dividend (imotxdv) announced in the 2000 Budget was implemented. It is equal to taxes paid in the previous year up to a maximum (OTXDVMAX). People who paid over 0\$ in taxes would get a minimum rebate of OTXDVMIN. The benefit is included in refundable tax credits of 2000. Since it is based on the previous year's taxes, the taxes are multiplied by OPYTAX in order to estimate the lagged effect.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CAPGIR | Capital gains inclusion rate |
| OAMTOPT | Ont. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| OAMTPCTF | Ont. amt rate as pct of additional fed tax due to minimum tax |
| OAMTPCTM | Ont. amt rate as pct of federal minimum tax amount |
| OAMTTX | Ont. amt rate as tax on adjusted income |
| OAXM | Ont. Age Amount |
| OAXPI | Ont. Age Amount phase in rate for 1994 and beyond |
| OAXRR | Ont. Age Amount credit reduction rate |
| OAXTD | Ont. Age Amount net income turndown |
| OBXM | Ont. Basic Personal Exemption/amount |
| OCAPGIR | Ont. Capital Gains Inclusion Rate |
| OCCEAFLG | Ont. Child Care Expense Credit activation flag |
| OCCEAPCT | Ont. Child Care Expense Credit qualifying percentage |
| OCCEARR | Ont. Child Care Expense Credit benefit reduction rate |
| OCCEATD | Ont. Child Care Expense Credit family income turndown |
| OCCEAYNG | Ont. Child Care Expense Credit allowance per child |
| OCGIRFLG | Ont. Capital Gains Inclusion Rate Activation Flag |
| OCGTC | Ont. Caregiver Tax Credit |
| OCGTCTFLG | Ont. Caregiver Tax Credit activation flag |
| OCGTCTC | Ont. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| OCGTCTD | Ont. Caregiver Tax Credit Turn Down Income |
| OCGTCTK | Ont. Caregiver tax credit take-up rate by income level [employment income,rate] |
| OCHATL1 | Ont. Charitable Donations amount level 1 |
| OCHATR1 | Ont. Charitable Donations tax credit rate 1 |
| OCHATR2 | Ont. Charitable Donations tax credit rate 2 |
| OCWISFLG | Ont. Child Care Working Income Supplement activation flag |
| OCWISRR | Ont. Child Care Working Income Supplement Rate [children][rr] |
| OCWISSP | Ont. Child Care Working Income Supplement maximum benefit for single parents |
| OCWISTD | Ont. Child Care Working Income Supplement minimum earnings |
| ODTCR | Ont. dividend tax credit rate |
| OEDXPM | Ont. Education Amount per month |
| OEHTDRR | OEHT - Income Tax Deduction Rate |
| OEHTEX | OEHT - Exemption |
| OEHTFLAG | OEHT - Ontario Employer Health Tax Flag |
| OEHTRR1 | OEHT - Rate 1 |
| OEHTRR2 | OEHT - Rate 2 |
| OEHTRR3 | OEHT - Rate 3 |
| OEHTTD1 | OEHT - Turndown 1 |
| OEHTTD2 | OEHT - Turndown 2 |
| OEMXM | Ont. equivalent to married amount |
| OEMXMT | Ont. equivalent to married turndown level |

| | |
|----------|---|
| OLVCMAX | Maximum Ont. labour-sponsored funds tax credit allowed |
| OLVCRT | Percent of Ont. labour-sponsored funds cost allowed as credit |
| OMAXDX | Ont. Maximum Disability deduction/amount |
| OMAXET | Ont. maximum on transfer of education and tuition amount |
| OMTY | Ontario tax reduction limit |
| OMXM | Ont. married amount |
| OMXMT | Ont. married amount turndown level |
| OPCRA | Ontario property tax college residence amount |
| OPNTCR | Ont. provincial non-refundable tax credit rate |
| OPOCAR | Ontario property tax percent of occupancy cost |
| OPOCM | Ontario property tax maximum occupancy cost |
| OPRIR | Ontario property tax credit rental inclusion rate |
| OPSMAX | Ontario property/sales tax credit maximum |
| OPTC | Ontario political contribution table [total donations,donation allowed] |
| OPTCBEN | Maximum Ontario political tax credit allowed |
| OPTCFLAG | Ontario political contribution refundable tax credit flag |
| OPTF | Ontario provincial tax fraction |
| OPTX | Ont. tax table [taxable income,basic provincial tax] |
| OPYTAX | Estimate of previous year's Ontario taxes |
| ORDOPT | Ontario tax reduction calculation option |
| OSPOCM | Ontario seniors property tax maximum occupancy cost |
| OSSML | Ontario surtax first cut-in level |
| OSSML2 | Ontario surtax second cut-in level |
| OSSMR | Ontario surtax first level rate |
| OSSMR2 | Ontario surtax second level rate |
| OSSTCP | Ontario seniors sales tax credit percent of income |
| OSTCB | Ontario sales tax credit basic credit |
| OSTCD | Ontario sales tax credit dependant credit |
| OSTCFLAG | Ontario seniors tax credit claimed flag |
| OSTCNIBA | Ontario seniors tax credit net income base amount |
| OSTCP | Ontario sales tax credit percent of income |
| OSTCS | Ontario sales tax credit spouse credit |
| OTCNIBA | Ontario tax credit net income base amount |
| OTRBPA | Ontario tax reduction basic personal amount |
| OTRDCA | Ontario tax reduction dependant child amount |
| OTRDDA | Ontario tax reduction disabled dependant amount |
| OTRF | Ontario tax reduction Ontario tax multiplier |
| OTRFP | Ontario tax reduction personal amount multiplier |
| OTXDVMAX | Maximum taxpayer dividend |
| OTXDVMIN | Minimum taxpayer dividend for people with non-zero taxes |
| OTXFLG | Ont. tax on taxable income activation flag |
| OYPNDL | Ont. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |

| | |
|----------|---|
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcapgex | Capital gains exemptions (254) |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnfn | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imccea | Child care expenses allowed |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdedft | Deductions from total income |
| imdepni | Dependant's net income |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfnkids | Number of children in nuclear family |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imiotax | Ontario taxable income |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| imonteht | Ontario Employers Health Tax (Self-employed) |
| imotxdv | Ontario Taxpayer Dividend |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgctc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txpei Compute provincial taxes for P.E.I.

SUMMARY

When PTXFLG is off, the Basic Provincial Tax (imbpt) for Prince Edward Island is simply a proportion (PTF) of Basic Federal Tax (imbft).

The 2000 budget announced that PEI would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (PTXFLG), a provincial tax table (PPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (PPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (PBXM) |
| impatxc | Age amount tax credit | (PAXM, PAXRR, PAXTD, PAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (PMXM, PMXMT, PEMXM, PEMXMT) |
| impcgtc | Caregiver tax credit | (PCGTC, PCGTCFLG, PCGTCTC, PCGTCTD, PCGTCTK) |
| impchrctc | Charitable donations | (PCHATL1, PCHATR1, PCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (PMAXDX) |
| impdtxc | Dividend tax credit | (PDTCR) |
| impedtxc | Education tax credit | (PEDXPM, PMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (PYPNDL) |
| imptutxc | Tuition Tax credit | (PMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using PAMTOPT.

The Prince Edward Island labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Prince Edward Island provincial credit is modeled as PLVCRT times the gross amount up to PLVCMAX. The credit cannot be more than provincial taxes (imtxp).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| PAMTOPT | P.E.I. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| PAMTPCTF | P.E.I. amt rate as pct of additional fed tax due to minimum tax |
| PAMTPCTM | P.E.I. amt rate as pct of federal minimum tax amount |
| PAMTTX | P.E.I. amt rate as tax on adjusted income |
| PAXM | P.E.I. Age Amount |
| PAXPI | P.E.I. Age Amount phase in rate for 1994 and beyond |
| PAXRR | P.E.I. Age Amount credit reduction rate |
| PAXTD | P.E.I. Age Amount net income turndown |
| PBXM | P.E.I. Basic Personal Exemption/amount |
| PCGTC | P.E.I. Caregiver Tax Credit |

PCGTCTCFLG P.E.I. Caregiver Tax Credit activation flag
 PCGTCTC P.E.I. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 PCGTCTD P.E.I. Caregiver Tax Credit Turn Down Income
 PCGTCTK P.E.I. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 PCHATL1 P.E.I. Charitable Donations amount level 1
 PCHATR1 P.E.I. Charitable Donations tax credit rate 1
 PCHATR2 P.E.I. Charitable Donations tax credit rate 2
 PDTCR P.E.I. dividend tax credit rate
 PEDXPM P.E.I. Education Amount per month
 PEMXM P.E.I. equivalent to married amount
 PEMXMT P.E.I. equivalent to married turndown level
 PLVCMAX Maximum P.E.I. labour-sponsored funds tax credit allowed
 PLVCRT Percent of P.E.I. labour-sponsored funds cost allowed as
 credit
 PMAXDX P.E.I. Maximum Disability deduction/amount
 PMAXET P.E.I. maximum on transfer of education and tuition amount
 PMXM P.E.I. married amount
 PMXMT P.E.I. married amount turndown level
 PPNTCR P.E.I. provincial non-refundable tax credit rate
 PPTC P.E.I. political contribution table [total
 donations,donation allowed]
 PPTCBEN Maximum P.E.I. political tax credit allowed
 PPTF P.E.I. provincial tax fraction
 PPTX P.E.I. tax table [taxable income,basic provincial tax]
 PSCI P.E.I. provincial tax above which surtax applies
 PSF P.E.I. provincial surtax rate
 PTRBAS Base PEI low income tax reduction
 PTRKID PEI low income tax reduction for dependent child
 PTRRR PEI low income tax reduction Reduction Rate
 PTRSP PEI low income tax reduction for spouse or equivalent-to-
 spouse
 PTRTD PEI low income tax reduction Turndown
 PTXFLG P.E.I. tax on taxable income activation flag
 PYPNDL P.E.I. Pension Income Deduction Amount

INPUT VARIABLES:

cfin First person in census family [pointer]
 cfinch First child in census family [pointer]
 cfineld Eldest person in census family [pointer]
 cfinspo Spouse of eldest [pointer]
 cfnchild Number of children (including 18+)
 cfnpers Number of persons in census family
 cfspoflg Census family contains married couple
 efin First person in economic family [pointer]
 efnpers Number of persons in economic family
 hhncf Number of census families in household
 hhnef Number of economic families in household
 hhnin Number of individuals in household
 hhnnf Number of nuclear families in household
 idage Age
 idcfrh Relationship to census family head
 iddisab Disability status
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 ideducm Eligible months of education allowance

| | |
|----------|---|
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impdtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |

| | |
|----------|-------------------------------------|
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txprov Compute provincial taxes

SUMMARY

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax as in Newfoundland, Prince Edward Island, New Brunswick and Nova Scotia to a parallel of the federal system in Quebec. The other provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|--------|----------|
| hdprov | Province |
|--------|----------|

txqcalc Calculate income tax (Quebec)

SUMMARY

The txqcalc function calculates Quebec income tax for those individuals affected.

SPSM Implementation

Each census family is processed in turn. First, the basic provincial tax is computed via a table look-up for each person. Next the non-refundable tax credits are applied and unused credits are transferred between spouses, if appropriate. Subsequently, the 'family situation' and 'eligible income' are computed followed by the family tax reduction. After the family tax reduction has been calculated, the refundable property tax credit is computed.

Relation to Other SPSM Routines

txqcalc is called from within txprov and is in a subsidiary relationship to it. It does not call, and is not called by, any further functions.

Sales tax credit

The refundable sales tax credit (imqstr) is activated when QSTRFLAG is set to 1. The sales tax credit includes a base credit (QSTRBCRD), a credit (QSTRCHILD) is added for each child in the family. A second credit is added (QSTRFTP3) when no spouse is present and at least one dependent child is present. And finally another credit is added (QSTRFTP4) is for a person living alone or with at least one dependent. The credit is reduced by the income considered at a rate QSTRRR.

Housing of Parent tax credit

The Housing of Parent Tax Credit (imqhptc) calculation is activated by a flag (QHPTCFLG) and the base tax credit is QHPTC. An economic family is eligible to the imqhptc if the parent or grandparent of the head of the economic family, or his/her spouse is in the economic family. A take-up rate QHPTCTC based on age of the potential parent assigns individuals with idefrh=3 as a parent according to SCF data. A take-up rate QHPTCTK based on employment income select the appropriate number of beneficiaries according to Portrait de la fiscalité des particuliers au Québec.

Medical Expenses tax credit

The calculation of the refundable tax credit for medical expenses is activated by the flag QMRTCFLG. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). The tax credit is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. Eligibility is also limited to persons aged 18 and over with employment related earnings greater than QMEDRMIN. The medical expenses tax credit was introduced in 1997.

Dues as non-refundable tax credit

Starting in 1997, dues that where a deduction (iddues) in txqinet are a tax credit activated by the option QDUESOPT = 2. The value of the tax credit is imquetc. When QDUESOPT = 1, the dues are calculated in txqinet.

Tuition as non-refundable tax credit

Starting in 1997, tuition are considered as a deduction (idtuitn) in txqinet are now a tax credit activated by the option QTUIOPT = 2. The value of the tax credit is imquitc.

Family Allowance Tax Credit

The Quebec Family Allowance Tax Credit started in September 1997 but is implemented in the model starting 1998. The Quebec Family Allowance Tax Credit is a credit based on

previous year net family income and is non-taxable. The maximum credits vary with the number of children (QFATCMXK), and a supplement QFATCSUP is allocated to single parent families. For families with 4 kids and more, a supplement, QFATCK6, is added that varies with the number of kids and the number of kids under 6 years of age. The credit is the maximum until it reaches the first turn down income level with a specific reduction rate. The sequence of turn down incomes and reduction rates for single parent families are in QFATCSRR and for married couples in QFATCMRR. The turning point at QFATD4K is increased by QFATD4KI for each child over three. The benefits are reduced up to a minimum based on the number of children in the family (QFATCMNK) until the net family income reaches the last turning point in either QFATCSRR or QFATCMRR. At this last turning point the benefits are starting to reduce until they reach a minimum for payments of QFATCMIN. The program is implemented by copying the reduction rate table (QFATCSRR or QFATCMRR) into a temporary table. Then another temporary table assigns benefits and reduction rates to turning point incomes. Finally, the calculated benefits, imqfatc, are assigned to the women in the married couples or to the head of the single parent family. When activated, the take-up rate, QFATCTK, selects the assigned individual only if a random number is higher than the level specified by its total income. As a standard, QFATCTK is set to zero and all individuals are selected.

Alternative Minimum Tax

The Alternative Minimum Tax in Quebec started in 1986 and is now fully implemented. The calculation is activated by QAMTXFLG. The calculation of the income considered is slightly different than the Federal Alternative Minimum Tax because of difference in the rates considered for:

- . the inclusion of an amount of capital in the income considered (QCAPAMTX),
- . the dividing factor for the dividends (QDIVRAT), and
- . the allowable taxable portion the capital gains (QAMTINCRT - QCAPGIR).

The exemption level is QAMTX and the tax rate is QAMTTX. When the Alternative Minimum Tax is higher than the calculated tax using the standard algorithm, the difference is stored in imqamt. A flag, imqamtfg, identifies the individuals with the modified income tax. In 1995, the definition of income was changed and QAMTXREF indicates new components used in the calculation of taxable income.

When QAMTXSTKFLG is set to 1, the stock option deduction (imqstkdd) can be deducted when calculating the Quebec Alternative Minimum Tax.

Political Contribution

Starting in 1995, the political contribution is subject to two rates (QPCTR) instead of one (QPTC). The calculation procedure for 1995 and after is activated when QPCOPT is set to 2, otherwise it is the single rate that applies.

Labour-sponsored venture capital tax credit

The Quebec labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Quebec provincial credit is modeled as QLVCRT times the gross amount up to QLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Simplified tax program (low income credit)

The simplified tax program, which includes a flat tax credit, started in 1998. People were allowed to decide whether it was in their benefit to fill out the simplified or general tax form. A worksheet was provided in order to facilitate the choice.

The SPSM has implemented this tax system in the following way. When QSFOPT is set to 1, everyone in Quebec fills out the general tax form. This is the system which was in place prior to 1998. If QSFOPT is set to 2, then everyone fills in the simplified tax form. And when QSFOPT is set to 3, then an optimization procedure is run. In this scenario, an approximation of the worksheet which was provided with the 1998 tax form is calculated prior to the computation of taxes. People are assigned to either the general tax form (which includes all deductions) or the simplified tax form (which includes few deduction but an additional credit - QSFTC). The variable imqsfllg notes which form was chosen.

A person can transfer all of their extra credits and deductions to their spouse when both spouses fill out the simplified tax form. When using the general form, only a limited number of deductions can be transferred. Because the worksheet does not take into account all the inter-spouse complexities, the optimization procedure will tend to overstate taxes. While it is very accurate for single persons, it tends to maximize the individual's gain which is not necessarily the couple's gain. The model may therefore slightly overstate Quebec taxes.

At the same time, the number of income tax brackets in QTX is reduced from 5 to 3, the Surtax and the Tax Reduction are eliminated.

This tax change also signified the replacement of the age, living alone, and retirement credits with a combined family-based credit (imqcalr).

Improved Tax System for Self Employed Workers

The improved tax system for self employed workers in Quebec was added. This improved system was announced in the Quebec 2000 Budget to enable the increasing number of self-employed workers to benefit from the simplified tax form. This system will standardize the tax treatment applicable to that part of the contribution paid by a worker in respect of pensionable self-employed earnings that could be equated with an employer's contribution, and refrain from excluding a growing number of self-employed workers from the simplified tax system. When activated (QITSFSEW), it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new

deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine the contribution to the Health Services Fund payable by individuals. The calculated amount of the contributions to be converted is held in imqcpse.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. The value of the tax credit is calculated in txqitax.

Refundable Tax Credit for Medical Expenses

When QMRTCFLG is assigned to 1, the Quebec refundable tax credit for medical expenses (imqmedrc) is calculated for persons aged 18 and over who had employment related earnings greater than QMEDRMIN. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). It is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. When QMRTCFLG is assigned to 0, the calculation of the Quebec refundable tax credit for medical expenses is suppressed.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| PYINC | Deflator to calculate previous year income |
| QAMTCBX | Quebec Alternative Minimum Tax Calculate Basic Exemption |
| QAMTDIV | Quebec Alternative Minimum Tax Taxable Dividend Limit |
| QAMTINCRT | Quebec Alternative Minimum Tax Inclusion Rate |
| QAMTNEGTTI | Quebec Alternative Minimum Tax Allow Negative Taxable Income |
| QAMTRITC | Quebec Alternative Minimum Tax Retirement Income Credit Deduction |
| QAMTRPFLG | RRSP/RPP included in Quebec Alternative Minimum Tax (1=include) |
| QAMTTX | QAMTX tax rate |
| QAMTX | QAMTX exemption level |
| QAMTXFLG | Quebec alternative minimum tax, QAMTX, activation flag |
| QAMTXREF | Quebec alternative minimum tax 1995 reform indicator (flag) |

| | |
|------------------|--|
| QAMTXSTKFLG | QAMTX stock option deduction inclusion (1=stk can be deducted) |
| QAPFFLG | Quebec anti-poverty fund activation flag |
| QAPFRAT | Quebec anti-poverty fund rate |
| QAXM | Quebec age exemption/amount |
| QBXM | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPAMTX | QAMTX taxable capital ratio |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |
| QCCETCR | Refundable CCE credit rate [net income, % cce claimable] |
| QCRDFLG | Quebec income credit flag [1=if social contribution are deducted] |
| QDIVRAT | QAMTX dividends ratio |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEIA1 | Quebec eligible income family type #1 |
| QEIA2 | Quebec eligible income family type #2 |
| QEIA3 | Quebec eligible income family type #3 |
| QEIA4 | Quebec eligible income family type #4 |
| QEIA5 | Quebec eligible income family type #5 |
| QEIAA | Quebec eligible income aged amount |
| QFAMDED | Quebec Family related deduction on income in refundable credits |
| QFAMFLG | Quebec family income deduction activation flag |
| QFAMNETI | Quebec family allowance tax credit net income concept flag |
| QFAMRAT | Quebec family income rate |
| QFATCHIRR | QFATC High income reduction rate |
| QFATCHITD | QFATC High income turndown |
| QFATCK6 | QFATC Supplement for kids under 6 in large families |
| [#kids][#kids<6] | |
| QFATCK6PYR | QFATC supplement for kids under 6 phase out year proportion |
| QFATCK6YR | QFATC Supplement for kids under 6 phase out year |
| QFATCMIN | QFATC minimum benefit paid |
| QFATCMNK | QFATC Minimum benefits by kid rank |
| QFATCMRR | QFATC turn down income levels and reduction rate for married parents |
| QFATCMXK | QFATC Maximum benefits by kid rank |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFATCSRR | QFATC turn down income levels and reduction rate for single parent |
| QFATCSUP | Quebec Family Allowance Tax Credit Supplement for single parent |
| QFATCTK | QFATC Take-up rates by total income |
| QFATD4K | QFATC turn down income for 4 children and more |
| QFATD4KI | QFATC turn down income increase by child for 4 children and more |
| QFTRA1 | Quebec family tax reduction family type #1 |
| QFTRA2 | Quebec family tax reduction family type #2 |
| QFTRA3 | Quebec family tax reduction family type #3 |
| QFTRA4 | Quebec family tax reduction family type #4 |
| QFTRFLAG | Quebec family tax reduction activation flag |
| QFTRRR | Quebec family tax reduction reduction rate |

QGIFTOPT Quebec gifts as tax credit
 QHPTC Quebec Housing Parent Tax Credit
 QHPTCFLG Quebec Housing Parent Tax Credit activation flag
 QHPTCTC QHPTC take-up rate by age of elderly [age,rate]
 QHPTCTK QHPTC take-up rate by income level [employment income,rate]
 QHSCI Quebec surtax first cut-in level
 QHSCI2 Quebec surtax second cut-in level
 QHSF Quebec surtax first level rate
 QHSF2 Quebec surtax second level rate
 QITSFSEW Quebec improved tax system for self-employed worker
 activation flag
 QLAXM Quebec living alone exemption/amount
 QLVCMAX Maximum Quebec labour-sponsored funds tax credit allowed
 QLVCRT Percent of Quebec labour-sponsored funds cost allowed as
 credit
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDRATE Proportion of expenses allowed for refundable tax credit
 for medical expenses
 QMEDRMAX Maximum expenses allowed for Que. refundable tax credit for
 medical expenses
 QMEDRMIN Minimum earnings for Quebec refundable tax credit for
 medical expenses
 QMEDRRR Reduction rate for the Que. refundable tax credit for
 medical expenses
 QMEDRTD Turndown level for Que. refundable tax credit for medical
 expenses
 QMRTCFLG Quebec refundable tax credits for medical expenses
 activation flag
 QNTCR Quebec nominal tax credit rate
 QPCOPT Quebec political contribution option
 QPCTR Quebec political contribution tax rates
 QPTC Quebec political contribution table [total
 donations,donation allowed]
 QPTCBEN Maximum Quebec political tax credit allowed
 QPTRGISB Quebec property tax rebate GIS bonus
 QPTRMTP Quebec property tax minimum tax per person
 QPTRMTR Quebec property tax maximum tax for reduction
 QPTRRR Quebec property tax rebate reduction rate
 QPTRTF Quebec property tax fraction
 QRTRFLAG Quebec real estate rebate activation flag
 QSFDISFLAG Quebec Simplified Form Disability tax credit inclusion flag
 QSFOPT Quebec Simplified Form Option (1=general 2=simplified
 3=optimized)
 QSFTC Quebec Simplified Form tax credit
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QSTRBCRD Quebec sales tax rebate base credit
 QSTRCHILD Quebec sales tax rebate children dependent credit
 QSTRFLAG Quebec sales tax rebate activation flag
 QSTRFTP3 Quebec sales tax rebate family type 3 credit
 QSTRFTP4 Quebec sales tax rebate family type 4 credit
 QSTROPT Quebec sales tax rebate option=1 based on imigis, =2
 otherwise
 QSTRRR Quebec sales tax rebate reduction rate
 QTRBE Quebec Tax Reduction Breakeven
 QTROPT Quebec Tax Reduction calculation option 1=universal
 2=income tested

QTRP Quebec tax Reduction proportion
 QTUIOPT Quebec tuition tax credit option
 QTX Quebec income tax table [taxable income,basic provincial tax]
 QYPDL Quebec deduction limit for pension income
 TARGETYEAR Year of analysis

INPUT VARIABLES:

cfin First person in census family [pointer]
 cfinch First child in census family [pointer]
 cfindeld Eldest person in census family [pointer]
 cfinspo Spouse of eldest [pointer]
 cfnkids Number of children in census family
 cfnpers Number of persons in census family
 cfspoflg Census family contains married couple
 efin First person in economic family [pointer]
 efnpers Number of persons in economic family
 hdnadult Number of adults in household
 hdnpers Number of persons in household
 hhncf Number of census families in household
 hhnef Number of economic families in household
 hhnnf Number of nuclear families in household
 idage Age
 idcarry Carrying charges (221)
 idccet Child care expenses associated with child
 idccett Child care expenses (Limit A, Form T778)
 idcfrh Relationship to census family head
 idcloss Allowable other years capital loss (253)
 iddisab Disability status
 ideofrh Relationship to economic family head
 idemplo Employee home relocation loan dedn (248)
 idexplor Exploration and development expenses (224)
 idicapg Capital gains (actual)
 idiemp Wages & salaries
 idiloss Business investment losses (217)
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idisefm Self-employed income - farming
 idisenf Self-employed income - non-farming
 idlabtxg Gross Labour funds bought (413)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idprvpol Provincial political contributions (565)
 idrand Random numbers [array]
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idsex Sex
 idspoflg Person has spouse
 imigis GIS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 immtot Total income
 improptx Imputed property tax paid
 imqalexp Quebec allowable employment expenses
 imqatc Quebec age tax credit
 imqbtc Quebec basic tax credit
 imqcapgx Quebec modelled capital gains deduction (254)

| | |
|----------|--|
| imqcchc | Quebec child's non-refundable credit |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdctc | Quebec dependent child tax credits |
| imqdedfn | Quebec all deductions from net income |
| imqdedft | Quebec deductions from total income |
| imqdistc | Quebec disability tax credit |
| imqduetc | Quebec Dues Tax Credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqidivt | Quebec taxable dividends |
| imqinet | Quebec net income |
| imqitax | Quebec taxable income |
| imqitot | Quebec total income |
| imqlatc | Quebec living alone tax credit |
| imqmeda | Quebec medical expenses allowed |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |
| imqritc | Quebec retirement income tax credit |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqstkdd | Quebec modelled Stock option deduction (249) |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| implvctc | Provincial labour-sponsored funds tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impsur | Provincial surtax |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| imqamt | Quebec Minimum Tax Amount |
| imqamtfg | Quebec Minimum Tax flag |
| imqapf | Quebec Anti-Poverty Fund |
| imqcalr | Quebec combined age, living alone, retirement credit |
| imqcceni | Quebec net income for refundable cce credit calculation |
| imqccetc | Quebec refundable child care expenses Tax Credit |
| imqdtxc | Quebec dividend tax credit |
| imqei | Quebec eligible income for tax reduction |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqfs | Quebec family situation (1-5) |
| imqftr | Quebec family tax reduction |
| imqhptc | Quebec Home Parent Tax Credit level |
| imqittr | Quebec income tested tax reduction |
| imqmedrc | Quebec refundable tax credit for medical expenses |
| imqptr | Quebec property tax refund |
| imqstr | Quebec sales tax refund |
| imqtca | Quebec tax credits applied |
| imqtct | Quebec tax credits transferable |
| imqtcts | Quebec tax credits transferred from spouse |
| imqtottc | Quebec total tax credits |

imtxp Provincial income tax payable

txqceea Compute child care expense allowance (Quebec)

SUMMARY

Since the amounts allowable for the Child Credit Expense Deduction differ slightly between the federal and Quebec provincial tax systems, it would be desirable to use the actual amount allowed for Quebec provincial tax purposes in the calculation of this deduction. The rules for eligibility exactly parallel the federal (see txceea). The algorithms are therefore essentially the same as the ones modeling the allocation of the federal Child Care Expense Deduction.

Unlike the federal algorithm, child care expenses are always treated as a deduction from total income. There is no option for treating them as a tax credit.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|----------|---|
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| QCCEAC1 | Quebec CCEA earned income fraction (1 child) |
| QCCEAC2 | Quebec CCEA earned income fraction (2 children) |
| QCCEAC3 | Quebec CCEA earned income fraction (3+ children) |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |

INPUT VARIABLES:

| | |
|----------|---|
| cfinch | First child in census family [pointer] |
| cfined | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |

OUTPUT VARIABLES:

| | |
|----------|---|
| imqccea | Quebec child care expenses allowed (dedn) |
| imqdedft | Quebec deductions from total income |
| imqinet | Quebec net income |

txqhstr Compute family-related deductions or credits (Quebec)

SUMMARY

This function parallels txhstr which performs similar calculations for federal taxes. The major difference is that the model does not incorporate the conversion of deductions into tax credits for the calculation of Quebec taxes. The algorithms include:

- calculate and allocate Personal Exemptions for Wholly Dependent Children
- calculate and allocate Married Exemption
- calculate Family Support Exemption (similar to federal Married Equivalent Exemption)
- calculate and transfer deductions from spouse

Calculate and Allocate Personal Exemptions for Wholly Dependent Children

Quebec filers with dependent children are eligible to claim an exemption based on the age and net income of the child. The exemption is calculated as a fixed amount minus a proportion of the child's net income exceeding the reduction level. The young child exemption is claimable on behalf of children aged 16 or 17. The old child exemption is claimable on behalf of children 18 and over but under 21, or over 20 and attending school full-time.

For taxation year 1986 and later, the definition of dependant's net income for the purpose of calculating the Exemption for Wholly Dependent Children requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The exemptions for all children are accumulated in cdeds which may later be adjusted by the calculation of the Family Support Exemption. If a spouse is present, the one with the higher Net Income (imqinet) receives the full amount of the exemption for all dependent children (imqcdeds) which is used to reduce Taxable Income (imqitax).

The model does not partition the exemptions for dependent children between spouses as is allowed by the tax regulations. This means that the tax burden of spouses with similar net incomes is not minimized.

In calculating the amount of the exemption, the model does not adjust the Net Income of the dependant to include certain non-taxable amounts of the Guaranteed Income Supplement (GIS), Spouse's Allowance (SPA) or Social Assistance as is specified in the Quebec tax regulations.

Calculate and Allocate Married Tax Credit

Persons legally married during the taxation year are eligible to claim a Married Tax Credit amounting to a fixed value reduced by the spouse's net income. The definition of spouse's net income for the purpose of calculating the Married Tax Credit requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The Married Tax Credit (imqmtc) is calculated only for the spouse with the lower Net Income (imqinet). It amounts to a fixed value (QMXM) reduced by the other spouse's Net Income. imqmtc is used to reduce the taxable income (imqitax) of the claiming spouse.

Note that the value of Net Income is not adjusted to include GIS, SPA, Social Aid and non-taxable amounts from international sources. GIS and SPA are calculated later in the model and the amounts are not available when this function is executed. Non-taxable amounts from international sources cannot be separated from other non-taxable income in the database.

Calculate Family Support Exemption

The definition of the Family Support Exemption is similar to the federal Married Equivalent Exemption. Filers who are single, divorced, separated or widowed and who supported a relative related by blood, marriage or adoption are eligible to claim that relative for a Family Support Exemption. This exemption amounts to a fixed value reduced by a proportion of the dependant's net income exceeding a reduction level.

The definition of the dependant's net income for the purpose of calculating the Family Support Exemption requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- Earnings from international sources which are tax exempt in Canada

SPSM Implementation

SPSM calculates the Family Support Exemption on behalf of dependent children and not other relatives who may be eligible.

The model attempts to make the claim on behalf of the dependant for whom a claim will benefit the filer most. The first choice for the exemption is a dependant who is not claimable for the child exemption, i.e., one who is 15 years of age or younger, or one who is over 21 and not attending an educational institution. If more than one dependant is eligible under these conditions, then the one with the lower Net Income (imqinet) is chosen. If there is no such dependant, the dependant claimable for the child exemption with the lowest Net Income is chosen.

If the Family Support Exemption is claimed on behalf of a dependant who is also claimable for the child exemption, the accumulated amount of the child exemption is adjusted by subtracting the amount claimed for that dependant.

The Family Support Exemption (imqmarex) is added to Total Personal Exemptions (imqpex) and subtracted from Taxable Income (imqitax).

Calculate and Transfer Deductions From Spouse

As in the federal case (see the function txhstr) Quebec allows the transfer of certain deductions from the spouse in the calculation of provincial income taxes. Deductions that may be transferred are:

- Age Exemption
- Interest and Dividend Income Deduction
- Deduction for Retirement Income
- Disability Deduction

Only the amount not required to reduce the spouse's taxable income to zero may be transferred. There is a limit to the amount of combined Interest and Dividend Income Deduction and Pension Income Deduction transferable which amounts to the unused proportion of the Married Exemption, i.e., if the full Married Exemption was claimed, no portion of these two deductions may be transferred.

SPSM Implementation

For the spouse with the lower Net Income (imqinet) the model calculates a value for potentially transferable deductions as the sum of:

- Age Exemption (imqaxm)
- Disability Deduction (imqdisex)

the lesser of:

- Total Pension Income Deduction (imqpendn) and Interest Income Deduction (imqintdn),
and
- the unused portion of the Married Exemption (QMXM minus imqmarex).

minus any amount required to reduce the spouse's Taxable Income to zero (imqinet minus QBXM).

The amount transferred from the spouse is subtracted from the filer's Taxable Income (imqitax) and added to Total Deductions from Net Income (imqdedfn). The spouse's Taxable Income and deductions are not adjusted because, if a transfer occurs, taxable income is zero by definition. The amounts recorded for the individual deductions (e.g., imqaxm, imqpendn) are not adjusted to reflect the transfer.

The value of Net Income used in the calculation of the transfer is not adjusted to include GIS, SPA and Social Aid income.

Calculate Living alone tax credit

The calculation of the living alone tax credit imqlatc is based on the value of the tax credit QLAXM adjusted by the nominal tax credit rate (QNTCR).

Starting in 1996, the calculation of the living alone tax credit is subject to turndown income (QLAXTD) and a reduction rate (QLAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QLAXPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqlatc is set to zero.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QLAXM | Quebec living alone exemption/amount |
| QLAXPI | Quebec living alone phase-in |
| QLAXRR | Quebec living alone reduction rate |
| QLAXTD | Quebec living alone turn down |
| QLPXM | Quebec lone parent exemption/amount |
| QMEDINC | Income definition for Que. refundable tax credit for medical expenses |
| QMXM | Quebec married exemption/amount |
| QNTCR | Quebec nominal tax credit rate |
| QPSXM | Quebec post-secondary exemption/amount |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QYCXM1 | Quebec dependent child #1 amount |
| QYCXM2 | Quebec dependent child #2 amount |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |

| | |
|----------|---|
| cfspoflg | Census family contains married couple |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idestat | Educational status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqinet | Quebec net income |
| imqitot | Quebec total income |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imqcchc | Quebec child's non-refundable credit |
| imqdctc | Quebec dependent child tax credits |
| imqdepni | Quebec dependant's net income |
| imqlatc | Quebec living alone tax credit |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |

txqinet Compute net income (Quebec)

SUMMARY

The Quebec provincial personal income tax system largely parallels the federal system: deductions and exemptions reduce total income to a taxable amount for which the basic provincial tax is calculated, then tax credits are applied to derive the amount of provincial tax payable. The function calculates net income for Quebec taxpayers and is similar to the process for calculating net income for federal income tax purposes.

SPSM Implementation

The algorithms for calculating Net Income for Quebec Provincial Income Tax Purposes are similar to the algorithms for calculating federal Net Income described under the function txinet. The major difference is that there are no options to treat deductions and personal exemptions as tax credits.

Whenever possible values already calculated in the computation of federal Net Income are applied here. The implementation of specific measures are described below.

Employment Expense Deduction

The calculation of the Quebec Employment Expense Deduction (imqdedia) is the same as the federal case. imqdedia is a proportion (QEAP) of Earnings from Employment (idiemp) up to a maximum deduction of QEAMAX. There is no flag controlling the calculation of

this value. If this deduction is to be eliminated, the values of QEAP and QEAMAX may be set to zero.

This value is added into Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Other Allowable Employment Expenses

The model assumes that the definition for Other Allowable Employment Expenses as applied to Quebec Provincial Taxes is the same as the federal definition (see txinet). The same value as used in the federal algorithm (idalexp) is used here. The value of idalexp may be scaled up or down by supplying an appropriate value for the parameter QALEXP (Proportion of Other Allowable Employment Expenses to Use as a Deduction).

The amount idalexp is added to Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Calculate Taxable Capital Gains

Capital Gains are treated as they are for federal taxes (see function txinet). Taxable Capital Gains for Quebec Provincial Tax Purposes (imqcapgt) is calculated as Total Capital Gains Received (idicapg) multiplied by the Capital Gains Inclusion Rate for Quebec Provincial Taxes (QDGUR).

Taxable Dividends

The treatment of dividends is similar to the federal algorithms described under the function txinet. Taxable Dividends for Quebec Provincial Taxes (imqdivt) are calculated as Total Dividends Received (idivid) multiplied by the Quebec Dividend Gross-up Rate (QDGUR).

Calculation of Total Income

As in the federal case (see function txinet), Total Income at this stage does not include Family Allowances which cannot be allocated until it is known whether the mother or the father have the higher net income. Total Income (imqitot) is calculated as the sum of:

| | |
|----------|---|
| idiemp: | Earnings From Employment |
| idisenf: | Self-employment Earnings (Non-farm), optionally scaled by the parameter FACTISENF |
| idisefm: | Self-employment Earnings (farm) |
| idiint: | Interest Income |
| idioinv: | Other Investment Income |
| idicqp: | CPP/QPP Benefits Received |
| iditogv: | Other Taxable Government Income |
| idipens: | Pension Income |
| iditoth: | Other Taxable Income |
| imiuib: | Modeled Unemployment Insurance Benefits Received |
| imiotg: | Modeled New Taxable Demogrants |
| imffa: | Modeled Family Allowance Benefits (optional) |

imioas: Modeled OAS Benefits
imqidivt: Modeled Taxable Amount of Dividends for Quebec
imqcapgt: Modeled Taxable Capital Gains and Losses for Quebec

The parameter QFAIFLAG controls whether federal Family Allowances are included in total income. If QFAIFLAG is set to one then imffa is added to imqitot. Also, Employment Expenses (imqdedia) and Other Allowable Employment Expenses (imqalexp) are added into All Deductions from Total Income (imqdedft) and not subtracted from Total Income as in the federal algorithms.

Calculation of Net Income

All Deductions from Total Income (imdedft) is calculated as the sum of:

idrpp: Registered Pension Plan Contributions
idrrsp: Registered Retirement Savings Plan Contributions
iddues: Union and Professional Dues
idtuitn: optionally, Tuition Fees
imqiloss: Allowable Business Investment Loss
idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions (calculated in txinet)
imuic: optionally, UI Contributions (calculated in txinet)
imqceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txqceca)
imqdedia: Employment Expenses
imqalexp: Other Allowable Employment Expenses

Dues as a tax credit

The dues as a deduction is activated by the option QDUESOPT = 1. Starting in 1997, dues are used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Tuition as a tax credit

The tuition as a deduction is activated by the option QTUIOPT = 1. Starting in 1997, tuition is used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Improved Tax System for Self-Employed Workers

The improved tax system for self employed workers in Quebec was added. When activated by QITSFSEW, it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine

the contribution to the Health Services Fund payable by individuals.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CPPXM | CPP/QPP exemptible earnings |
| QALEXP | Quebec proportion of other allowable employment expenses to use |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCPPOPT | Quebec CPP/QPP contribution deduction/credit option [1=deduction,2=credit] |
| QDGUR | Quebec dividend gross-up rate |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEAMAX | Quebec maximum employment allowance deduction |
| QEAP | Proportion of earnings for Quebec employment allowance deduction |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QITSSEF | Quebec percentage of self-employ CPP/QPP contributions to convert to deduction |
| QMAXDX | Quebec maximum disability deduction/amount |
| QMEDANF | Quebec medical allowance lower limit net income fraction |
| QNTCR | Quebec nominal tax credit rate |
| QREPNETFG | Social program repayments reduce Quebec net income flag |
| QSFDISFLAG | Quebec Simplified Form Disability tax credit inclusion flag |
| QSFOPT | Quebec Simplified Form Option (1=general 2=simplified 3=optimized) |
| QSFSMXI | Quebec simplified form spouse maximum income for work sheet |
| QSFTC | Quebec Simplified Form tax credit |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QUICOPT | Quebec UI contributions deduction/credit option [1=deduction,2=credit] |
| WSCF | CPP/QPP contribution rate on employment earnings |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|---------|---|
| hhnin | Number of individuals in household |
| idalexp | Other allowable employment expenses (229) |

| | |
|----------|--|
| idcarry | Carrying charges (221) |
| idcclos | Allowable other years capital loss (253) |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqpp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmedgro | Medical expenses, gross (330) |
| idmovexp | Imputed moving expenses (219) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imcqqpc | CPP/QPP contributions |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imiotg | Other taxable demogrants |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|--|
| imqalexp | Quebec allowable employment expenses |
| imqcapgt | Quebec taxable capital gains |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdedia | Quebec employment allowance |
| imqdedft | Quebec deductions from total income |
| imqduetc | Quebec Dues Tax Credit |

| | |
|----------|--|
| imqidivt | Quebec taxable dividends |
| imqiloss | Quebec Modelled Business investment losses (243) |
| imqinet | Quebec net income |
| imqitot | Quebec total income |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |

txqitax Compute taxable income and individual credits (Quebec)

SUMMARY

The process of computing taxable income for Quebec provincial taxes parallels that of the federal method. The following deductions are calculated and subtracted from Net Income (imqinet) to derive a tentative value for Taxable Income (imqitax):

| | |
|-----------|---|
| imqpendn: | Pension Income Deduction |
| imqintdn: | Interest Income Deduction |
| imqstddn: | Combined Medical Expense Deduction, Charitable Donations and Gifts to Canada or a Province |
| imqdisex: | Disability Deduction |
| imqdedfn: | Calculate Deductions from Net Income |
| imqaxm: | Age Exemption |
| imqexm: | Basic Exemption |

The computation of Taxable Income is completed by the function txqhstr which calculates exemptions for dependents and performs the transfer of deductions between members of the family.

Unlike the algorithms for the calculation of Federal Taxable Income, this function contains no options for converting these deductions into tax credits.

Pension Income Deduction

Depending upon the filer's age and the type of income, pension and retirement income may be eligible for the Pension Income Deduction. Any portion of this deduction not required to reduce a filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Modeled Pension Income Deduction (imqpendn) is calculated as the lesser of:

- a) Eligible Pension Income (idipens), and
- b) the Maximum Pension Income Deduction (QYPDL)

The Modeled Pension Income Deduction (imqpendn) is added to Total Deductions from Net

Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet).

The function txqhstr may transfer some amount of the Pension Income Deduction to the spouse. In this event, adjustments are made to imqdedfn and imqinet but not to imqpendn.

The model assumes that the value of idipens represents pension income eligible for this deduction. No further checks are made to ensure that the pension is of the appropriate type for the age of the filer.

After the reform in 1988, the non-refundable tax credit for pension income (imqritc) was the minimum of the base credit (QYPDL) and the eligible pension income (idipens). Starting in 1996, the calculated deduction for pension income (imqritc) based on the credit (QYPDL) is now subject to turn-down income (QYPTD) and a reduction rate (QYPRR) for pension income (idipens) in excess. In 1996 the reduction is only 50% and 100% after and it is controlled by the phase in variable QYPPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqritc is set to zero.

Interest Income Deduction

Interest income and dividends from Canadian sources are eligible for the Interest Income Deduction. This deduction amounts to the lesser of a fixed amount and the eligible income. Any portion of the deduction not required to reduce the filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Interest and Dividend Income Deduction (imqintdn) is calculated as the lesser of:

- a) the Maximum Interest and Dividend Income Deduction (QYIDL), and
- b) the sum of Interest Income (idiint) and Dividends (imqidivt) minus Carrying Charges (idcarry).

The deduction is added to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet) to derive Taxable Income (imqitax).

Since the Interest and Dividend Income Deduction is transferable between spouses, the function txqhstr may adjust the values of imqdedfn and imqitax. The value of imqintdn is not adjusted to reflect a transfer to the spouse.

Medical Expense and Charitable Donations Deduction

The filer is allowed a deduction for certain medical expenses, charitable donations and gifts to Canada or a province. In 1984, eligible medical expenses were deductible if they exceeded 3% of Net Income. Deductible charitable donations were limited to 20% of Net Income.

Before 1997, the calculation of the medical exemption in txqitax was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997,

(with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

SPSM Implementation

The database contains variables representing the federal Medical Expense Deduction Allowed (immeda) and combined Eligible Charitable Donations and Gifts to Canada or a Province (imchara). Net Medical Expenses represent medical expenses in excess of 3% of Net Income. Eligible Charitable Donations represent charitable donations not exceeding QCHATNF percent of Net Income.

The Combined Medical Expense and Charitable Donations Deduction (imqstddn) is calculated by taking the higher of:

- a) the Standard Deduction (QSTD), which may be zero, and
- b) the sum of Net Medical Expenses Allowed (imqmeda), Eligible Charitable Donations and Gifts to Canada or a Province (imqchara).

The variable imqstddn is added to Total Deductions from Net Income (imqdedfn) which is subsequently used to reduce Taxable Income.

Disability Deduction

As in the case of the federal income tax system, Quebec allows a special deduction for blind persons or persons confined to a bed or a chair. Any unused portion of the Disability Deduction may be transferred to a spouse or supporting parent.

SPSM Implementation

The database contains a value of the Disability Deduction Allowed on behalf of the filer (iddisslf), spouse or dependents (iddisoth). If either of these values are non-zero, the Quebec Disability Deduction (imqdisex) takes on the value assigned to the parameter QMAXDX. imqdisex is added in to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income.

Since this deduction is potentially transferable, the function txqhstr checks the relative net incomes of the head and spouse and performs any necessary transfers. The values of imqdedfn and imqitax are adjusted to reflect these changes. The value of imqdisex is not updated if the Disability Deduction is transferred to a spouse.

The model does not transfer unused portions of the Disability Deduction from dependant to parent. This probably does not cause a large error since the value on the database already takes into account amounts transferred from the spouse or dependents. The transfer between head and spouse is repeated in txqhstr because the estimate of Net Income is more accurate at this stage than during the database creation process.

Calculate Deductions from Net Income

The variable imqdedfn stores the value of All Deductions from Net Income. It is calculated

as the sum of:

| | |
|-----------|---|
| imqstdn: | Combined Medical Expense and Charitable Donations Deduction |
| imqintdn: | Interest and Dividend Income Deduction |
| imqpendn: | Pension Income Deduction |
| imqdisex: | Disability Deduction |
| imuibr: | Unemployment Insurance Benefits Reimbursed |
| idclos: | Capital Losses from Other Years |
| idnclos: | Non-capital Losses from Other Years |

The variable imqdedfn is subtracted from Net Income (imqinet) and may be adjusted in the function txqhstr if deductions are transferred between spouses.

The model does not include the Exemption for Members of a Religious Order, the Exemption for Dependents Aged 21 and Over Suffering from a Physical or Mental Infirmary, Deduction for a Home Relocation Loan, the Sociétés de placements dans l'entreprise québécois Deduction, or the Capital Gains Deduction.

Basic Exemption

Each filer claims a Basic Exemption which is subtracted from Net Income. The Amount of the Basic Exemption for Quebec Provincial Income Taxes is increased occasionally.

SPSM Implementation

For all filers with income, the Quebec Basic Exemption (QBXM) is added to the variable imqexm which accumulates personal exemptions. imqexm is subsequently added to imqpex which accumulates all exemptions and is later subtracted from Net Income imqinet.

Age Exemption

All filers who were 65 years of age or older during the taxation year claim the Age Exemption. The value of the Age Exemption is increased occasionally. Any unused portion of the Age Exemption may be transferred to the spouse.

SPSM Implementation

The Modeled Quebec Age Exemption (imqaxm) is assigned the value of the parameter QAXM for all filers 65 or over (idage \geq 65) if they have income (imninc $>$ 0). This value is added to imqexm (All Personal Exemptions on behalf of filer) which is subsequently added to imqpex (All Personal Exemptions) and subtracted from Net Income imqinet. The function txqhstr may transfer the unused portion of the Age Exemption to the spouse and make corresponding adjustments to the value of imqinet but not to imqaxm.

Starting in 1996, the calculation of the age exemption tax credit is subject to turndown income (QAXTD) and a reduction rate (QAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QAXPI.

Medical exemption calculation

Before 1997, the calculation of the medical exemption was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997, the calculation of the medical exemption is transferred to txqhstr (with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. Beginning in 2000, there are two tax credit rates applied to gifts in Quebec. The activation flag, QGIFTHCR, is used to implement the calculation. Allowable gifts up to QGIFTL1 use the QNTCR. The higher credit rate QGFTCR is applied to allowable gifts over QGIFTL1. The total value of the tax credit is imqchatc.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| QAXM | Quebec age exemption/amount |
| QAXPI | Quebec age exemption reduction phase in |
| QAXRR | Quebec age exemption reduction rate |
| QAXTD | Quebec age exemption income turn down |
| QBXN | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCHATNF | Quebec charitable donations maximum % net income |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QGFTCR | Quebec credit rate for gifts over upper limit |
| QGIFTFLG | Quebec max to gifts to Federal/Province/Crown activation flag |
| QGIFTHCR | Quebec higher tax credit on large gifts activation flag |
| QGIFTL1 | Quebec minimum gift limit subject to higher credit rate |
| QGIFTOPT | Quebec gifts as tax credit |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSCFLAG | Quebec Health Services Fund Contribution calculation flag |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QMAXDX | Quebec maximum disability deduction/amount |

QMEDALL Quebec medical allowance maximum lower limit
 QMEDANF Quebec medical allowance lower limit net income fraction
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDOPT Quebec Medical Tax Credit option
 QNFSDED Quebec deduction of net federal supplements (SPA and GIS)
 from net income flag
 QNTPCR Quebec nominal tax credit rate
 QREPNETFG Social program repayments reduce Quebec net income flag
 QSADED Quebec deduction of social assistance benefits from net
 income flag
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QYPDL Quebec deduction limit for pension income
 QYPPI Quebec deduction phase-in for pension income
 QYPRR Quebec deduction reduction rate for pension income
 QYPTD Quebec deduction turn down for pension income

INPUT VARIABLES:

hhnin Number of individuals in household
 idage Age
 idcagpex Capital gains exemptions (254)
 idcarry Carrying charges (221)
 idcfrh Relationship to census family head
 idcharit Charitable donations (340)
 idclos Allowable other years capital loss (253)
 iddalimo Alimony paid (220)
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 idemplo Employee home relocation loan dedn (248)
 idgifts Gifts to Canada/provinces/culture (342)
 ididiv Dividend income (actual)
 idiemp Wages & salaries
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idmedgro Medical expenses, gross (330)
 idnclos Allowable other years non-capital loss (252)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idspoflg Person has spouse
 idstkded Stock option deduction (249)
 imigis GIS benefits
 imioas OAS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 imninc No income flag
 imoasr OAS recovery
 imqalexp Quebec allowable employment expenses
 imqcapgt Quebec taxable capital gains
 imqcppse Quebec self-employ. QPP/PPP Cont. deduction
 imqiloss Quebec Modelled Business investment losses (243)
 imqinet Quebec net income
 imqitot Quebec total income
 imqsfflg Quebec simplified tax form flag 0=general 1=simplified
 imrepay Social Benefits Repayments
 imuibr UI benefit recovery

OUTPUT VARIABLES:

| | |
|----------|--|
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |
| imqchara | Quebec allowable charitable donations(calc) |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqdedfn | Quebec all deductions from net income |
| imqdistc | Quebec disability tax credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqitax | Quebec taxable income |
| imqmeda | Quebec medical expenses allowed |
| imqritc | Quebec retirement income tax credit |
| imqstkdd | Quebec modelled Stock option deduction (249) |

txque Compute provincial taxes for Quebec

SUMMARY

For residents of Quebec, the calculation of provincial taxes roughly approximates the process of calculating federal taxes. The SPSM divides this task among three functions which are described in another section of this document:

1. txqinet calculates total and net income tax
2. txqitax calculates a provisional value for taxable income subject to updating by txqhstr
3. txqhstr performs the calculation of personal exemptions for dependents and the allocation of deductions between head and spouse

The value of Taxable Income (imqitax) calculated by txqhstr is used to look up a value for Basic Provincial Tax (imbpt) in the tax table (QTX).

The Quebec Dividend Tax Credit (imqdtxc) is calculated as a proportion (QDTCR) of Taxable Dividends (imqidivt) and is subtracted from Basic Provincial Tax to derive Provincial Tax Payable (imtxp). Also subtracted is the Quebec Tax Reduction which is a proportion (QTRP) of Provincial Tax Payable (imtxp).

txsask Compute provincial taxes for Saskatchewan

SUMMARY

When STXFLG is off, Saskatchewan Basic Provincial Tax is a proportion (SPTF) of Basic Federal Tax (imbft). A flat surtax, calculated as a proportion (SFTAX) on Net Income (iminet) is added to Basic Tax.

The 2000 budget announced that Saskatchewan would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (STXFLG), a provincial tax table (SPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (SPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (SBXM) |
| impatxc | Age amount tax credit | (SAXM, SAXRR, SAXTD, SAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (SMXM, SMXMT, SEMXM, SEMXMT) |
| impcgtc | Caregiver tax credit | (SCGTC, SCGTCFLG, SCGTCTC, SCGTCTD, SCGTCTK) |
| impchrctc | Charitable donations | (SCHATL1, SCHATR1, SCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (SMAXDX) |
| impdtxc | Dividend tax credit | (SDTCR) |
| impedtxc | Education tax credit | (SEDXPM, SMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (SYPNDL) |
| imptutxc | Tuition Tax credit | (SMAXET) |
| impuictc | EI contributions tax credit | |
| imsctxc | Saskatchewan Non-refundable child tax credit | (SCNTC) |
| imssstxc | Saskatchewan senior supplement tax credit | (SSSTC) |

The option to apply a minimum tax is controlled using SAMTOPT.

Adjusted Saskatchewan Tax Payable (before a tax reduction is applied, is stored in the temporary variable a) is calculated as Basic Saskatchewan Tax (imbpt) plus a proportion (SSF) of Basic Saskatchewan Tax exceeding the Saskatchewan Surtax Level (SSCI).

Saskatchewan also implements a system of tax reductions for senior citizens and persons with dependent children. The Basic Tax Reduction (STRBR) is augmented by the Senior Citizen's Tax Reduction (STRSC) if the filer is age 65 or older. A tax reduction per child under 18 (STRPC) up to a maximum total for all children (STRCL) is also added. The number of children claimable for this tax reduction is taken from imnfach, the number of children eligible for Family Allowances.

The total potential tax credit is reduced by a proportion (STRRR) of the tax credit exceeding Adjusted Saskatchewan Tax Payable a to derive Reduced Saskatchewan Tax Payable imtxp.

Starting in 1992, a surtax (SDSF) for the reduction of the deficit is applied to the tax (imtxp). In 1995, an amount (SDSRA) was deducted from the surtax.

The Saskatchewan labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Saskatchewan provincial credit is modeled as SLVCRT times the gross amount up to SLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Saskatchewan Child Benefit and Saskatchewan Employment Supplement announced in the 1998 budget are modeled. When the SCBFLG is activated, families receive a benefit which depends on the number of children in the family (SCB1, SCB2, and SCB3). The benefit is reduced in two stages. Net family income greater than SCBTD1 and less than SCBTD2 is reduced at a rate SCBRR1 which depends on the number of children in the family. The benefit is further reduced at a rate of SCBRR2 for income over SCBTD2.

The Saskatchewan Employment Supplement is a monthly program. In the SPSD/M, the program is modeled in a yearly fashion. The maximum benefit is derived by multiplying a family's employment income in excess of SESCO (up to a maximum of SESMXIP) by a rate (SESR) which depends on the number of children in the family. The benefit is reduced for any family net income in excess of SESTD by a SESRR rate. The supplement started in mid-1998 and hence a phase-in rate SESPI was applied.

The estimate resulting from the SPSD/M may differ from the administrative totals. In modeling the program, employment income is assumed to be evenly distributed during the year. No maintenance income (e.g. child or spousal support) is added to employment income. The program is administered monthly with eligibility being determined depending on each month's income.

The Saskatchewan Sales Tax Credit announced in their 2000 Budget is now modelled. The Saskatchewan Sales Tax Credit is activated when SSTCFLAG is set to 1.

The Saskatchewan Sales Tax Credit was introduced in 2000 and became effective April 1, 2000 to offset the effect of sales taxes on lower income earners. SSTCPI represents the phase in rate for the program. The Saskatchewan Sales Tax Credit (imsstc) will consist of an adult component and a child component. This credit will be fully refundable and will be assigned to the spouse with the highest income.

The adult component of the Saskatchewan Sales Tax Credit will rise at a rate of SSTCBASPIR of individual net income up to a maximum (SSTCBAS). It will be reduced at a rate of SSTCRR as family net income increases above SSTCBASTD. An individual will also be eligible for SSTCSP in additional benefits for a dependent spouse or equivalent. This amount will be reduced at a rate of SSTCRR as family net income rises over SSTCSPTD.

The child component of the Saskatchewan Sales Tax Credit will provide an additional

SSTCKID per child. For two-parent families, the maximum child component will be SSTCKID + SSTCKID. For single parent families, the first child will be eligible for the adult benefit of SSTCSP and the maximum child component will be SSTCKID. The child component of the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC1KIDTD for families with one qualifying child. For families with more than one qualifying child, the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC2KIDTD.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| SAMTOPT | Sask. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| SAMTPCTF | Sask. amt rate as pct of additional fed tax due to minimum tax |
| SAMTPCTM | Sask. amt rate as pct of federal minimum tax amount |
| SAMTTX | Sask. amt rate as tax on adjusted income |
| SAXM | Sask. Age Amount |
| SAXPI | Sask. Age Amount phase in rate for 1994 and beyond |
| SAXRR | Sask. Age Amount credit reduction rate |
| SAXTD | Sask. Age Amount net income turndown |
| SBXM | Sask. Basic Personal Exemption/amount |
| SCB1 | Sask Child Benefit max for 1st child |
| SCB2 | Sask Child Benefit max for 2nd child |
| SCB3 | Sask Child Benefit max for 3rd and additional child |
| SCBFLG | Sask Child Benefit activation flag |
| SCBRR1 | Sask Child Benefit 1st reduction rate [number of kids] |
| SCBRR2 | Sask Child Benefit 2nd reduction rate [number of kids] |
| SCBTD1 | Sask Child Benefit 1st turndown |
| SCBTD2 | Sask Child Benefit 2nd turndown |
| SCGTC | Sask. Caregiver Tax Credit |
| SCGTCFLG | Sask. Caregiver Tax Credit activation flag |
| SCGTCTC | Sask. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| SCGTCTD | Sask. Caregiver Tax Credit Turn Down Income |
| SCGTCTK | Sask. Caregiver tax credit take-up rate by income level [employment income,rate] |
| SCHATL1 | Sask. Charitable Donations amount level 1 |
| SCHATR1 | Sask. Charitable Donations tax credit rate 1 |
| SCHATR2 | Sask. Charitable Donations tax credit rate 2 |
| SCNTC | Sask. non-refundable child tax credit amt per child |
| SDSF | Saskatchewan provincial deficit surtax fraction |
| SDSRA | Saskatchewan deficit surtax reduction rate |
| SDTCR | Sask. dividend tax credit rate |

| | |
|-----------------------------|---|
| SEDXPM | Sask. Education Amount per month |
| SEMXM | Sask. equivalent to married amount |
| SEMXT | Sask. equivalent to married turndown level |
| SESCI | Sask Employment Supplement cut in level |
| SESMIN | Sask Employment Supplement minimum benefit |
| SESMXIP | Sask Employment Supplement maximum benefit income point |
| SESPI | Sask Employment Supplement phase-in |
| SESR | Sask Employment Supplement benefit rate [number of kids] |
| SESRR | Sask Employment Supplement reduction rate |
| SESTD | Sask Employment Supplement turndown level |
| SESTK | Sask. Employment Supplement take up by number of kids |
| SESYPI | Sask Employment Supplementary benefit for under 13 phase-in |
| SESYR | Sask Employment Supplementary benefit for under 13 rate |
| [number of kids] | |
| SESYRR | Sask Employment Supplementary benefit for under 13 |
| reduction rate | |
| SFTAX | Saskatchewan provincial flat surtax rate on net income |
| SHEATFAM | Saskatchewan Home Heating Assistance Rebate for families |
| SHEATFLG | Saskatchewan Home Heating Assistance Rebate activation flag |
| SHEATSNG | Saskatchewan Home Heating Assistance Rebate for singles |
| SLVCMAX | Maximum Sask. labour-sponsored funds tax credit allowed |
| SLVCRT | Percent of Sask. labour-sponsored funds cost allowed as |
| credit | |
| SMAXDX | Sask. Maximum Disability deduction/amount |
| SMAXET | Sask. maximum on transfer of education and tuition amount |
| SMXM | Sask. married amount |
| SMXMT | Sask. married amount turndown level |
| SPNTR | Sask. provincial non-refundable tax credit rate |
| SPTC | Saskatchewan political contribution table [total |
| donations,donation allowed] | |
| SPTCBEN | Maximum Saskatchewan political tax credit allowed |
| SPTF | Saskatchewan provincial tax fraction |
| SPTX | Sask. tax table [taxable income,basic provincial tax] |
| SSCI | Saskatchewan surtax cut-in |
| SSF | Saskatchewan provincial high income surtax fraction |
| SSSTC | Sask. senior supplement tax credit |
| SSTC1KIDTD | Sask. sales tax credit child amount turndown if only 1 |
| child | |
| SSTC2KIDTD | Sask. sales tax credit child amount turndown if more than 1 |
| child | |
| SSTCBAS | Sask. sales tax credit base amount |
| SSTCBASPIR | Sask. sales tax credit base amount phase in rate |
| SSTCBASTD | Sask. sales tax credit base amount turndown |
| SSTCFLAG | Sask. sales tax credit activation flag |
| SSTCKID | Sask. sales tax credit child amount |
| SSTCPI | Sask. sales tax credit phase in |
| SSTCRR | Sask. sales tax credit reduction rate |
| SSTCSP | Sask. sales tax credit spousal amount |
| SSTCSPTD | Sask. sales tax credit spousal amount turndown |
| SSTR | Saskatchewan spousal & married equivalent tax reduction |
| STRBA | Saskatchewan tax reduction base amount |
| STRBR | Saskatchewan basic provincial tax reduction |
| STRCL | Saskatchewan child tax reduction limit |
| STRPC | Saskatchewan tax reduction per child |
| STRRR | Saskatchewan tax reduction reduction rate |
| STRSC | Saskatchewan tax reduction for senior citizens |
| STXFLG | Sask. tax on taxable income activation flag |

SYPNDL Sask. Pension Income Deduction Amount

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| imuic | UIC contributions |

| | |
|----------|---|
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| impptc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impptxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imscb | Saskatchewan Child Benefit |
| imsctxc | Saskatchewan Non-refundable child tax credit |
| imses | Saskatchewan Employment Supplement |
| imssstxc | Saskatchewan senior supplement tax credit |
| imsstc | Saskatchewan refundable sales tax credit |
| imtxp | Provincial income tax payable |

ui Compute UI benefits

SUMMARY

Unemployment Insurance (UI) and Employment Insurance (EI) benefits are calculated by a set of functions which mimic application of UI/EI regulations to individual employment and

claim histories. These histories are summaries of administrative data from a 1% sample of persons with some UI/EI claim activity . Benefits are first calculated on a claim basis. Adjustments are then made to allow for claims overlapping more than one calendar year. Finally, taxable benefits received by individuals within a calendar year are determined.

Program Description

Unemployment/Employment insurance is an income support program financed jointly by employees, employers and the federal government. It is intended to provide income maintenance during temporary interruptions in employment. As such, it is not a universal program. Among those excluded from coverage are persons who do not participate in the labour force, the self-employed (other than fishermen) and persons who have exhausted benefit entitlements.

SPSM Implementation

The SPSM implementation of the UI/EI program has distinct steps representing application of program regulations to a given claim. The function `ui` operates as a controller which calls the sub-functions which apply UI/EI regulations to each claim and each UI/EI claimant within a household and returns the benefits received by individuals for the calendar year. Claimants may have one or two claims overlapping the survey calendar year. Payments within the calendar year are determined assuming benefits are paid on consecutive weeks.

For SPSM purposes, the unemployment regions are urban size classes within each province. These are not the regions defined for administration of the UI/EI program. The use of proxy unemployment regions is required to ensure data confidentiality.

For purposes of determining entitlements, the claim histories include the initial claim type `ucbtyp` (i.e., Maternity, Sickness, Retirement, Fishing or Regular) and a type change flag (i.e., indicating that a Sickness claim, for example, was changed to a Regular claim within the Initial Phase). SPSM deems the type change to have taken place immediately after the claim is established and does not attempt to subdivide the Initial Phase into Special and Regular periods. Since type change takes place, the special benefits totals (e.g., Sickness benefits) can not be determined by eliminating the type (e.g., by setting eligibility requirements high) and calculating the reduction in benefits. A second claim type (`ucmtyp`) is also imputed. If there was more than one type of benefit received within a claim, `ucmtyp` represents the claim type which had the majority of weeks. By turning on `UIEIMTYPFLG`, `ucmtyp` is modelled instead of `ucbtyp`.

The UI/EI algorithm has no behavioral response capacity, so that, for example, no new claims can be created. However, there have been more people with claims imputed in the base year than was necessary. The means that the number of persons with claims can be modified using the `UITARGET` and `UIEITKP` parameters. Similarly, the duration of modeled claims does not exceed observed durations, except when the following parameters are used: `UIREGWKFCT`, `UITRNWKFCT`, `UIOTHWKFCT`, `UIEXTMATWKS`. Unless these parameters are modified, the assumption is that individuals would not increase their duration on claim, if their entitlements were increased. However, no restriction is placed on

durations within each phase. Consequently, the elimination of a phase need not reduce the overall duration of a claim.

There are several sub-functions contained in the *ui* function. The first called is *uicl*m which calculates benefits for a single claim. *uicl*m does this by first calling three sub-functions which test for eligibility requirements based on claim type, repeat claim status, and regional unemployment rates (*uielent*, *uielrep*, *uielrge*). *uicl*m next calls three sub-functions which determine the weeks of entitlement in the Initial, Labour Force Extended and Regional Extended Phases (*uiwkbas*, *uiwklfe* and *uiwkrge*). The *ui* function then calls *uitrnc*l*m* which calculates training and other benefits (excluding regular, fishing, sickness, maternity, and parental which are calculated in *uicl*m). If a second claim is required *uicl*m and *uitrnc*l*m* are called again. Each function and sub-function are briefly described below.

ui

The *ui* function serves to pass information about each individual with a UI/EI claim in a household to *uicl*m. If an individual has more than one claim, modeled weeks of benefits in the qualifying period are computed for the first claim and passed to *uicl*m when the second claim is processed. UI/EI benefits for a calendar year are returned.

***uicl*m**

The sub-function *uicl*m processes distinct claims from the information passed to it by *ui*. In the event of a repeat claim, *ui* passes information about modeled claim activity in the qualifying period. Modeled changes to UI/EI regulations may produce important differences in first claim activity, thereby effectively changing the status of the second claim.

The *uicl*m function operates at a claim rather than an individual level. It calls *uielent*, *uielrep* and *uielrge* to establish eligibility. It then changes the type of eligible claims, where appropriate.

Once a claim is established, *uicl*m calls *uiwkbas*, *uiwklfe* and *uiwkrge* to determine the weeks of entitlement in each of the Initial, Labour Force Extended and Regional Extended Phases, respectively. The claim is represented by four pointers which identify:

Pointer #1 - 1st week of benefits (following waiting period)

Pointer #2 - 1st week of Labour Force Extended benefits

Pointer #3 - 1st week of Regional Extended benefits

Pointer #4 - week after end of Regional Extended Benefits.

Weeks are identified by integers with the week of January 1 being zero. The differences between succeeding pointers will initially equal the entitlement on the appropriate phase. *uicl*m then calls a utility function *uisqz* which ensures that interval between #1 and #4 does not exceed the original claim (minus any training or other weeks) or the maximum allowable duration of a claim. A subsequent call to *uisqz* produces a second set of (windowed) pointers that do not include any weeks outside the calendar year.

The *uicl*m function then calculates the weekly benefits. Benefits are the product of phase weeks times the weekly benefit rate for each phase summed over phases. However, benefit

rates may be increased or decreased by the following modelled programs: minimum divisor rule (see UIEIDIVFLG), the intensity rule (see UIEIFIFLG), an enhanced rate should there be dependents (see UIENSTRO), and the family supplement (see UIEIFSFLG).

uielent

The uielent sub-function applies eligibility tests based on the minimum weeks or hours of insurable employment in the qualifying period required for each initial claim type. These are basic tests which may be superseded by special tests applied to repeaters, new entrants/re-entrants, and other regular claimants. The function sets a flag indicating eligibility status.

uielrep

The uielrep function performs special eligibility tests that apply to repeaters only. The required weeks of insurable employment depend on the regional unemployment rate and on weeks of benefits in the qualifying period. The function performs a two dimensional table lookup to determine whether eligibility is established. The function sets a flag indicating eligibility status.

uielrge

Claims that are initiated as regular claims are subject to variable entrance requirements that depend on the regional unemployment rate. The function uielrge performs the table lookup necessary for these tests. The function sets a flag indicating eligibility status.

uiwkbas

The function uiwkbas determines entitlements in the Initial Phase. For special benefit types (i.e., claims that remain maternity, fishing, sickness or parental), this is the total claim entitlement and is determined by a table lookup. For regular claims, entitlements, up to a maximum number of weeks, are determined in proportion to weeks or hours of insurable employment in the qualifying period up to a maximum number of weeks.

uiwklfe

The function uiwklfe determines entitlements in the Labour Force Extended Phase. As in the Initial Phase, entitlements are determined in proportion to weeks, above a minimum, of insurable employment in the qualifying period.

uiwkrge

The function uiwkrge determines entitlements in the Regional Force Extended Phase. Entitlements are determined by the regional unemployment rate.

uitrnclm

The function uitrnclm is called by the ui function after the uicl function. Therefore, regular, sickness, maternity, fishing, and parental benefits have already been assigned. The uitrnclm function assigns first other types of benefits, then training benefits. Other types of

benefits will include everything not included in regular, sickness, maternity, parental, fishing or training. The list of other benefits included will vary depending on the year of the program. But they may include such items as job creation benefits, work sharing benefits, and self-employed assistance.

Other benefits are calculated using the imputed weeks of other benefits (ucothwk) and a weekly benefit rate (ucothbr). These can be adjusted using UIOTHWKFCT and UIOTHBNFCT. Training benefits are calculated in a similar manner using uctrnwk, uctrnbr, UITRNWKFCT, and UITRNBNFCT. There are no eligibility tests for these types of benefits. New pointers, ubp5 and ubp6 are created to signify the end of these benefit phases.

Adjusting UI/EI

Some parameters were added to the model in order to mimic some historical changes to the UI/EI program which the model cannot do without changes to the database. The UITARGET and UIEITKP parameters allow the users to increase or decrease the number of UI/EI recipients. The following parameters: UIREGWKFCT, UITRNWKFCT, UIOTHWKFCT, UIEXTMATWKS allow the users to increase the number of weeks of benefits over and above the weeks claimed on the database. UITRNBNFCT and UIOTHWKFCT allow the benefit rate for training and other benefits to be increased.

1 - Qualifying for benefits is now based on hours of work instead of weeks of work

Since the SPSD does not contain total hours of work, these are derived using the weeks of work prior to claim (ucwwork) multiplied by a new variable: the average weekly hours of work (ucwchr) which was imputed from the Survey of Labour and Income Dynamics. For more information, see UIREGHRMIN, UIMATHRMIN, UISICHRMIN,.

As for fishing benefits, qualification is based on earnings in the past 31 weeks. These are derived using weeks of work prior to claim (ucwwork) and average weekly earnings (ucern). It is assumed that the weeks ucwwork occurred immediately prior to the start of the claim. See UIFSHERMIN.

2 -The Family Income Supplement was added

When UIEIFSFLG is set to 1, the Family supplement is calculated. The total amount of the family supplement paid on a claim is ubclmfs. The total amount of family supplement paid on a claim in the calendar year is ubcalfs.

The Family Supplement was introduced as part of the Employment Insurance system reform introduced in 1995. It increases the basic benefit of families with low income. It replaces the older program which gave an enhanced rate for individuals with low income (in the SPSD/M this older program was controlled by UIENSRATE, UIDEPOPT, UIENSRTCO).

There are two methods of calculating the Family Supplement. When UIEIFSOPT is set to 1, then family supplement is directly tied into the Canada Child Tax Benefit (imfcben). Families which are eligible for the Child Tax Benefit receive the weekly amount of the benefit in addition to their regular Employment Insurance. It is reduced at a rate (UIEIFSRR) over incomes greater than UIEIFSRL.

Some simplifications were made in order to implement this program in the SPSM. The calculation of the Canada Child Tax Benefit is done after the calculation of EI in the model since it requires net income. But it requires the previous year's net income which is estimated as PYINC times the current year's net income.

When the Family Supplement is activated, the tax/transfer driver (drv) is run through twice per eligible household. The first time, no one will get a family supplement since the child tax benefit is equal to zero. The value of the benefit is saved (in cceopt) and drv is called again. This time, the previously saved value for the child tax benefit is used to calculate the family supplement. The family supplement will be slightly inconsistent with the child tax benefit since the latter will be recalculated and may be slightly smaller than the one used for deriving the family supplement since family net income will increase due to the family supplement.

Another simplification in deriving the family supplement derives from the fact that the SPSM assumes that the Child Tax Benefit is given in one lump sum amount in July. Therefore in the case of the Family supplement, the rules governing the Child Tax Benefit may be a year off if the benefit is received in the first half of the year.

When UIEIFSOPT is set to 2, the family supplement is calculated independently of the child tax benefit. First the number of children under the age of 7 is calculated (imuiydep). By going through the drv twice, the family's net income (prior to the addition of the family supplement) is available and the previous year's income is derived by multiplying it by PYINC. The family supplement is then derived by looking up the base value (UIEIFS1 for families with 1 child, UIEIFS2 for families with 2 children, and UIEIFS3 for families with 3 or more children). A supplement for each child over and above the third is added (UIEIFSTOPUP) as is a supplement for each child under the age of 7 (UIEIFSYNG).

The Family supplement rules changed on July 1999. Since the methodology under UIEIFSOPT = 1 would be off by a year, it was decided to treat all of 1999 under the methodology introduced in July 1999 (UIEIFSOPT = 2).

Under both options, EI weekly benefits including the family supplement cannot exceed a proportion (UIEIMFSP) of the claimant's weekly earnings (ubern). Nor can EI benefits, including the family supplement exceed the base rate (UIEIRATE) times the maximum weekly earnings (UIERNMAX).

Also, under both options, when the UIEIFIFLG is turned on, people who receive the family supplement are exempted from the intensity rule.

3 - The Intensity Rule

For persons receiving regular or fishing EI benefits and who did not receive the Family Income Supplement, the intensity rule was applied. The benefit rate (UIEIRATE) depends on the number of weeks of EI collected in the past. See UIEIFIFLG, UIEIRATE, UIEIYRS, ubeiwbp, ucy1, ucy2, ucy3, ucy4, ucy5 for more details.

4 -The Minimum Divisor

In order to obtain their maximum benefits, EI claimants must work two weeks more than the minimum entrance requirements. The minimum divisor rule is controlled by UIEIDIVFLG and UIEIDIV.

5 -Minor Changes

There was a minor change in the method used to derive training weeks and training benefits.

The method of using the UI/EI regular benefit weeks adjustment factor UIREGWKFACT was adjusted.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| PYINC | Deflator to calculate previous year income |
| UIBASFLAG | Basic phase calculation flag (UI and EI) |
| UIBASOPT | UI reform option [1=normal, 2=Apr'89] (UI and EI) |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIDEPOPT | UI dependency option [1=normal, 2=Feb'94] (UI only) |
| UIEFFFLAG | Observed effective weekly benefit rate flag (UI and EI) |
| UIEIDIV | EI minimum divisor [uer][divisor] (EI only) |
| UIEIDIVFLG | EI minimum divisor flag (EI only) |
| UIEIFIFLG | EI intensity rule exemption for family supplement receivers (EI only) |
| UIEIFS1 | Max fam supplement 1 child (EI only) |
| UIEIFS2 | Max fam supplement 2 children (EI only) |
| UIEIFS3 | Max fam supplement 3+ children (EI only) |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIFSOPT | UI EI calculate family supplement option (EI only) |
| UIEIFSRL | UI EI family supplement reduction level (EI only) |
| UIEIFSRR | UI EI family supplement reduction rate (EI only) |
| UIEIFSTOPUP | Max fam supplement top up for more than 3 kids (EI only) |
| UIEIFSYNG | Max fam supplement top up for young children (EI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIMTYPFLG | Flag to model main benefit type (UI and EI) |
| UIEINEREFLG | Flag to check for hours for new entrants and re-entrants (EI only) |

| | |
|----------------------------|---|
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIRATE | Benefit rate under EI reform [Past Wks ben][Rate] (EI only) |
| UIEITKP | UI EI takeup rate [index] : index based on prov, sex, age, |
| weeks | |
| UIEIYRS | Number of years of previous EI benefits calculated (EI |
| only) | |
| UIENSRATE | Enhanced rate for basic phase (UI only) |
| UIENSRTCO | Enhanced rate cutoff (UI only) |
| UIENTFLAG | Basic entrance requirements flag (UI and EI) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIEWK | Entitlement (weeks) [wkwrk, uer] (UI and EI) |
| UIEXTMATWKS | Additional weeks for maternity - behavioural response (UI |
| and EI) | |
| UIFLAG | UI/EI Activation flag (UI and EI) |
| UIFSHERMIN | Min. earnings to qualify for fish. benefits [unempl. rate] |
| (EI only) | |
| UIFSHMINWK | Minimum weeks to qualify for fishing benefits (UI only) |
| UILFEFLAG | Labour force extended phase calculation flag (UI only) |
| UILFEMIN | Weeks worked in qualifying period [UILFEWKS index] (UI |
| only) | |
| UILFERATE | Benefit rate for labor force extended phase (UI only) |
| UILFEWKS | Weeks LFE entitlement [UILFEMIN](UI only) |
| UIMATHRMIN | Minimum hours to qualify for maternity benefits (EI only) |
| UIMATMINWK | Minimum weeks to qualify for maternity benefits (UI only) |
| UIMAXBASEWKS | Maximum number of weeks - regular (UI and EI) |
| UIMAXDUR | Maximum duration of a UI claim (UI and EI) |
| UIMAXFSHWKS | Maximum number of weeks - fishing (UI and EI) |
| UIMAXMATWKS | Maximum number of weeks - maternity (UI and EI) |
| UIMAXPARWKS | Maximum number of weeks - parental (UI and EI) |
| UIMAXSICWKS | Maximum number of weeks - sickness (UI and EI) |
| UINEREHRMIN | Minimum hours to qualify for new entrant or re-entrant (EI |
| only) | |
| UIOTHBNFCT | UI other benefits per week adjustment factor (EI and EI) |
| UIOTHWKFCT | UI other benefits weeks adjustment factor (UI and EI) |
| UIREGHRMIN | Min. hours to qualify for reg. benefits [unempl. rate] (EI |
| only) | |
| UIREGMINWK | Minimum weeks to qualify for regular benefits (UI only) |
| UIREGWKFCT | UI regular benefit weeks adjustment factor (UI and EI) |
| UIREPPREV | Weeks of insurable employment [weeks] (UI only) |
| UIREPUER | Regional unemployment rate [rates] (UI only) |
| UIREPWWKD | Repeater eligibility requirements [weeks x rates] (UI only) |
| UIRGEFLAG | Regional extended phase calculation flag (UI only) |
| UIRGEMIN | Unemployment rate for Regional Extended entitlement |
| [UIRGEWKS index] (UI only) | |
| UIRGERATE | Benefit rate for regional extended phase (UI only) |
| UIRGEWKS | Weeks Regional Extended entitlement [UIRGEMIN] (UI only) |
| UIRGNFLAG | Regional requirements flag (UI only) |
| UIRGNMIN | Regional unemployment rate (UI only) |
| UIRGNWKS | Weeks required for eligibility (UI only) |
| UIRPTFLAG | Repeater requirements flag (UI only) |
| UISICHRMIN | Minimum hours to qualify for sickness benefits (EI only) |
| UISICMINWK | Minimum weeks to qualify for sickness benefits (UI only) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| UITRBNFCT | UI training benefit per week adjustment factor (EI and EI) |
| UITRNWKFCT | UI training benefit weeks adjustment factor (UI and EI) |
| UIWAITWKS | Minimum waiting period all claims (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hdurb | Size of urban area |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| hhnfn | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinoth | Other money income (non-taxable) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idnfn | Person's nuclear family [pointer] |
| idninc | No income flag (SPSD variables) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| iduirank | Predicted ranked likelihood of getting UI |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imuidpfg | UI claimants has dependents flag |
| nfin | First person in nuclear family [pointer] |
| nfinch | First child in nuclear family [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnpers | Number of persons in nuclear family |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucgotpa | Received paternity benefits |
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucyl | Weeks on UI in first year before claim |

| | |
|------|---|
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

OUTPUT VARIABLES:

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imuibr | UI benefit recovery |
| imuidpfg | UI claimants has dependents flag |
| imuiydep | Number of dependents under 7 for family supplement (EI only) |
| ubcalfs | Family supplement paid in calendar year |
| ubcalpd | Benefits paid in calendar year |
| ubcalwk | Weeks on claim in calendar year |
| ubclmfs | Family supplement paid on claim |
| ubclmpd | Benefits paid on claim |
| ubclmwk | Weeks on claim |
| ubeiwbp | Weeks of past EI benefits |
| ubern | Modelled insurable weekly earnings |
| ubp1 | Week # of first payment |
| ubp1c | Week # of first payment (windowed) |
| ubp2 | Week # of start of second phase |
| ubp2c | Week # of start of second phase (windowed) |
| ubp3 | Week # of start of third phase |
| ubp3c | Week # of start of third phase (windowed) |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ubp5 | Week # of last other type of ui/ei payment |
| ubp5c | Week # of last other type of ui/ei payment (windowed) |
| ubp6 | Week # of last training payment |
| ubp6c | Week # of last training payment (windowed) |

vardef Define structure member as an SPSM variable

SUMMARY

The vardef function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.



SPSD/M 

Algorithm Guide

This guide is designed primarily to provide *SPSD/M* users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black box and glass box users.

September 21, 2001



Canada

Introduction

The Algorithm Guide provides SPSD/M users with a description of the specific personal tax and cash transfer programs which are simulated and the specific way in which this is done. An attempt is also made to guide and caution the user, where necessary, as to the interpretation of the results. Also included in this guide are descriptions of processing and utility algorithms which have a significant effect on the results. The guide is intended for both black box and glass box users.

The guide is organized into three main sections. After the first section (this Introduction), there is a section describing the algorithms organized into logical groupings. This is followed by an alphabetically-arranged encyclopaedic section that lists all algorithms in the SPSM.

These modules are referred to as functions. Function names are printed in lower case (e.g. `txinet`, `txcalc`). Sub-functions are defined within the function that calls them and are also shown in lower case (e.g. `uicl`, `gissub`). Both regular and local variables are shown as usual in lowercase (immicons). These local variables may not be used for reporting purposes unless modifications are made in glass box mode.

These functions tend to have a one-to-one correspondence with actual social and tax programs. In some cases however, two functions are required for one social program (Eg. the child care expense deduction is calculated in one function and allocated to a particular family member in another), or many programs may be simulated in one function (e.g. federal and provincial family allowances are both calculated by one routine).

Subject Reference

1 Algorithm by Program

1.1 Introduction

This guide is designed primarily to provide SPSD/M users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black-box and glass-box users.

1.2 Pre-simulation Functions

The functions in this group are executed prior to the simulation of taxes and transfers. The database is first adjusted to the users specifications, by `adj`. This adjusted database will form the basis of all base/variant combinations executed in a single program run. Parameter edit checks and the calculation of derived parameters are performed next in `mpc`. This is done based on `.apr` parameters and rules embodied in the function. Finally, calls to the tax/transfer algorithms are made for each requested base and/or variant simulation as controlled by the `drv` function.

1.2.1 Adjust Database

Three functions perform certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database.

| | |
|-----------------------|--|
| <code>fmspopen</code> | Routines to read SPSD file (.spd) |
| <code>fmxopen</code> | Routines for reading FAMEX (.fxv) file |
| <code>adj</code> | Perform SPSD database adjustment |

1.2.2 Calculate Derived Parameters

The `mpc` function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters.

| | |
|------------------|---|
| <code>mpc</code> | Calculate derived model parameters and do edits |
|------------------|---|

1.2.3 Tax/Transfer Calculator

Two functions are responsible for invoking the algorithms which calculate all taxes and transfers.

| | |
|-------------------|------------------------------|
| <code>call</code> | Call tax/transfer calculator |
| <code>drv</code> | Tax/transfer calculator |

1.3 Government Cash Transfers

1.3.1 Unemployment Insurance Benefits

Unemployment Insurance benefits are calculated by a set of functions which mimic application of UI regulations to individual employment and claim histories. These functions are contained within the ui function

ui Compute UI benefits

1.3.2 Family Allowances

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

famod Compute family allowance

1.3.3 Federal Child Tax Benefit/Credit

This function is used to calculate either the federal Child Tax Credit program or the federal child tax benefit. Both programs are intended to provide benefits to help low and middle income families meet the costs of raising children under the age of 18.

txctc Compute child tax credit

ccept zero CCE for young kids if optimal

1.3.4 Federal Sales Tax Credits

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse.

txfstc Compute federal sales tax credit

1.3.5 Elderly Programs

1.3.5.1 Old Age Security

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. The SPSM calculates OAS based on the age of the individual and, for immigrants, the years since immigration. The clawback of OAS is performed in the txitax function.

oas Compute OAS for elderly

1.3.5.2 Guaranteed Income Supplement/Spouses Allowance

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable

monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested.

gis Compute GIS/SPA for elderly

1.3.5.3 Provincial GIS Supplementation Programs

The gist function calculates benefits for seven provincial GIS supplementation programs in six provinces; Nova Scotia, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. All modelled provincial senior's programs within SPSM are in this function.

gist Compute Provincial GIS top-ups for elderly

1.3.6 Social Assistance Benefits

This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here.

samod Compute social assistance or guarantees

1.4 Federal Income and Payroll Taxes

1.4.1 Calculate Net Income

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Taxable Dividends
- Taxable Capital Gains
- Total Income
- CPP/QPP Contributions (Deduction or Tax Credit)
- UI Contributions (Deduction or Tax Credit)
- Tuition Fees (Deduction or Tax Credit)
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

txinet Compute net income

1.4.2 Calculate Taxable Income

The process of computing taxable income is divided into two separate routines. Exemptions, deductions and tax credits which are not dependent upon information from other members of the family (e.g., the Basic Personal Exemption or Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

txitax Compute taxable income and individual credits

txhstr Compute family-related deductions or credits

1.4.3 Child Care Expense Allowance

The txceea function calculates the value of the child care expense deduction. The calculation may be optionally converted to a tax credit basis rather than a deduction.

txceea Compute child care expense allowance

1.4.4 Calculate Federal Tax

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Basic Federal Tax (including credit transfers)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement

txcalc Calculate federal income tax

1.5 Calculate Provincial Taxes

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax to a parallel of the federal system in Quebec. Most provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

1.5.1 All Provinces except Quebec

| | |
|--------|---|
| txprov | Compute provincial taxes |
| txnfld | Compute provincial taxes for Newfoundland |
| txpei | Compute provincial taxes for P.E.I. |
| txns | Compute provincial taxes for Nova Scotia |
| txnb | Compute provincial taxes for New Brunswick |
| txont | Compute provincial taxes for Ontario |
| txman | Compute provincial taxes for Manitoba |
| txsask | Compute provincial taxes for Saskatchewan |
| txalta | Compute provincial taxes for Alberta |
| txbc | Compute provincial taxes for British Columbia |

1.5.2 Quebec

| | |
|---------|--|
| txque | Compute provincial taxes for Quebec |
| txqinet | Compute net income (Quebec) |
| txqccea | Compute child care expense allowance (Quebec) |
| txqitax | Compute taxable income and individual credits (Quebec) |
| txqhstr | Compute family-related deductions or credits (Quebec) |
| txqcalc | Calculate income tax (Quebec) |

1.6 Calculate and Assign Commodity Taxes

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures at the spending unit level of analysis in the following function..

| | |
|---------|--|
| ctmod | Compute commodity taxes for individuals and households |
| txhhexp | Compute and pro-rate household taxes, rent, etc. |

1.7 Aggregation Routines

Two aggregation functions are used to calculate several reporting variables as aggregates of other modeled variables. The functions calculate all dollar denominated reporting variables up to the level of consumable income. In addition taxable filer status is determined.

| | |
|-------|----------------------------------|
| memo1 | Compute memo items for reporting |
| memo2 | Compute consumable income, etc. |

1.8 Glass Box Stub Routines

There are two empty functions in both the standard and alternate drivers (drv) that are available to

allow completely new tax or benefit programs to be developed by glass box users.

| | |
|-----|--|
| dem | Compute new taxable demogrants |
| gai | Compute new refundable credits or guarantees |

1.9 Auxiliary Functions

There are a number of auxiliary functions which are used by the functions containing the tax/transfer algorithms. These functions perform routine tasks required in simulating the tax/transfer system such as table look-ups and benefit reduction functions. The description of these functions is of use to anyone attempting to fully understand or modify the C-language source code for the tax/transfer algorithms.

| | |
|----------|--|
| classu | Compute user-defined reporting variables |
| isneg | Is argument negative ? |
| isnneg | Is argument non-negative? |
| isnzro | Is argument non-zero? |
| iszero | Is argument zero? |
| lkup1 | Table look-up with interpolation/extrapolation |
| lkup2 | Table look-up without interpolation |
| maxn | Find the maximum of two numbers |
| minn | Find the minimum of two numbers |
| nneg | Change negative numbers to zero |
| pmaddent | Define and add a parameter |
| randrnd | Randomly round a floating point number to an integer |
| round | Round to nearest integer |
| strn | Retrieve string by string number |
| taxbak1 | One level tax-back function |
| taxbak2 | Two level tax-back function |
| vardef | Define structure member as an SPSM variable |

Alphabetic Reference

adj

Perform SPSD database adjustment

SUMMARY

The `adj` function performs certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database. The function may currently be used to adjust the amount of RRSP contributions claimed. A brief description of the database adjustment in general is also included.

SPSM Implementation

The SPSD is based on surveys and administrative data collected for the 1988 calendar year. Adjustment of this data may be required for several reasons. The user may wish to use the incomes to represent the incomes in a more recent year such as 1994. As such the user would supply estimates of growth rates for income by source and expenditures from 1988 to 1994. The user may also wish to make adjustments for simulation purposes in the 1988 year. For example, known under-reporting of alcohol expenditures may be treated by scaling each household's alcohol expenses or a deduction item could be scaled down to zero to represent a restriction of a certain tax measure. Finally, the user may wish to adjust the weights of individuals and households to reflect alternate demographic assumptions.

The scaling of money items is performed in two functions inaccessible to the glass box user. Prior to the calculation of any taxes or transfers each dollar denominated database variable is multiplied by a single corresponding database adjustment parameter. There are two key exceptions to this. Employment income, comprising about 70% of total income is given more rigorous treatment due to its relative importance in the overall tax/transfer system. Employment income may be adjusted by industry specific growth rates. CPP/QPP income may be adjusted by differential rates according to age groups which allows for the phasing in of that program. Users should refer to the *Parameter Guide* in this manual for further details on specific adjustment parameters.

The `adj` function is a means for glass box users to affect the adjustment of the database in ways not currently possible. The user may add their own adjustment routines to augment or even offset current means of adjustment. For example if the user wished to grow employment income by age and sex they would set the existing employment parameter to one and enter a new algorithm in this function. One such specific database adjustment provision is currently available in black box mode and is used in the analysis of RRSP contributions.

This adjustment (which will change the value of the `idrrsp` variable) is designed to allow the user to simulate the increase in RRSP contribution limits in a rough fashion. It allows the user to increase the RRSP contributions of individuals who are near to the current

contribution limits. The facility is activated by setting the RRSPIFLAG parameter to 1. Two cases are distinguished, those who are not covered by a employer-contributed pension plan, and those who are.

If individuals had RRSP contributions but had no RPP contributions, and their RRSP contributions fell between RRSPSMIN and RRSPSMAX inclusive, their RRSP contributions will be increased by RRSPSINC.

If individuals had RPP contributions, then, for those individuals whose total pension contributions (RRSP plus RPP) fell between RRSPMIN and RRSPMAX, their RRSP contributions will be increased by RRSPEINC.

Relation to Other SPSM Routines

The `adj` function is called before `drv` and as such is only executed once for every program run. This means that database adjustments will apply to both the base and variant scenarios. The function is called after the other database adjustment routines.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-----------|---|
| DNINCFLAG | Disable no income flag for calculation |
| PROVMAP | Provincial remapping [prov] |
| RRSPEINC | Increment to rrsp if conditions & rpp>0 |
| RRSPMAX | Maximum (rpp+rrsp) for increment if rpp>0 |
| RRSPMIN | Minimum (rpp+rrsp) for increment if rpp>0 |
| RRSPIFLAG | RRSP increment activation flag |
| RRSPSINC | Increment to rrsp if conditions & rpp=0 |
| RRSPSMAX | Maximum (rrsp) for increment if rpp=0 |
| RRSPSMIN | Minimum (rrsp) for increment if rpp=0 |

INPUT VARIABLES:

| | |
|-------|---|
| hhnin | Number of individuals in household |
| idrpp | Registered pension plan contributions (207) |

OUTPUT VARIABLES:

| | |
|---------|---------------------------------|
| hdprov | Province |
| idninco | No income flag (SPSD variables) |
| idrrsp | RRSP calculated amount (208) |

SUMMARY

Stub function for use by glass box users who wish to modify database variables either before and/or after tax/transfer calculation. This function calls the standard driver -- drv.c.

SUMMARY

The ccept function controls multiple calls to the tax transfer calculator drv.

Program Description

There are three instances in which the entire calculation of the tax/transfer system for household is necessary. The ccept function controls such recalculations. Each case is discussed under separate headings below:

Pre-calculation of the child tax benefit.

The calculation of Employment Insurance depends in part upon an individual's Child Tax Benefit entitlement. However, Employment Insurance is calculated prior to the Child Tax Benefit. ccept is used to calculate a preliminary value for the child tax benefit which can then be used in the calculation of Employment Insurance. The final value for a family's child tax benefit may differ from the preliminary estimate used for this calculation of Employment Insurance.

Optimization of the Child Tax Credit/Child Tax Benefit

Beginning in 1988 the rules for calculating the child tax credit/child tax benefit and the child care expense credit were altered to ensure that middle income families could not receive the full benefits from both programs. In practice this is done by reducing maximum child tax credit benefits by 25% of claimed child care expenses. The resulting situation is that below a certain income level it is advantageous not to claim any child care expenses incurred. The ccept function can locate this level and thus maximize the combined benefits from the child care expense credit and the child tax credit/child tax benefit.

SPSM Implementation

ccept performs the re-calculations and optimizations in a specific sequence. The pre-calculation of the federal Child Tax Benefit for purposes of correctly calculating Employment Insurance is performed first. Next the optimization of the child care expense deduction and the federal Child Tax Benefit is performed. The SPSM implementation of each

type of optimization are described separately below:

Pre-calculation of the child tax benefit.

The first time drv is called Employment Insurance is calculated with a zero value for the federal Child Tax Benefit. This will result in no EI family supplement benefits being assigned. The first time ccept is called by drv, it first determines if a family is eligible for both EI and the Child Tax Benefit. If so, that household has its entire tax/transfer entitlements/liabilities re-calculated using the value for the federal child tax benefit calculated in the first pass.

Note that there is a circularity between the two programs in that the federal Child Tax Benefit is based, in part, on Unemployment Insurance benefits to the extent that they are included in the definition of net income which is used to clawback the child benefits.

Optimization of the Child Tax Credit/Child Tax Benefit

The default calculation first performed in txceca makes use of any child care expenses associated with the children in the family. In the ccept function cases subject to optimization are first identified as families having children aged 0-6 with associated child care expenses.

The complexities of the tax reform situation in Canada make it difficult to know how to optimize many of this type of case. Consequently, once these families have been identified, the entire tax/transfer system is recalculated, setting child care expenses for young children to zero. The value of consumable income for both runs is then compared. If the family benefits from this change, the scenario with no child care expenses is kept. Otherwise, the previous scenario is restored by again re-running the entire tax transfer system.

The algorithm is controlled by the parameter CCEZOPT, which is described in the [Parameter Guide](#).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----------|--|
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UITARGET | UI/EI target for the number of cases (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| hdageeld | Age of eldest in household |
| hdnkids | Number of children in household |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idninc | No income flag (SPSD variables) |
| iduirank | Predicted ranked likelihood of getting UI |
| imcce | Child care expenses claimed on behalf of child |
| immicons | Consumable income |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|---------|--|
| imcceni | Consumable income with CCE not zeroed |
| imccez | Is CCE zeroed? |
| imccezi | Consumable income with CCE zeroed |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |

classu Compute user-defined reporting variables

SUMMARY

The classu function is a stub routine which allows the glass-box user to compute and assign values to new or re-defined variables. Variables first must be defined appropriately in vsdu.c and vsu.h. Since this function is normally called by both the standard and alternate model drivers, assignments made in classu will be effective in both cases.

Users should note that classu should only be used when the user is unable to create the desired classification with the User Defined Variable Facility. Please see the [*User's Guide*](#) for more information on this alternative facility.

Note that classu is called at the end of drv so that variables defined in classu are not available for use in other tax/transfer algorithms. See the [*Programmer's Guide*](#) for more information.

ctmod Compute commodity taxes for individuals and households

SUMMARY

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to

observed family expenditures at the spending unit level of analysis. The resulting federal government taxes span 48 consumer expenditure (CE) categories while provincial government taxes have both CE category and provincial dimensions. Commodity taxes are also estimated for other levels of analysis such as economic families and individuals.

Program Description

The federal government has a variety of taxes which are levied on goods used in production and for final demand consumption. Some of the major federal tax types are: custom import duties, alcohol and tobacco excise taxes and excise duties, manufacturers sales tax, gasoline excise tax, air transportation tax, and energy use taxes. The provincial governments also levy taxes but with more of an emphasis on consumer goods. Major taxes include liquor commission mark-ups, gasoline taxes, tobacco taxes, and retail sales taxes.

An important characteristic of this tax system is the cascading effect. Tax cascading occurs when a tax rate is applied to the value of a commodity inclusive of another tax type. For example, when an individual makes a long distance call a federal telecommunications tax of 10% is applied to the price of the call. Provincial governments then levy their retail sales tax rates to the value of the call inclusive of the federal tax.

SPSM Implementation

Input/Output Estimation of Tax Rates

Tax costs associated with domestic production are passed to the domestic consumers is the fundamental I/O modeling assumption. For example, alcohol producers require raw materials such as grains, water, energy source etc. If these inputs are produced themselves in other industries, then their selling price may include a manufacturer's tax component. Through Input/Output (I/O) techniques we are able to associate the implicit tax share of the production process to the correct final demand good.

The macroeconomic I/O system is used to construct effective tax rates by tax type, final demand good, and by province. This enables the calculation of the tax burden implicit in each household's reported final demand expenditures.

The federal tax rates have been grouped into six tax types: custom import duties; excise duties; manufacturer's sales tax; excise taxes; other energy taxes; and federal sales tax. The federal sales tax type that has been included for user simulations is set to zero by default. The array of provincial tax rates has also been reduced to six tax types: profits on liquor commissions; liquor gallonage tax; gasoline tax; amusement tax; tobacco tax; retail sales tax.

The above rates are defined as the ratio of a particular tax to the expenditure net of all commodity taxes for a given good in a given province. Therefore, an additional input parameter rate is applied to the FAMEX observations to net out the commodity taxes implicit in the base year.

For a more complete description of the I/O methodology, calculation procedures, tax type composition, etc. see *Commodity Tax Model User's Guide*.

Notes Regarding Expenditure Adjustments

Prior to the execution of the ctmod function, two modifications of the FAMEX data have been performed by the SPSM.

The first is made necessary because of the way SNA and FAMEX treat the expenditures on motor vehicles as net expenditures. If the trade-in exceeds the value of the purchase, or a household sells a vehicle outright, then the expenditure category will contain a negative value. In this case the SPSM treats the net expenditure as an income item (net sale of durables) and it is incorporated into the income calculation. The expenditure category is then set to zero. This procedure is conducted in the two consumer expenditure categories where net sales can occur: New & used automobiles; Recreation, sporting goods, and camping equipment. This modification is not accessible to the user.

The second data modification involves correcting for under-coverage of some FAMEX expenditure components. For example, sales of alcohol and tobacco are monitored very carefully by government agencies and their data indicate roughly twice as much consumption of these two goods as reported on the FAMEX. Two other FAMEX categories report substantially lower consumption than other information sources would indicate. They are semi-durables and expenditures for restaurants & hotels. The GFFMX parameter in the .APR file enables the adjustment of raw FAMEX values to the levels of other sources. We provide users with factors to inflate expenditures to known 1984 levels.

Estimation of commodity taxes

The ctmod function initially calls the ctfx sub-function to calculate the taxes based on the expenditure patterns of FAMEX spending units. The ctmod function then computes the taxes for other levels of analysis such as individuals or economic families.

The FAMEX expenditure categories must be stripped of their original tax component before the commodity tax calculation can be performed. This is accomplished in the ctfx sub-function by applying the I/O computed CTTXRM parameter (database adjustment parameter) to the expenditure observations.

The effective commodity tax rates are then multiplied by the net expenditures to produce commodity tax levels for each spending unit. If the CTDFLAG is set to 0 then total federal level taxes by commodity and provincial level taxes by commodity and province are calculated. If CTDFLAG is set to 1 then the six detailed federal taxes and seven provincial taxes are generated. Provincial taxes applied are defined in the following input parameters:

- CTPAMU Provincial amusement tax
- CTPGAS Provincial gasoline tax
- CTPICT Provincial commodity taxes on industry
- CTPLGL Provincial liquor gallonage tax
- CTPPLQ Provincial profits on liquor commissions
- CTPRST Provincial retail sales tax
- CTPTOB Provincial tobacco tax

The model ensures that both options will produce identical results in the aggregate.

Commodity taxes are then allocated to individuals in the FAMEX spending unit via personal income shares in the ctmof function. The income of the household's head is derived by adding three variables from the FAMEX income concept not surveyed elsewhere to his/her SPSD income concept variables. These variables are: savings; other money receipts; and net sales of durables. The shares reflect the income distribution after this modification.

The CTOPT parameter controls which income concept is used in the simulation. If the parameter is set to 1 then the FAMEX income concept is used. This measure of income is not linked to other SPSD variables in any way. Therefore, if the user wishes to examine the implications to commodity tax outflows based upon changes in SPSD income variables (i.e. OAS, GIS, income tax changes) then this option should never be specified. Its use should be restricted to pure FAMEX analyses.

If CTOPT is set to 2 then the SPSD income concept is used. This income measure has been corrected for an income bias inherent in Survey of Consumer Finance (SCF) data using Department of Revenue Green Book tax data. This income adjustment is described in detail in the *Database Creation Guide*. The result is a substantial increase in household income for observations in the extreme upper tail.

The FAMEX data suffers from the same under-coverage as the SCF so the reported spending unit expenditure can be out of synch with the Green Book adjusted income. For example, the largest total expenditure observation is around \$150,000 while a large tax adjusted household income exceeds \$5,000,000.

Setting the CTOPT parameter to 2 scales the commodity tax calculated conditioned on FAMEX spending unit income by the ratio of the SPSD "shared" income concept to an equivalent FAMEX "shared" income concept. In this way tax outlays bear closer relation to the SPSD income levels. However, this leads to some outlay distortions for the extremely wealthy which are described in the Interpretation Section.

Interpretation

There are some other discrepancies between the system of national accounts (SNA) definition of consumer expenditure and that of FAMEX. Generally, SNA includes the entire personal sector whose components are households, self-employed professionals, and universities. FAMEX tracks only households and, therefore, tax levels by commodity are generally lower. For a detailed description of these differences see the *Commodity Tax Model User's Guide*

In the aggregate, differences between income SPSM income concept (CTOPT=2) and the FAMEX income concept (CTOPT=1) are almost negligible. Using 1984 base case parameters the FAMEX option produced a \$20.997 billion tax burden on Canadian families while the scaled option generated \$21.048 billion. These compare favorably with the SNA estimate of \$22.5 billion. However, the differences for the highest income households in great. The top three households show differences of over \$200,000. This implies some caution when interpreting commodity tax values for high income observations.

Relation to Other SPSM Routines

The ctmod function calls the ctfx sub-function in order to calculate spending unit commodity taxes. The ctmod function itself is called by the drv function. The ctmod function makes use of parameters derived in the mpc function. The mpc function also ensures that the ctmod function is not executed if the FAMEX data vector is not being read (i.e. if FXVFLAG=0). The calculation of commodity taxes is highly dependent on the parameters applied to the database expenditure items during the database adjustment phase of the simulator.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTDFLAG | Commodity tax detailed calculation flag |
| CTFCID | Federal custom import duties [com] |
| CTFEXD | Federal excise duties [com] |
| CTFEXT | Federal excise taxes [com] |
| CTFGST | Federal GST [com] |
| CTFLAG | Commodity tax activation flag |
| CTFMFG | Federal manufacturer's sales [com] |
| CTFOEN | Federal other energy taxes [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTLPROP | Local property taxes |
| CTNES | Expenditures NES |
| CTOPT | Commodity tax calculation method [1=FAMEX,2=SPSM] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| CTPTOT | Provincial total retail tax equivalent |
| CTSAVE | All positive savings |

INPUT VARIABLES:

| | |
|----------|--|
| ctnexp | Household expenditure net of taxes |
| ctothmon | Household money from other sources |
| cttxfc | Federal commodity taxes (total) |
| cttxpc | Provincial commodity taxes (total) |
| fxfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |

| | |
|----------|------------------------------------|
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hhnin | Number of individuals in household |
| idhhrh | Relationship to head of household |
| immdisp | Disposable income |

OUTPUT VARIABLES:

| | |
|----------|--|
| ctfcid | Federal custom import duties |
| ctfexd | Federal excise duties |
| ctfext | Federal excise taxes |
| ctfgst | Federal GST |
| ctfmfg | Federal manufacturer's sales tax |
| ctfoen | Federal other energy taxes |
| ctishrh | Shared income concept (FAMEX) |
| ctlprop | Local property taxes on owned dwellings |
| ctnes | Household expenditure not elsewhere specified |
| ctnexp | Household expenditure net of taxes |
| ctnexp_ | Household expenditure net of taxes [array] |
| ctnsna | Household expenditure net of taxes -SNA adjusted |
| ctnsna_ | Household expenditure net of taxes [array] -SNA adjusted |
| ctothmon | Household money from other sources |
| ctpamu | Provincial amusement tax |
| ctpgas | Provincial gasoline tax |
| ctplgl | Provincial liquor gallonage taxes |
| ctpplq | Provincial profits on liquor commissions |
| ctprov | Province for COMTAX calculations |
| ctprst | Provincial retail sales tax |
| ctptob | Provincial tobacco tax |
| ctsave | Household savings |
| ctseqhv | FAMEX record sequence number |
| cttxfc | Federal commodity taxes (total) |
| cttxfc_ | Federal commodity taxes [array] |
| cttxpc | Provincial commodity taxes (total) |
| cttxpc_ | Provincial commodity taxes [array] |
| imishri | Shared income concept (FAMEX & SPSD) |
| imninc | No income flag |
| imtxfc | Federal commodity taxes |
| imtxpc | Provincial commodity taxes |

dem Compute new taxable demogrants

SUMMARY

This is a stub function for use by glass box users who wish to incorporate a new program which interacts with the tax system (i.e. taxable benefits).

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|--------------------------|
| imiotg | Other taxable demogrants |
|--------|--------------------------|

| | |
|------------|-------------------------|
| drv | Tax/transfer calculator |
|------------|-------------------------|

SUMMARY

The calculation of taxes and cash transfers for any base or variant run is controlled by a function whose only task is to call all other individual tax/transfer algorithm functions. The sequence of calls is critical to the simulation due to the informational requirements of the tax/transfer functions. For example net income must be known before gis can be calculated. The following list gives the functions called by drv in the order in which they are called.

| Function | Description |
|----------|---|
| ui | Compute UI benefits |
| famod | Compute family allowance |
| oas | Compute OAS for elderly |
| dem | Stub routine for new pre-tax system programs |
| txinet | Compute net income (including payroll taxes) |
| gis | Compute GIS/SPA for elderly |
| senben | Compute senior benefit |
| gist | Compute Provincial GIS top-ups for elderly(GAINS-A, SIP, etc) |
| samod | Compute social assistance or guarantees |
| txitax | Compute taxable income |
| txhstr | Apply tax transfers between head and spouse |
| txcalc | Calculate federal income tax |
| txctc | Compute child tax credit |
| txprov | Compute provincial taxes and credits |
| txfstc | Compute federal sales tax credit |
| gai | Stub routine for new post-tax system programs |
| memo1 | Compute memo items for reporting |
| ctmod | Compute commodity taxes |
| memo2 | Compute consumable income, etc. |

ccept
Classu

Zero CCE for young children if optimal
Stub routine to compute user defined reporting variables

The calling order of the component functions of drv reflects the logical precedence between them.

- The first functions, ui, famod and oas, simulate programs whose benefits are determined by factors other than income and as such are called first.
- dem is a stub routine for glass box applications that require calculations to occur before entering the tax system routines.
- txinet calculates net income prior to certain transfers.
- gis calculates transfers to the elderly.
- senben calculates senior benefits.
- gist, txctc, and txfstc calculate income tested transfer programs.
- samod calculates social assistance or guaranteed income transfers.
- Federal and provincial taxes are calculated next in the next six functions with the tx prefix (txitax, txhstr, txcalc, txprov, txctc, and txfstc).
- gai is another stub routine that is intended for use by glass box users who wish to simulate options requiring information on all personal income taxes and cash transfers. For example users may use this function to simulate an income supplementation program.
- The memol and memo2 functions create aggregate variables for reporting.
- In the ctmod function, sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures.
- ccept optimizes income by maximizing the child care expense credit and the child tax credit.
- classu is a stub routine which allows the glass box user to compute and assign values to new or re-defined variables.

The functions called by drv call other functions and sub-functions in order to complete their calculations. The following page contains a complete list of the names of functions and sub-functions along with a short description in the order in which they are called by drv. Please refer to the specific function in this guide for a more detailed description. Sub-functions (in *italic*) can be found listed under the function which calls them. Thus for a complete understanding of the calculation of net income one would have to consult both the txinet and txceca functions.

As mentioned earlier, function names are printed in lower case, bold, courier font (E.g. txinet, txcalc) and correspond to a single C language source code file (E.g. txinet.c, txcalc.c). Sub-functions are defined within the function (file) that calls them and are shown in lower case, courier font, *italic* (e.g. uisqz, gissub). All multiple calls to the same sub-function have been shown here. All functions directly called by drv begin in the first column below, other function calls are indented.

In ccept all the functions are called a second time by drv to find if a family benefit of setting CCE to zero, if it is the case the result is kept, otherwise drv call again all the functions to reset the original values.

| | | |
|----|----------------------|---------------------|
| ui | | Compute UI benefits |
| | <i>uicl</i> <i>m</i> | Simulate a UI claim |

| | | |
|--------|-----------------|---|
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| | <i>uicl</i> | Simulate a UI claim |
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| famod | | Compute family allowance |
| oas | | Compute OAS for elderly |
| dem | | Stub routine for new pre-tax system programs |
| txinet | | Compute net income |
| | <i>txccea</i> | Compute child care expense allowance |
| gis | | Compute GIS/SPA for elderly |
| | <i>gissub</i> | Compute income used to tax back GIS/SPA |
| senben | | Compute senior benefit |
| | <i>sbsub</i> | Compute income used to tax back Seniors Benefit |
| gist | | Compute Provincial GIS top-ups for elderly |
| | <i>txhhexp</i> | Compute and pro-rate household taxes, rent, etc. |
| samod | | Compute social assistance or guarantees |
| txitax | | Compute taxable income |
| txhstr | | Apply tax transfers between head and spouse |
| txcalc | | Calculate federal income tax |
| txprov | | Compute provincial taxes |
| | <i>txnfld</i> | Compute Newfoundland provincial taxes |
| | <i>txpei</i> | Compute PEI provincial taxes |
| | <i>txns</i> | Compute Nova Scotia provincial taxes |
| | <i>txnb</i> | Compute New Brunswick provincial taxes |
| | <i>txque</i> | Compute Quebec provincial taxes |

| | | | |
|--------|--------------|--------------|--|
| | | txqinet | Compute net income (Quebec) |
| | | txqccea | Compute child care expense allowance (Quebec) |
| | | txqitax | Compute taxable income (Quebec) |
| | | txqhstr | Apply tax transfers between head and spouse (Quebec) |
| | | txqcalc | Calculate Income Tax (Quebec) |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txont | | Compute Ontario provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txman | | Compute Manitoba provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txsask | | Compute Saskatchewan provincial taxes |
| | txalta | | Compute Alberta provincial taxes |
| | txbc | | Compute BC provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| txctc | | | Compute child tax credit |
| txfstc | | | Compute federal sales tax credit |
| gai | | | Stub routine for new post-tax system programs |
| memo1 | | | Compute memo items for reporting |
| ctmod | | | Compute commodity taxes |
| | <i>ctfx</i> | | Compute commodity taxes for FAMEX spending unit |
| | | <i>ctfxd</i> | Compute commodity taxes for FAMEX spending unit (detailed) |
| | | <i>ctfxs</i> | Compute commodity taxes for FAMEX spending unit (simple) |
| memo2 | | | Compute consumable income, etc. |
| cceopt | <i>pass2</i> | | Zero CCE for young kids if optimal recalculate UI with child benefits in place |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| classu | | | Compute User Defined Reporting Variables |

SUMMARY

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

Following 1997 reform, starting in 1998 in the model, the Quebec family allowance, the Quebec new born allocation and the Quebec availability allowance are now calculated only if QFATCOPT is set to 1, otherwise the Quebec Family Allowance Tax Credit is calculated in txqcalc.

Program Description

The federal Family Allowances program was designed to provide taxable benefits to help meet the costs of raising children under the age of 18 who are resident in Canada and are maintained by their parent(s) or guardian. At least one parent or guardian must be either a Canadian citizen or a permanent resident, visitor or holder of a Minister's Permit under the Immigration Act and have been legally admitted into Canada. The parent(s) or guardian must make application for benefits and their income must be subject to Canadian income tax. Benefits cease to be payable with regard to self-supporting children (i.e. children who begin to earn a taxable income).

Family allowance benefits are generally paid at a uniform rate across Canada. However, provinces may, within certain limits, vary the amount of Family Allowances that the federal government pays to their residents according to the age and/or number of children in a family. Alberta and Quebec are the only provinces that vary the rate. Alberta varies payment based on the age of the child while Quebec varies payment based on the number of children in the family and then adds a supplement based on the age of the child.

The province of Quebec maintains a separate but linked program under the Quebec Family Allowances Act which provides for benefits to the parent or guardian of an unmarried child under the age of 18 who is not a ward of the province. The applicant must have resided in Quebec for at least one month or be paying Quebec income tax. In 1984 benefits payable were not subject to Quebec income tax, however benefits paid with respect to children aged 16 and 17 were subject to federal tax. Persons in receipt of federal family allowances automatically receive the provincial benefits without application. This program also has a supplement for handicapped children; however, this is not modeled in the SPSM.

The Quebec Newborn Allowance was implemented in 1988 and is modeled in famod from that year. Benefits are paid per child and rise from \$500.00 for each of the first two children to \$3000.00 for each subsequent child.

An option permit the user to randomly increase the rank of first and second child in order to

reflect the rank distribution of child observed by the RRQ. The program end in October 1997 and is replaced by a Child tax allocation not modeled yet.

SPSM Implementation

The famod function calculates federal and provincial family allowances based on the age of children and number of children in a family. Residency requirements are deemed to have been met in all cases as is the requirement of non self-sufficiency. The function always allocates family allowances as income of the mother unless one is not present in the nuclear family. This temporary allocation is subsequently assigned to the spouse having the higher net income in txinet and txqinet. The function outputs values for federal(imffa) and provincial(impfa) family allowances as well as the value of taxable family allowances(imtfa) for use in other functions. The function loops through each nuclear family in a household.

The function first calculates federal and provincial family allowances for residents of Quebec. Counts of numbers of children by age group are calculated and used to index into two look-up tables for federal and provincial programs as well as to scale the federal age supplement. The values are then aggregated into two local variables, taxable family allowances and federal family allowances. Taxable family allowances are equal to the sum of federal benefits for each child (as determined by that child's rank in the family) plus the federal supplement for each child aged 12-17 plus the portion of Quebec family allowances paid with respect to children aged 16 and 17.

The calculation of Quebec allowances in famod includes the Quebec availability allowance from 1988 forward. It is paid as a supplement to the Quebec family allowances and is represented by the variable imqaafa. Quebec allowances also include the calculation of the Quebec Newborn Allowance, represented by the variable imqnbfa. This benefit is calculated on the following schedule for 1988:

| Child Number | Birth | Age 1 | Age 2 | Total |
|--------------|-------------|-------------|-------|-------|
| 1 | 500 | 0 | | 500 |
| 2 | 500 | 0 | | 500 |
| 3+ | 375/Quarter | 375/Quarter | | 3,000 |

Interpretation

Results obtained from the SPSM with respect to family allowance benefits differ from Health and Welfare Canada administrative data. Overall the SPSM reports 96.7% of the 1984 calendar year average health and welfare total dollars and 97.3% of children for whom benefits are received.

The SPSM has few children in part due to the non-coverage of Yukon, N.W.T., and native reservations, all of which have younger than average populations and larger than average family sizes (approximately 1.5% of children). A second source of underestimation is the special allowances for foster children and children in welfare agencies. The SPSM does not include these children or their benefits which account for .7% of total family allowances. Further, the SPSM does not take into account payments made outside Canada, although the effect of these on the total is insignificant (less than .1%).

The family allowance program requires parents of 'self-supporting' children to notify Health and Welfare Canada and have the benefits with respect to these children suspended. There are about 52,000 of such children aged 16 and 17 on the SPSD with respect to whom benefits are allocated. It is unknown how many of the parents of these children actually report their situation to Health and Welfare Canada. Lastly, no residency check is imposed on the parents and this will have an insignificant effect. It is assumed that the number of children turning age 18 during the calendar year is balanced by the number of new births. That is, full year family allowance benefits paid with respect to children born during 1984 will be overestimates to the same degree that an underestimate arises for benefits not given to 18 year olds who were 17 during calendar 1984.

Relation to Other SPSM Routines

The famod function is called by drv. The function outputs two variables that are used in txinet for deciding which parent will claim the family allowances for tax purposes: taxable family allowances(nftfa) and number of family allowance children(nfnfach).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AFAC1 | Alberta FA benefit per child aged 0 - 6 |
| AFAC2 | Alberta FA benefit per child aged 7 - 11 |
| AFAC3 | Alberta FA benefit per child aged 12- 15 |
| AFAC4 | Alberta FA benefit per child aged 16- 17 |
| FAFLAG | Family allowance flag |
| PFACFLAG | Use provincial configuration flag |
| QAAFA | Quebec availability allowance (supplement) [parity,\$] |
| QAAFAFLAG | Availability Allowance: Supplement to Quebec FA |
| QFAIFLAG | Quebec inclusion of federal family allowance in income flag |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFFSL | Federal family allowance: Quebec Configuration[parity,\$] |
| QFPSL | Quebec provincial family allowance [parity,\$] |
| QFS | Federal supplement per child 12-17 in Quebec configuration |
| QNBFA | Quebec newborn family allowance [parity,age] |
| QNBFAFLAG | Quebec newborn family allowance flag |
| QNBPOFLAG | Quebec newborn family allowance phase out flag |
| QNBPOPYR | Quebec newborn family allowance phase-out year proportion |
| QNBPOYR | Quebec newborn family allowance phase out year |
| QNRFLAG | Quebec newborn family random increase of child rank |
| STDFA | Standard federal family allowance per child |
| TARGETYEAR | Year of analysis |
| INPUT VARIABLES: | |
| hdprov | Province |
| hhnnf | Number of nuclear families in household |

| | |
|----------|---|
| idage | Age |
| idrand | Random numbers [array] |
| idsex | Sex |
| nfinch | First child in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|---------|---|
| imffa | Federal portion of family allowances |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| impfa | Provincial family allowance |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqnbfa | Quebec newborn Allowance |
| imqtfa | Quebec taxable family allowances |
| imtfa | Taxable family allowances |
| nfineld | Eldest person in nuclear family [pointer] |

fmfxopen Routines for reading FAMEX (.fxv) file

SUMMARY

The purpose of this maintenance function is to load the FAMEX variables and to grow them by the corresponding database adjustment parameter.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|---------------|--|
| CTCFALC | FAMEX reporting error adjustment: Alcohol [prov] |
| CTCFGAS | FAMEX reporting error adjustment: Gasoline [prov] |
| CTCFTOB | FAMEX reporting error adjustment: Tobacco [prov] |
| CTTXRM | Base year commodity tax removal factor [com x prov] |
| GFCQP | Adjustment Factor: CPP/QPP contributions |
| GFFABD | Adjustment Factor: Account balancing difference |
| GFFMX | Adjustment Factor: consumer expenditure categories |
| [commodity] | |
| GFFOMR | Adjustment Factor: Other money receipts |
| GFGVPEN | Adjustment Factor: Government pension plan contributions |
| GFINTAX | Adjustment Factor: Income taxes |
| GFIPAC | Adjustment Factor: Life insurance premiums and annuity |
| contributions | |
| GFNCAL | Adjustment Factor: Net change in assets and liabilities |
| GFNES | Adjustment Factor: Not elsewhere stated |

| | |
|------------|---|
| GFPRTAX | Adjustment Factor: Property tax |
| GFPVPEN | Adjustment Factor: Private pension plan contributions |
| GFRECOM | Adjustment Factor: Real estate commissions |
| GFRFEES | Adjustment Factor: Registration and license fees |
| GFRRSPT | Adjustment Factor: Total RRSP contributions (FAMEX) |
| GFTPTAX | Adjustment Factor: Transfer of property taxes |
| GFUIC | Adjustment Factor: UI contributions |
| KEEPNEGEXP | Retain negative expenditures in FAMEX |
| DBVERSION | Version of the database (x100) |
| INPFXV | Name of FAMEX vector file (in) [string] |
| INPSPD | Name of SPSD file (in) [string] |

INPUT VARIABLES:

| | |
|----------|--|
| fhbfver | SPSD/M binary format version (x100) |
| fhdbver | SPSD/M database/year version (x100) |
| fhfiltyp | File type (extension) [string] |
| fhnum | Number of numbers in the file |
| frclohhv | Cloning factor for FAMEX exp. vector |
| frcqp | Cpp - qpp contributions |
| frfabd | Account balancing difference |
| frfomr | Other money receipts |
| frgvpen | Gvt pension plan contributions |
| frintax | Income taxes |
| frio | Expenditure on the 40 I/O categories [array] |
| fripac | Life ins prems and annuity contributions |
| frncal | Net change in assets and liabilities |
| frnes | Not elsewhere stated |
| frprtax | Property tax |
| frpvpen | Private pension plan contributions |
| frrecom | Real estate commissions |
| frrfees | Registration and license fees |
| frrgvlot | Ratio of spending on government lotteries |
| frrrspt | Total RRSP contributions (FAMEX) |
| ftrptax | Transfer of Property taxes |
| fruc | UI contributions |
| hdprov | Province |

OUTPUT VARIABLES:

| | |
|----------|---|
| fhhash | Hashed code of header information |
| fxclohhv | FAMEX cloning factor |
| fxcqp | Cpp - qpp contributions |
| xfabd | Account balancing difference |
| xfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxintax | Income taxes |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxncal | Net change in assets and liabilities |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxrgvlot | Ratio of spending on government lotteries |
| fxrrspt | Total RRSP contributions (FAMEX) |

| | |
|----------|---|
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| fxuic | UI contributions |
| hdfrstfx | First household in FAMEX group flag |
| hdlastfx | Last household in FAMEX group flag |
| hdwgtfx | Sum of household weight for FAMEX group |

fmspopen Routines to read SPSD file (.spd)

SUMMARY

The purpose of this maintenance function is to load the SPSD variables and to grow them by the corresponding database adjustment parameter. In addition the method of conversion for converted variables is applied. The logic for differential growth of CPP is also applied in this function. The actual code in this function is proprietary and is not released with the SPSD/M product.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|-----------|--|
| GFADDDDED | Growth Factor: Additional deductions from net income (256) |
| GFALEXP | Growth Factor: Other allowable employment expenses (229) |
| GFCAPGEX | Growth Factor: Capital gains exemptions (254) |
| GFCARRY | Growth Factor: Carrying charges (221) |
| GFC CET | Growth Factor: Child care expenses associated with child |
| GFC CETT | Growth Factor: Child care expenses (Limit A, Form T778) |
| GFCGLESS | Growth Factor: TCG Less Cap Gains Ded on Cap Prop Gifts |
| GFCCHARIT | Growth Factor: Charitable donations (340) |
| GFCLOSS | Growth Factor: Allowable other years capital loss (253) |
| GFCPP65 | Growth Factor: CPP for age 65 |
| GFCPP66 | Growth Factor: CPP for age 66 |
| GFCPP67 | Growth Factor: CPP for age 67 |
| GFCPP68 | Growth Factor: CPP for age 68 |
| GFCPP69 | Growth Factor: CPP for age 69 |
| GFCPP70 | Growth Factor: CPP for age 70 |
| GFCPP71 | Growth Factor: CPP for age 71 |
| GFCPP72 | Growth Factor: CPP for age 72 |
| GFCPP73 | Growth Factor: CPP for age 73 |
| GFCPP74 | Growth Factor: CPP for age 74 |
| GFCPP75 | Growth Factor: CPP for age 75 |
| GFCPPG75 | Growth Factor: CPP for age > 75 |
| GFCPPL65 | Growth Factor: CPP for age < 65 |

| | |
|------------------|---|
| GFDALIMO | Growth Factor: Alimony paid (220) |
| GFDISOTH | Growth Factor: Disability amount for dependants (318) |
| GFDISSLF | Growth Factor: Disability amount for self (316) |
| GFDUES | Growth Factor: Union and professional dues (212) |
| GFEMPLO | Growth Factor: Employee home relocation loan dedn (248) |
| GFEXPLOR | Growth Factor: Exploration and development expenses (224) |
| GFFDSFT | Growth Factor: Foreign tax credit applied to surtax (511) |
| GFFORAVG | Growth Factor: Forward averaging amount withdrawal (237) |
| GFFORINC | Growth Factor: Net foreign income (508) |
| GFFORTX | Growth Factor: Foreign tax paid (507) |
| GFGIFTS | Growth Factor: Gifts to Canada/provinces/culture (342) |
| GFGSTREB | Growth Factor: GST rebate (457) |
| GFHOMSTU | Growth Factor: College residence/resident homeowner |
| assistance (558) | |
| GFIALIMO | Growth Factor: Alimony Income |
| GFICAPG | Growth Factor: Capital gains (actual) (127 * 1.5) |
| GFIDIV | Growth Factor: Dividend income (actual) (120 / 1.5) |
| GFIEMP | Growth Factor: Employment income [province,sex] |
| GFIINT | Growth Factor: Interest income (121) |
| GFILOSS | Growth Factor: Business investment losses (217) |
| GFINOGV | Growth Factor: Other government income (non-taxable) |
| GFINOTH | Growth Factor: Other money income (non-taxable) |
| GFIOINV | Growth Factor: Other investment income with net rental |
| GFIPENS | Growth Factor: Pension income (115) |
| GFISA | Growth Factor: Social assistance income |
| GFISEFM | Growth Factor: Self-employed income - farming |
| GFISENF | Growth Factor: Self-employed income - non-farming |
| GFITC | Growth Factor: Federal investment tax credits (412) |
| GFITOGV | Growth Factor: Other government income (taxable) |
| GFITOTH | Growth Factor: Other non-government income (taxable) |
| GFITRRSP | Growth Factor: Taxable RRSP withdrawals |
| GFIVETP | Growth Factor: Veterans Pensions |
| GFWORKC | Growth Factor: Worker's compensation |
| GFLABTXG | Growth Factor: Labour funds tax credit (414) |
| GFMEDGRO | Growth Factor: Medical expenses, gross (330) |
| GFMINCAR | Growth Factor: Minimum tax carryover (504) |
| GFMOVEXP | Growth Factor: Imputed moving expenses (219) |
| GFMSCHPD | Growth Factor: Manitoba school taxes paid |
| GFNCLOS | Growth Factor: Allowable other years non-capital loss (252) |
| GFNORTH | Growth Factor: Northern deductions (255) |
| GFOTHDED | Growth Factor: Other deductions from total income (232) |
| GFOTHPE | Growth Factor: Other dependant exemptions (305) |
| GFPARTLO | Growth Factor: Limited partnership losses (251) |
| GFPOLCON | Growth Factor: Federal political contributions (409) |
| GFPROPTX | Growth Factor: Net property taxes paid (556) |
| GFPRVFTC | Growth Factor: Provincial foreign tax credit (Form T2036) |
| GFPRVPOL | Growth Factor: Provincial political contributions (565) |
| GFRENTPD | Growth Factor: Total rental payments (555) |
| GFRPP | Growth Factor: Registered pension plan contributions (207) |
| GFRRSP | Growth Factor: RRSP contributions (208) |
| GFSAURED | Growth Factor: Predicted benefits from Social Assistance |
| GFSCFCQP | Growth Factor: SCF CPP |
| GFSCFCTC | Growth Factor: Child tax credit |
| GFSCFFTC | Growth Factor: Federal tax credit |
| GFSCFINT | Growth Factor: SCF interest income |
| GFSCFOAS | Growth Factor: Old age security |
| GFSCFPTC | Growth Factor: SCF provincial tax credits |

GFSCFSA Growth Factor: SCF social assistance
 GFSCFUIB Growth Factor: Unemployment insurance benefits
 GFSTKDED Growth Factor: Stock option deduction (249)
 GFTUITN Growth Factor: Tuition fees (320)
 GFUIPRED Growth Factor: Predicted benefits from UI
 IEMPADJ Adjustment Factor: Employment income [employment income
 breaks,province]
 IEMPBRK Adjustment Factor: Income breaks for income
 adjustment[employment income breaks]
 IMPCQPOPT Imputation method, CQP [1=none 2=rank]
 IMPINTOPT Imputation method, Interest [1=none 2=imputed]
 IMPSAOPT Imputation method, SA [1=none 2=rank]
 IMPUIBOPT Imputation method, UI [1=none 2=rank]
 PURR Ratio current:base unemployment rate [prov]
 UIBASEYRMAX Maximum insurable earnings for base year
 UITARGYRMAX Maximum insurable earnings for target year
 FXVFLAG Read FAMEX expenditure vector file
 INSPSD Name of SPSD file (in) [string]
 WGTFLAG Read weight file

INPUT VARIABLES:

fhbfver SPSD/M binary format version (x100)
 fhdbver SPSD/M database/year version (x100)
 fhfiltyp File type (extension) [string]
 fhnhh Number of households in the file
 hrclohh Number of SCF clones
 hrevmv Expenditure vector matching variable
 hrprov Province
 hrtenur Tenure
 hrurb Size of urban area
 idage Age
 idccqp Converted CPP/CQP benefit
 idcintim Converted interest income (imputed)
 idcsa Converted social assistance
 idsex Sex
 irage Age
 irccqp Converted CPP/CQP
 ircfpub SCF CF publication flag
 ircfrh Relation to census family head
 ircfseq Census family sub-sequence number
 ircintim Converted interest income (imputed)
 ircluflg Common law union flag
 ircsa Converted social assistance
 ircuib Converted UI benefit
 iredlev Educational level
 irefpub SCF EF publication flag
 irefrh Relation to economic family head
 irefseq Economic family sub-sequence number
 irestat Educational status
 irhhrh Relation to household head
 irieflag Institutionalized elderly flag
 irimmi Years since immigrant arrival
 irind Industry
 irinseq Individual sub-sequence number
 irlfst Labour force status
 irlyfp Full or part-time last year
 irlystr Stretches of unemployment last year

| | |
|------------|-------------------------------------|
| irlyun | Weeks unemployed last year |
| irlyww | Weeks worked last year |
| irmarst | Marital status |
| irnonlf | Main activity for non-lf persons |
| irocc | Occupation |
| irrklyun | Raking foundation: weeks worked |
| irrklyww | Raking foundation: weeks unemployed |
| irscfflg | SCF high-income preservation flag |
| irschtp | School type |
| irsex | Sex |
| irsynthi | Synthetic high income person |
| m0val | Money item value |
| m1val | Money item value |
| m2val | Money item value |
| m3val | Money item value |
| urbtyp | Claim type |
| urdivwk | New EI Variable |
| ureff | Base year effective weekly benefit |
| urern | Base year insurable weekly earnings |
| urexhas | Exhaustee flag |
| urgotpa | |
| urhrwk | New EI Variable |
| urmtyp | Claim type |
| urnere | New EI Variable |
| urothbr | New EI Variable |
| urothwk | New EI Variable |
| urrpeat | Repeat claim flag |
| urstart | Week claim established |
| urtpcng | Type change flag |
| urtrnbr | Training benefit weekly rate |
| urtrnwk | Weeks of training benefits |
| uruer | Local unemployment rate (x10) |
| urweeks | Claim weeks of benefits |
| urwork | Weeks of work prior to claim |
| ury1 | |
| ury2 | |
| ury3 | |
| ury4 | |
| ury5 | |
| wrwgt | Household weight (float) |
| CANCELFLAG | Cancellation request flag |
| DBVERSION | Version of the database (x100) |
| WGTTOT | Sum of weights on tax file |

OUTPUT VARIABLES:

| | |
|---------|---|
| fhash | Hashed code of header information |
| hdclohh | Number of SCF clones |
| hdevmv | Expenditure Vector Matching Variable |
| hdnpers | Number of persons in household |
| hdprov | Province |
| hdseqhh | Household sequence number |
| hdtenur | Tenure |
| hdurb | Size of urban area |
| hdwgthh | Household weight |
| hhnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idalexp | Other allowable employment expenses (229) |
| idcapgex | Capital gains exemptions (254) |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idccqp | Converted CPP/CQP benefit |
| idcfpub | SCF CF publication flag |
| idcfrh | Relationship to census family head |
| idcfseq | Census family sub-sequence number |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idcintim | Converted interest income (imputed) |
| idcross | Allowable other years capital loss (253) |
| idcluflg | Common-Law union flag |
| idcsa | Converted social assistance |
| idcuib | Converted UI benefit |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idedlev | Educational level |
| ideducm | Eligible months of education allowance |
| idefpub | SCF EF publication flag |
| idefrh | Relationship to economic family head |
| idefseq | Economic family sub-sequence number |
| idemplo | Employee home relocation loan dedn (248) |
| idestat | Educational status |
| idexplor | Exploration and development expenses (224) |
| idext | Extra numbers [array] |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idgstreb | GST rebate (457) |
| idhhrh | Relationship to head of household |
| idhomstu | College res/resdnt homeowner assist (558) |
| idialimo | Alimony income received |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idimmi | Years since immigration |
| idind | Industry |
| idinogv | Other government income (non-taxable) |
| idinoth | Other money income (non-taxable) |
| idinseq | Individual sub-sequence number |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisa | Social assistance income |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| iditogv | Other government income (taxable) |

| | |
|-----------|--|
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idivetp | Veterans pensions and allowances |
| idiworkc | Workers compensation benefits |
| idlabtxg | Gross Labour funds bought (413) |
| idlfst | Labour force status |
| idlyfp | Last year full/Part time |
| idlystr | Last year stretches unemployed |
| idlyun | Weeks unemployed |
| idlyww | Weeks worked |
| idmarst | Marital status |
| idmedgro | Medical expenses, gross (330) |
| idmincar | Minimum tax carryover (504) |
| idmovexp | Imputed moving expenses (219) |
| idmschpd | Manitoba school taxes paid |
| idnage | Age |
| idnclos | Allowable other years non-capital loss (252) |
| idninco | No income flag (SPSD variables) |
| idnonlf | Major non-LF activity |
| idnorth | Northern deductions (255) |
| idocc | Occupation |
| idothded | Other deductions from total income (232) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idproptx | Net property taxes paid (556) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrentpd | Total rental payments (555) |
| idrkllyun | Raking foundation: weeks unemployed |
| idrkllyww | Raking foundation: weeks worked |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| idscfcqp | CPP/QPP income (SCF) |
| idscfctc | Child tax credit |
| idscfflg | SCF high-income preservation flag |
| idscfftc | Federal tax credit |
| idscfint | Interest income (SCF) |
| idscfoas | Old age security |
| idscfptc | Provincial tax credits as reported on SCF |
| idscfsa | Social assistance income (SCF) |
| idscfuib | Unemployment insurance benefits |
| idschtp | School type |
| idsex | Sex |
| idstkded | Stock option deduction (249) |
| idsynthi | Synthetic high income person |
| idtuitn | Tuition fees (320) |
| iduipred | Predicted amount of UI received |
| iduirank | Predicted ranked likelihood of getting UI |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucexhas | Exhaustee flag |
| ucgotpa | Received paternity benefits |

| | |
|----------|--|
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucuero | Local unemployment rate (x10)-original value |
| ucweeks | Weeks of benefits |
| ucworkwk | Weeks of work prior to claim |
| ucy1 | Weeks on UI in first year before claim |
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

gai Compute new refundable credits or guarantees

SUMMARY

This is a stub function for use by glass-box users who wish to incorporate a new program that does not affect current programs in the tax system (i.e. a new refundable tax credit). It is called by drv after all taxes have been calculated.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hnnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|------------------------|
| imiosa | Other SA or guarantees |
|--------|------------------------|

SUMMARY

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested. The SPSM gis function is based on the age of the individual and the years since immigration as well as family net income and family type. The function can calculate GIS, SPA, Extended SPA, and Widowed SPA benefits. The functions contain one sub-function, gissub, which calculates the income on which GIS/SPA benefits are tested.

The GIS/SPA benefits are zeroed out if the Seniors Benefit is turned on. When activated, the Seniors Benefit takes precedence over OAS/GIS. Persons age 60 or over in May 1996 may elect to receive OAS/GIS rather than the seniors benefits if their benefits are higher.

Program Description

The Guaranteed Income Supplement is a monthly, non-taxable, income tested benefit paid to residents of Canada who are in receipt of a basic Old Age Security pension. Recipients must re-apply annually. The Guaranteed Income Supplement is not payable outside of Canada for periods of longer than six months. Income testing is based on net income as defined for income tax purposes with the exception of Old Age Security benefits. In the case of a married couple, including common-law, the combined income of the pensioner and his or her spouse is taken into account. Where the individual or couple have an income above a specified amount, the Guaranteed Income Supplement is reduced at a rate of either \$1 for every \$2 of income, or \$1 for every \$4 of income, dependent upon the individuals' marital status and the benefit status of their spouses (if present).

The Guaranteed Income Supplement was established in 1966 to provide monthly benefits to OAS pensioners born on or before December 31, 1910, whose income is below a specified amount. For 1967, the monthly benefit was \$40 and set at 40 percent of the OAS pension thereafter. The Guaranteed Income Supplement has been changed on various occasions, the most important of which were as follows: 1970, which extended GIS to all OAS beneficiaries who met the income criterion; 1972, provided for annual indexation of GIS based on the CPI; 1973, changed indexation to quarterly from annual; 1977, provided the payment of GIS to partial OAS recipients; 1984, provided an increase in maximum GIS benefits to recipients of partial OAS pensions in the amount of the difference between full and partial OAS benefits.

The Spouse's Allowance is a monthly benefit designed to recognize the difficult circumstances faced by those couples living on the pension of only one spouse, and by many widowed persons. The Allowance is payable to the 60 to 64 year old spouse of an Old Age Security pensioner as well as to any low-income widow or widower age 60 to 64, providing the potential recipient has been a resident of Canada for at least 10 years after reaching age 18. This benefit is income-tested based upon the combined income of both the beneficiary

and his/her spouse and must be re-applied for annually. Benefits are not considered as income for income tax purposes and are not payable outside Canada for periods of more than six months.

The Spouse's Allowance came into effect October 1, 1975 and provided for the payment of benefits to persons aged 60 to 64 inclusive who are married to and living with an OAS pensioner. The amount was set at a sum equal to the monthly OAS pension plus the maximum monthly GIS at the married rate. Significant changes to the Spouse's Allowance were made in 1977 with the provision for partial Spouse's Allowance using the same criterion as for OAS; 1979, the extension of the Spouse's Allowance to include surviving spouses of deceased Old Age Security pensioners; 1985, with the provision for Spouse's Allowance to be paid to all widows/widowers age 60 to 64 regardless of deceased spouse's prior pension status.

The GIS, and SPA programs have been designed with the overall income of elderly Canadians in mind and ensure that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. Because the programs are interrelated, a better understanding is facilitated by discussing them together across the five different family types listed below and discussed in turn. These categories define the basic structure of the SPSM implementation of these programs. In these descriptions pensioner is understood to mean a recipient of either full or partial OAS benefits.

| GIS/SPA Type | Family Status |
|---|---|
| 1. Single Pensioner: | Unattached Individual, OAS Pensioner |
| 2. Widowed Pensioner: | Unattached Individual, Age 60-64, Widowed |
| 3. Married 2 Pensioner: | Married Couple, Both OAS pensioners |
| 4. Married pensioner with SPA spouse: | Married Couple, OAS Pensioner with SPA recipient |
| 5. Married pensioner with non-pensioner spouse: | Married couple, 1 OAS pensioner, spouse ineligible for OAS or SPA |

Single Pensioner

If an individual is receiving a full Old Age Security Pension he or she may be eligible for the federal Guaranteed Income Supplement (GIS). GIS is an income tested benefit payable to OAS beneficiaries with little or no income beyond to the basic OAS benefit. In the case where a beneficiary of a full OAS pension has no additional income or income of up to a maximum of \$24 per year, his/her GIS benefit will be the maximum. For every two dollars of income in excess of \$24 annually, the GIS benefit is reduced by one dollar until the benefit is reduced to zero.

In the case where the beneficiary is eligible for only partial OAS benefits, but has little or no other income (again, to a maximum of \$24 per year), supplementary GIS is available. Supplementary GIS makes up the difference between the partial OAS benefit that the beneficiary is receiving and full OAS benefits. Thus, a beneficiary with 20 years of residence in Canada would receive 30/40 of a full OAS pension and supplementary GIS benefits up to an amount equivalent to 10/40 of a full OAS pension. This ensures that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. In addition to the partial OAS pension and the supplementary GIS benefits, an individual may also receive the regular GIS benefit. Both the regular and the supplementary GIS benefits are income tested and reduced at a rate of one dollar for every two dollars of income in excess of \$24 per year.

Widowed pensioner

The Spouse's Allowance is an income-tested benefit payable to individuals who are between 60 and 65 years of age and are spouses of Old Age Security beneficiaries. In order to qualify for this benefit, the applicant must meet the same residence requirements set out for the basic Old Age Security Pension. The guarantee for the benefit is equivalent to the sum of the full basic Old Age Security Pension plus the Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of the beneficiary's monthly income or the couple's combined monthly income until the OAS-equivalent is reduced to zero. At that point the GIS portion reduces at the rate of \$1 for every \$4 of combined income until benefits are reduced to zero.

If an individual receiving Spouse's Allowance becomes a widow or widower, they are then eligible for an Extended Spouse's Allowance until they reach the age of 65 at which time they will become eligible for a basic Old Age Security Pension and the Guaranteed Income Supplement. The amount of the Extended Spouse's Allowance is somewhat higher than the regular Spouse's Allowance to account for the fact that the beneficiary is now in a single income family.

In addition to the regular and Extended Spouse's Allowances, benefits exist for widows and widowers between 60 and 65 years of age whose spouse died prior to becoming a pensioner. The Widowed Spouse's Allowance pays benefits at the same rate as the Extended Spouse's Allowance. Both the Extended and Widowed Spouse's Allowances are reduced by \$3 for every \$4 of monthly income until the OAS-equivalent portion is reduced to zero and then by \$1 for every additional \$2 of monthly income until the GIS-equivalent portion is reduced to

zero.

The Spouse's Allowance is not considered as income for income tax purposes but may, however, affect taxes indirectly via the spousal exemption amount.

Married Couple, Both Pensioners

GIS eligibility for couples is first based upon receipt of OAS. If the applicant is not eligible for OAS, then he or she is not eligible for GIS. Once eligibility for GIS has been established, then the rate of recovery or rate at which GIS is reduced because of additional income, must be established. For two pensioner couples, where both are OAS beneficiaries, GIS is reduced by one dollar for every four dollars of the couple's combined monthly income in excess of \$48 per year. In 1984, the maximum regular GIS payable to a married beneficiary was less than that payable to a single beneficiary. As in the case of a single beneficiary receiving only partial OAS benefits, a supplementary GIS benefit is available which makes up the difference between partial and full OAS benefits.

Married Pensioner with SPA Spouse

GIS is payable to the pensioner at the same rate as is paid to an individual in married couple where both spouses are pensioners. The amount of SPA benefit is equivalent to the combination of the full basic Old Age Security Pension and Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of combined monthly income (75%) until the OAS-equivalent is reduced to zero. At that point both the remaining portion of the Spouse's Allowance, and the pensioner's Guaranteed Income Supplement are each reduced by \$1 for every additional \$4 (50%) of the couple's combined monthly income.

The benefits payable to a pensioner with a given income could vary depending on whether the couple had applied for SPA; the benefit being higher for single pensioner couples. To ensure benefits are equal in these cases the SPA couple's benefits begin to be reduced at the effective rate of 25%, \$1 for each \$4 of family income after the crossover point. This is done by holding the pensioner's benefits fixed from the crossover point until the SPA benefits are reduced to zero; then the pensioners benefits continue to be reduced at the same married rate (see following figure).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

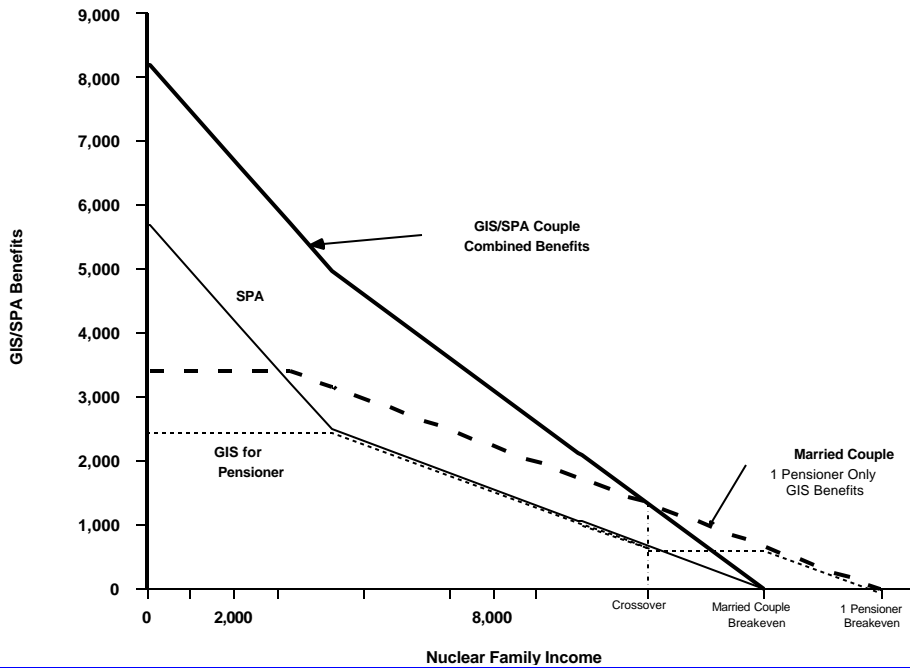


Figure 2 GIS/SPA Benefits for Married Pensioner with Non-Pensioner Spouse

Married Pensioner with Non-Pensioner Spouse

In the case of a pensioner whose spouse is under 60 years of age or is a recent immigrant, and therefore not eligible for OAS, GIS or SPA, the pensioner receives GIS at the higher single rate and benefits are reduced \$1 for every \$4 of the couple's combined monthly income with the first reduction being made only when their combined monthly income exceeds an amount equivalent to basic OAS plus \$4 per month. (see figure above)

SPSM Implementation

The gis function determines benefits based on the age of the individual, the years since immigration as reported at the time of the SCF survey in April 1985, combined family income, and family type. The function makes use of the imoasres, imoaspar variables created in the oas function to determine residential eligibility.

The function initially performs some screenings and pointer assignments for efficiency, and then makes a call to the gissub function to determine the previous years income, which will be used when calculating GIS/SPA benefits. This sub-function adds together all the components of total income listed below and multiplies them by a deflator PYINC to estimate the value of the previous year's income.

| | |
|----------------------|--|
| Net Income = PYINC * | Deflator To Simulate Previous Years Income |
| imicapgt | Taxable Capital Gains |
| + imidivt | Dividends Received |
| + idiint | Investment Income |

| | |
|-----------|--------------------------------------|
| + idiemp | Employment Income |
| + idisenf | Non-Farm Self Employment Income |
| + idisefm | Farm Self Employment Income |
| + idioinv | Other Investment Income |
| + iditoh | Other Income |
| + idicqp | CPP/QPP Benefits |
| + idipens | Private Pension Income |
| + iditogv | Other Taxable Government Transfers |
| + imiuib | Unemployment Insurance Benefits |
| - imalexp | Other allowable Employment Expenses |
| - imcqpc | CPP/QPP Contributions |
| - imuic | Unemployment Insurance Contributions |

Benefits are then calculated in each of the five groups discussed above. Every individual is assigned a value for the variables imoldtyp and ingistyp which define the type of pensioner couple and are used in the gist function.

The GIS supplement for the OAS shortfall for immigrants is calculated conditional on the setting of GISOASFLAG in all cases except the SPA recipient in a married couple. This should be set to one in years 1984 and later. No adjustment is made to account for the first quarter in 1984 for which no shortfall adjustment was made.

Take-up rates for GIS and SPA benefits are optionally applied depending on the value of the GISTURFLAG parameter. The rates are applied to individuals and to one spouse of a married couple. The algorithm assumes that the take-up rate look-up table margins are all dollar denominated GIS or SPA benefit levels.

Relation to Other SPSM Routines

GIS and SPA depends on the input parameters for basic GIS/SPA benefits and various variables calculated in the oas function. The function also makes use of parameters derived in the mpc function. The mpc function also ensures that GIS is not calculated without OAS being calculated first. The calculation of OAS and other modeled variables occurs prior to and effects the calculation of GIS and related GIS 'top-up' programs in the gist function. The gist function is called after txprov (calculation of provincial income taxes) by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-------|-----------------------------------|
| BESPA | Basic GIS portion of extended SPA |
| BGISM | Basic GIS - married |

| | |
|----------------|---|
| BGISS | Basic GIS - single |
| BOAS | Basic OAS |
| ESPAT | Extended SPA take-up rate by benefit level [benefit,rate] |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISCT | GIS take-up rate: pensioner couple by benefit level |
| [benefit,rate] | |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISOASFLAG | 1984 GIS top-up to OAS residence shortfall flag |
| GISOT | GIS take-up rate: one pensioner couple by benefit level |
| [benefit,rate] | |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| GISRRS | Basic GIS reduction rate: single pensioners |
| GISST | GIS take-up rate: single pensioner by benefit level |
| [benefit,rate] | |
| GISTURFLAG | GIS take-up flag: apply 5 take-up tables |
| PYINC | Deflator to calculate previous year income |
| SPAOSRR | OAS portion of SPA taxback rate |
| SPARL | SPA reduction point: one married/ widowed |
| SPAT | SPA take-up rate by benefit level [benefit,rate] |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |

INPUT VARIABLES:

| | |
|----------|--|
| hhnfnf | Number of nuclear families in household |
| idage | Age |
| idicqp | CPP/QPP income (114) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmarst | Marital status |
| idrand | Random numbers [array] |
| imalexp | Allowable employment expenses |
| imcqpcc | CPP/QPP contributions |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imioas | OAS benefits |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |
| imuic | UIC contributions |
| nfageeld | Age of eldest in nuclear family |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imigis | GIS benefits |

| | |
|----------|--------------------------------|
| imispa | Spouse's allowance |
| imninc | No income flag |
| imoldtyp | Type of GIS/SPA nuclear family |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |

gist Compute Provincial GIS top-ups for elderly

SUMMARY

The gist function calculates benefits for eight provincial GIS supplementation programs in eight provinces; Newfoundland, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. The function requires that both OAS and GIS be calculated first. All provincial senior's programs within SPSM are in this function. Please note that the provincial programs here are not exhaustive, but all major benefits are covered.

Program Description

Eight provinces provide cash benefits to pensioners in receipt of federal OAS, GIS, and in some cases, SPA benefits. The eight programs differ in terms of the level of benefits payable, eligibility requirements, etc. Each program listed below is modeled and documented independently.

| | |
|------------------|--|
| Newfoundland | Low-income Seniors Benefit |
| Nova Scotia | Special Social Assistance |
| New Brunswick | Low-income Seniors Benefit |
| Ontario | Guaranteed Annual Income System (GAINS-A) |
| Ontario | Sales Tax Grant Program |
| Ontario | Property Tax Grant Program |
| Manitoba | Supplement for Pensioners (55+) |
| Saskatchewan | Income Plan (SIP) |
| Alberta | Assured Income Plan AAIP |
| Alberta | Alberta Seniors Benefit |
| Alberta | Widow's Pension |
| British Columbia | GAIN for Seniors Supplement (Guaranteed Available Income for Need) |

Newfoundland Low-Income Seniors Benefit

A benefit is given to seniors (aged 65 and over) with annual family income less than NFSBTD. The maximum benefit NFSBBAS is reduced by NFSBRR for each dollar of family income over NFSBTD.

Nova Scotia Special Social Assistance

Up to 1991, all residents of the province of Nova Scotia who are in receipt of GIS in March

of a given year were eligible for Special Social Assistance. Application for benefits had to be made each year. SPA recipients were not eligible. One lump-sum payment was made yearly in one of four amounts scaled to the proportional GIS of the recipient as follows:

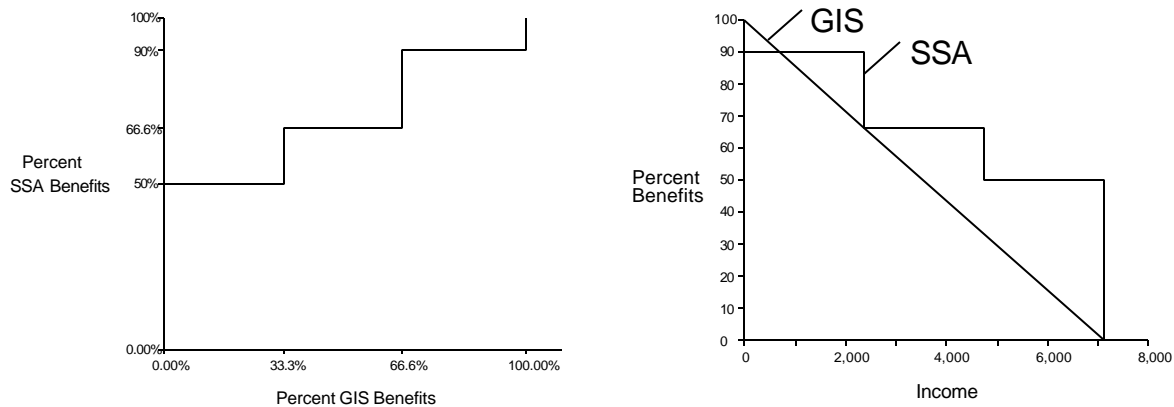


Figure 3. Nova Scotia Special Social Assistance

So, for example, a pensioner receiving maximum GIS benefits would have received maximum SSA benefits and a pensioner receiving 80% of maximum GIS benefits would have received 90% of maximum SSA benefits.

New Brunswick Low-Income Seniors Benefit

A benefit is given to seniors who receive GIS. If both spouses received GIS, the benefit is given to the spouse with the lower net income.

Ontario Guaranteed Annual Income System (GAINS-A)

GAINS-A provides a monthly benefit to Ontario residents in receipt of GIS who meet certain income and residence requirements. A person must have lived in Ontario for the year prior to applying for GAINS-A or for at least 20 years after turning 18 years of age. GIS recipients need not apply since their eligibility is reviewed automatically. SPA recipients are not eligible. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

Ontario Sales Tax Grant Program

The sales tax grant has been a flat \$50 per person over age 65 from 1984 to 1989. The maximum value of the sales tax grant is stored in the ONTSTG parameter. The variable impstg is used to store individual sales tax grants calculated by the model.

Ontario Property Tax Grant Program

The property tax grant is payable to seniors who are head of their household. The amount of the grant varies by tenure and actual costs. For years 1984 to 1989 renters receive 20% of their rental costs up to a maximum of \$500. Homeowners receive the maximum benefit. The fraction of rental costs allowed is contained in the ONTFPTG parameter while the

maximum benefit is stored in the parameter ONTPPTG. Calculated benefits are stored in the variable impptg.

Calculated benefits for both the sales tax grants and the property tax grants are also added to the variable imigist.

Manitoba Supplement for Pensioners (MSP, 55+)

The MSP provides quarterly benefits to Manitoba residents who are in receipt of certain levels of GIS and SPA benefits, including extended and widowed SPA recipients. MSP also provides benefits to persons aged 55 and over who are not in receipt of OAS benefits but whose income falls in a specified range and is derived at least 50% from pension sources. Eligibility is renewed automatically for GIS and SPA recipients, but non-GIS/SPA pensioners 55 years of age and over must apply.

In the case of GIS/SPA recipients there are two levels of benefits, single and married. An SPA recipient is treated as a single pensioner. Benefits are reduced at the same rate as GIS based on family income. Non GIS/SPA pensioners are treated in exactly the same manner except for couples benefits are reduced based on individual annual income.

Saskatchewan Income Plan

SIP provides monthly benefits to Saskatchewan residents in receipt of GIS and whose incomes don't exceed specified levels. SPA recipients are not eligible for SIP benefits. There are two levels of benefits, single and married. There are three different reduction rates. Unattached Individuals and Married Couples where both are GIS pensioners SIP benefits are reduced by \$1 for each \$1 reduction in GIS. For a pensioner whose spouse is not eligible for OAS/GIS/SPA the benefit is reduced by \$3 for each \$1 reduction in GIS benefits. The pensioner spouse of an SPA recipient has their benefit reduced by \$1 for each \$3 reduction in their spouse's SPA. There are monthly minimum benefits at both single and married levels.

Alberta Assured Income Plan

AAIP benefits are payable monthly to all Alberta residents who are in receipt of GIS benefits or who became eligible for the extended SPA prior to May 1983. Regular SPA recipients are ineligible. Since May 1983 all extended SPA recipients are referred to the Alberta Widow's pension. Application is not required. There is one individual benefit which is reduced by 50¢ for each \$1 reduction in GIS benefits to a minimum of \$10 monthly.

Alberta Seniors Benefit

Starting in 1994, the AAIP was replaced by the Alberta Seniors Benefit. When ALTASOPT is set to 2, the Alberta Seniors Benefit is calculated. Seniors are split into six categories:

- single seniors who rent their home,
- single seniors who own their home,
- seniors married to non-seniors who rent their home,
- seniors married to non-seniors who own their home,
- two senior couples who rent their home,

and two senior couples who own their home

When ASBSSOPT is set to 2, seniors married to non-seniors are treated in the same manner as two senior couples. Benefits and reduction rates vary by these categories (ASBBASIC, ASBRENT, ASBSS, ASBNSS, ASBRR). Maximum benefits are phased out using non-deductible income which is defined as last year's total income (imitot) minus OAS benefits (imioas), registered pension plan contributions (idrpp), RRSP contributions (idrrsp), and ASBEMP times idiemp.

For persons who do not qualify for OAS because of residency requirements, a proportion of the total benefit is assigned depending on marital status and household tenure (ASBNOAS). For these persons, BOAS is deducted from their non-deductible income. When ASBSSOPT is set to 1, a two senior couple in which one of the seniors does not meet the OAS eligibility requirement is treated as 1 senior couple.

Alberta Widowed Pension

The Alberta Widow's pension provides monthly benefits to widows and widowers aged 55 to 64 years who reside in Alberta. Yearly Application must be made. Maximum benefits are reduced by \$1 for each \$1 of previous year's non-exempt annual income. Extended SPA recipients may apply however their SPA benefits are included in their income when calculating entitlement.

British Columbia GAIN for Seniors Supplement

GAIN provides a monthly benefit to British Columbia residents in receipt of GIS or SPA who meet certain income and residence requirements. GIS/SPA recipients need not apply since their eligibility is reviewed automatically. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

SPSM Implementation

The user is invited to read the source code in order to examine the implementation of these programs. A subsequent update will include a written description of the implementation of these programs.

Interpretation

In general the problems of coverage, including take-up, discussed in the interpretation of OAS and GIS are also present here. Specifically there are no tests made for residential eligibility applied on Ontario GAINS-A. Currently double counting occurs for the benefits for Manitoba residents under the age of 65. This is because the calculated income is reported in one variable (imigist) and reported income from the survey is reported in another (imisa). There are plans to fix the problem; however, the dollar amounts are small in any case.

Relation to Other SPSM Routines

Provincial GIS supplement programs depend on various program specific input parameters as

well as variables calculated in the oas and gis functions. The mpc function ensures that provincial GIS supplements are not calculated without GIS being calculated first. The calculation of OAS and GIS occurs prior to and effects the calculation GIS 'top-up' programs in the gist function. The gist function is called after gis by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALTAMIN | Alberta GIS supplement minimum annual benefit |
| ALTASC | Alberta GIS supplement maximum annual benefit |
| ALTASOPT | Alberta seniors option [1=GIST,2=new seniors benefit 1994] |
| ALTAWP | Alberta widow's pension maximum annual benefit |
| ASBBASIC | Alberta seniors benefit annual basic benefit |
| ASBEMP | Alberta seniors benefit employment inclusion rate |
| ASBNOAS | Alberta seniors benefit reduction if no OAS [senior type] |
| ASBNSS | Alberta seniors benefit non-senior spouse supplement |
| ASBRENT | Alberta seniors benefit renter supplement |
| ASBRR | Alberta seniors benefit reduction rate [senior type] |
| ASBSS | Alberta seniors benefit senior spouse supplement |
| ASBSSOPT | Alberta seniors benefit 1 senior couple option [1=model separately,2=model as senior couples] |
| BCC | British Columbia GIS supplement: married pensioners |
| BCS | British Columbia GIS supplement: single pensioners |
| BOAS | Basic OAS |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISTFLAG | Provincial GIS top-up flag |
| MANC | Manitoba GIS supplement: married pensioners |
| MANCNPF | Manitoba GIS supplement reduction point: married |
| MANS | Manitoba GIS supplement: single pensioners |
| MANSNPF | Manitoba GIS supplement reduction point: single |
| NBSB | New Brunswick Low-Income Seniors' Benefit |
| NBSBSPA | N.B. Low-Income Seniors' Benefit - SPA eligibility |
| NFSBBAS | NFLD Low-Income Seniors' Benefit base amount |
| NFSBRR | NFLD Low-Income Seniors' Benefit reduction rate |
| NFSBTD | NFLD Low-Income Seniors' Benefit turndown |
| NS13 | Nova Scotia GIS supplement for 1/3 GIS |
| NS23 | Nova Scotia GIS supplement for 2/3 GIS |
| NSLT13 | Nova Scotia GIS supplement for less than 1/3 GIS |
| NSMAX | Nova Scotia maximum GIS supplement level |
| ONTC | Ontario GIS supplement: married pensioners |
| ONTFPTG | Ontario property tax grant (fraction of rent) |
| ONTPTG | Ontario property tax grant for seniors |
| ONTS | Ontario GIS supplement: single pensioners |
| ONTSTG | Ontario sales tax grant for seniors |
| PYINC | Deflator to calculate previous year income |
| SASKC | Saskatchewan GIS supplement: married pensioners |
| SASKMINC | Saskatchewan GIS supplement minimum benefits: married |

| | |
|------------|--|
| SASKMINS | Saskatchewan GIS supplement minimum benefits: single |
| SASKRR1 | Saskatchewan GIS supplement reduction rate: regular |
| SASKRR2 | Saskatchewan GIS supplement reduction rate: 1 GIS |
| SASKRR3 | Saskatchewan GIS supplement reduction rate: SPA |
| SASKS | Saskatchewan GIS supplement: single pensioners |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|--|
| hdageeld | Age of eldest in household |
| hdprov | Province |
| hdtenur | Tenure |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawls |
| idmarst | Marital status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imalexp | Allowable employment expenses |
| imcqqpc | CPP/QPP contributions |
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imicapgt | Capital gains (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoasres | Partial OAS fraction |
| imrentpd | Imputed rent paid |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|---------|---|
| imiasb | Alberta seniors benefit |
| imigist | GIS provincial top-up |
| imninc | No income flag |
| impptg | Provincial property tax grant for seniors |
| impstg | Provincial sales tax grant for seniors |

isneg Is argument negative ?

SUMMARY

```
int isneg(var);
```

```
NUMBER var
```

The `isneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a negative value. If the argument is zero or positive, a value of zero is returned. Note that, unlike a function, the `isneg` macro cannot take an expression as an argument. The expression `isneg(var)` is functionally equivalent to an expression of the form `(var < 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnneg Is argument non-negative?

SUMMARY

```
int isnneg(var);
```

```
NUMBER var;
```

The `isnneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-negative value. If the argument is negative, a value of zero is returned. Note that, unlike a function, the `isnneg` macro cannot take an expression as an argument. The expression `isnneg(var)` is functionally equivalent to an expression of the form `(var > 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnzero Is argument non-zero?

SUMMARY

```
int isnzero(var);
```

```
NUMBER var;
```

The `isnzero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-zero value. If the argument is zero, a value of zero is returned. Note that, unlike a function, the `isnzero` macro cannot take an expression as an argument.

The expression `iszero(var)` is functionally equivalent to an expression of the form `(var != 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

iszero Is argument zero?

SUMMARY

```
int iszero(var);
```

```
NUMBER var;
```

The `iszero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains the value zero. If the argument is non-zero, a value of zero is returned. Note that, unlike a function, the `iszero` macro cannot take an expression as an argument. The expression `iszero(var)` is functionally equivalent to an expression of the form `(var == 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

lkup1 Table look-up with interpolation/extrapolation

SUMMARY

```
NUMBER lkup1(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The `lkup1` function is used to perform table look-ups with interpolation. Expressed another way, `lkup1` evaluates continuous piecewise linear functions.

The first argument (`tbl`) is the address of an SPSM look-up table, which is an $n \times 3$ array of floating point numbers. The first two columns of `tbl` contain the (X,Y) pairs that define the piece-wise linear function. The third column of `tbl` contains the slope of the segment that starts at the (X,Y) pair. SPSM look-up tables are defined in parameter input files, and come in two varieties, as perceived by the user. One variety allows the user to specify the (X,Y) pairs, and computes the slopes automatically. The other variety allows the user to specify all the X values, the first Y value, and the slopes, and computes the remaining Y values automatically. In both cases the internal representation of the lookup table is identical and is the same as that expected by the `lkup1` function.

The second argument of `lkup1` is an integer giving the number of rows in `tbl`. Generally this value is another member of the same parameter structure in which the `tbl` is defined.

The third argument of lkup1 is the X value whose corresponding Y value is to be determined. lkup1 returns the corresponding Y value.

lkup2 Table look-up without interpolation

SUMMARY

```
NUMBER lkup2(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The lkup2 function is used to perform table look-ups without interpolation. Expressed another way, lkup2 evaluates step functions.

The first argument (tbl) is the address of an SPSM look-up table, which is an n x 3 array of floating point numbers. The first two columns of tbl contain the (X,Y) pairs that define the left-most point of each step in the step function. The third column of tbl contains the slope of the segment that starts at the (X,Y) pair, but the lkup2 function only makes use of the (X,Y) pairs in the look-up table. The slopes, though always present in look-up tables, are not used.

The second argument of lkup2 is an integer giving the number of rows in tbl. Generally this value is another member of the same parameter structure in which the tbl is defined.

The third argument of lkup2 is the X value whose corresponding Y value is to be determined. lkup2 returns the corresponding Y value.

maxn Find the maximum of two numbers

SUMMARY

```
NUMBER maxn(x, y);
```

```
NUMBER x;  
NUMBER y;
```

The maxn function returns the value of the larger of its two input arguments.

memo1 Compute memo items for reporting

SUMMARY

The memo1 function is used to calculate several reporting variables as aggregates of other

modeled variables. The function calculates all dollar denominated reporting variables up to the level of disposable income. In addition taxable filer status is determined.

SPSM Implementation

The `memo1` function operates at the individual level of analysis and skips individuals with no income. The algorithm first assigns filer status as relevant/non-relevant and taxable/non-taxable based on taxes paid and credits received. The function then calculates several reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|---|
| <code>imiemp =</code> | <code>idiemp;</code> |
| <code>imiself =</code> | <code>idisenf + idisefm;</code> |
| <code>imfoth =</code> | <code>iditogv + idinogv;</code> |
| <code>impoth =</code> | <code>ZERO;</code> |
| <code>imicqp =</code> | <code>idicqp;</code> |
| <code>immemp =</code> | <code>idiemp + idisenf + idisefm;</code> |
| <code>imminv =</code> | <code>idiint + ididiv + idicapg + idioinv;</code> |
| <code>immoth =</code> | <code>idipens + iditoth + idinoth;</code> |
| <code>immmkt =</code> | <code>immemp + imminv + immoth;</code> |
| <code>imftran =</code> | <code>imffa + imioas + imiotg + imigis + imispa + imctc + imfcben + imicqp + imfoth + imiuib + imfstc + imqtar + imfsa + imiosa + imfortc;</code> |
| <code>imctcben =</code> | <code>imctc + imfcben;</code> |
| <code>imfothtr =</code> | <code>imfoth + imfortc;</code> |
| <code>imfnewpg =</code> | <code>imiotg + imiosa;</code> |
| <code>imigispa =</code> | <code>imigis + imispa;</code> |
| <code>impfp =</code> | <code>impfa + imqaafa + imqnbfa + imiafetc + imnbcben + imibcfb + imoccea + imqfatc + imscb + imses + imnscb + imibceib;</code> |
| <code>imptran =</code> | <code>impfp + imigist + imptc + impfa + importc + iminsda;</code> |
| <code>immtran =</code> | <code>imptran + imftran;</code> |
| <code>immtot =</code> | <code>immmkt + immtran;</code> |
| <code>imftax =</code> | <code>imuic + imcqppc + imrepay + imtxf;</code> |
| <code>imptax =</code> | <code>imtxp;</code> |
| <code>immtax =</code> | <code>imftax + imptax;</code> |
| <code>immdisp =</code> | <code>immtot - immtax;</code> |
| <code>immicons =</code> | <code>immdisp; (initial assignment, may be re-assigned in memo2)</code> |

Relation to Other SPSM Routines

The `memo1` function is called by `drv` immediately after the income tax and cash transfer algorithms have executed. It is called just before the execution of the commodity tax model (`ctmod`) which makes use of some of the aggregated output variables. The `memo2` function follows `ctmod` to add information to the reporting variables calculated in the `memo1` function.

CROSS REFERENCE

| Function | Description |
|-----------------------|---|
| INPUT VARIABLES: | |
| <code>hhnin</code> | Number of individuals in household |
| <code>idialimo</code> | Alimony income received |
| <code>idicapg</code> | Capital gains (actual) |
| <code>idicqp</code> | CPP/QPP income (114) |
| <code>ididiv</code> | Dividend income (actual) |
| <code>idiemp</code> | Wages & salaries |
| <code>idiint</code> | Interest income (121) |
| <code>idinogv</code> | Other government income (non-taxable) |
| <code>idinoth</code> | Other money income (non-taxable) |
| <code>idioinv</code> | Other investment income with net rental |
| <code>idipens</code> | Pension income (115) |
| <code>idisefm</code> | Self-employed income - farming |
| <code>idisenf</code> | Self-employed income - non-farming |
| <code>iditogv</code> | Other government income (taxable) |
| <code>iditoth</code> | Other non-government income (taxable) |
| <code>idivetp</code> | Veterans pensions and allowances |
| <code>idiworkc</code> | Workers compensation benefits |
| <code>imbft</code> | Basic federal tax |
| <code>imcqqpc</code> | CPP/QPP contributions |
| <code>imctc</code> | Child tax credit |
| <code>imfcben</code> | Total Federal Child Benefits |
| <code>imffa</code> | Federal portion of family allowances |
| <code>imfortc</code> | Federal other refundable tax credits |
| <code>imfsa</code> | Federal social assistance |
| <code>imfstc</code> | Federal sales tax credit |
| <code>imheatrl</code> | Federal relief for heating expenses |
| <code>imiafetc</code> | Alberta Family Employment Tax Credit Benefits |
| <code>imibceib</code> | B.C. Earned Income Benefit |
| <code>imibcfb</code> | B.C. Family Bonus |
| <code>imigis</code> | GIS benefits |
| <code>imigist</code> | GIS provincial top-up |
| <code>iminet</code> | Net income |
| <code>iminsda</code> | NS Direct Assistance Program |
| <code>imioas</code> | OAS benefits |
| <code>imiosa</code> | Other SA or guarantees |
| <code>imiotg</code> | Other taxable demogrants |
| <code>imispa</code> | Spouse's allowance |

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imnbcben | Total NB child tax Benefits |
| imnccb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnscb | Nova Scotia Child Benefit |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| impfa | Provincial family allowance |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| importc | Other refundable provincial tax credits |
| impsa | Provincial social assistance |
| imptc | Refundable provincial tax credits |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqnbfa | Quebec newborn Allowance |
| imqtar | Quebec tax abatement (refundable) |
| imrepay | Social Benefits Repayments |
| imscb | Saskatchewan Child Benefit |
| imses | Saskatchewan Employment Supplement |
| imtxf | Federal income tax payable |
| imtxp | Provincial income tax payable |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|---|
| imctcben | Federal child tax credit and child benefits |
| imfiler | Taxable filer status |
| imfnewpg | Federal new programs |
| imfoth | Federal other government income |
| imfothtr | Federal other trans income and ref. credits |
| imftax | Federal taxes |
| imftran | Federal transfer income |
| imicqp | CPP/QPP payable |
| imiemp | Wages and salaries |
| imigispa | GIS and spouse's allowance |
| imiself | Total self-employment income |
| immdisp | Disposable income |
| immemp | All employment income |
| immicons | Consumable income |
| imminv | Investment income |
| immmkt | Market income |
| immoth | Other income |
| immtax | All taxes |
| immtot | Total income |
| immtran | All transfer income |
| impalltc | All refundable provincial tax credits |
| impfp | Provincial family programs |
| impoth | Provincial other government income |
| imptax | Provincial taxes |
| imptran | Provincial transfer income |

SUMMARY

The `memo2` function is used to calculate several reporting variables as aggregates of other modeled variables. The function calculates all dollar denominated reporting variables up to the level of consumable income.

SPSM Implementation

The `memo2` function operates at the individual level of analysis and skips individuals with no income. Aspects of the function are not executed if the commodity tax model has not been run (`CTMOD=0`). The function first adjusts several reporting variables calculated in `memo1` as follows.

| Reporting Variable | Formula |
|-------------------------|--|
| <code>imftax =</code> | <code>imftax + imtxfc</code> |
| <code>imptax =</code> | <code>imptax + imtxpc</code> |
| <code>immtax =</code> | <code>immtax + imtxfc + imtxpc</code> |
| <code>immicons =</code> | <code>immdisp - imtxfc - imtxpc</code> |

The function next calculates additional reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|--------------------------------------|
| <code>imnettr =</code> | <code>immtran - immtax</code> |
| <code>imothrep =</code> | <code>imrepay - imuibr</code> |
| <code>imqta =</code> | <code>imqtaa + imqtar</code> |
| <code>imfedbal =</code> | <code>imftax - imftran</code> |
| <code>imprvbal =</code> | <code>imptax - imptran</code> |
| <code>impovinc =</code> | <code>immtot - imctc - imfstc</code> |

Relation to Other SPSM Routines

The `memo2` function is called by `drv` immediately after the commodity tax algorithms (`ctmod`) have executed. The function adds information to the reporting variables calculated in the `memo1` function.

Please refer to the [Variable Guide](#) for detailed descriptions of the variables listed above.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

CTFLAG Commodity tax activation flag

INPUT VARIABLES:

hhnin Number of individuals in household
imftran Federal transfer income
immdisp Disposable income
immtot Total income
immtran All transfer income
imninc No income flag
imptran Provincial transfer income
imqtaa Quebec tax abatement (applied)
imqtar Quebec tax abatement (refundable)
imrepay Social Benefits Repayments
imtxfc Federal commodity taxes
imtxpc Provincial commodity taxes
imuibr UI benefit recovery

OUTPUT VARIABLES:

efin First person in economic family [pointer]
idef Person's economic family [pointer]
imfedbal Federal taxes less transfers
imftax Federal taxes
immicons Consumable income
immtax All taxes
imnettr Net transfers to person
imothrep Other federal repayments
impovinc Income for low income measurement
imprvbal Provincial taxes less transfers
imptax Provincial taxes
imqta Quebec tax abatement (total)

minn Find the minimum of two numbers

SUMMARY

NUMBER minn(x,y);

NUMBER x;

NUMBER y;

The minn function returns the value of the smaller of its two input arguments.

mpc Calculate derived model parameters and do edits

SUMMARY

The mpc function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters. The function currently calculates derived parameters for

use in the commodity tax (`ctmod`) function, the Guaranteed Income Supplement (`gis`) function, and the head/spouse transfer (`txhstr`) function. Performing the calculations in `mpc` increases the efficiency of the program by avoiding multiple calculations for every household. Edit checks are performed for aspects of the commodity tax model and the old age income system. Please refer to the appropriate section in the [Algorithm Guide](#) for details of the specific social and tax programs.

SPSM Implementation

Calculation of Derived Parameters

Two derived parameters for use in the `ctmod` are calculated: a total federal government effective commodity tax rate (CTFTOT) and a total provincial government effective rate (CTPTOT). The federal rate is calculated by adding together the six detailed federal rates produced by the Input/Output model: CTFCID, CTFEXT, CTFMFG, CTFEXT, CTFOEN, and CTFGST. The aggregate provincial rate is calculated in the identical fashion, summing up the 6 provincial rates: CTPRST, CTPLGL, CTPPLQ, CTPTOB, CTPGAS, and CTPAMU.

These parameters are used to ensure equivalent results between the detailed and non-detailed commodity tax model options. When the detailed option is turned off (i.e. the CTDFLAG parameter is set to zero), commodity tax revenues are produced by multiplying the two aggregate rates by the total expenditure of each household. This requires a fraction of the operations for each household when compared to the detailed method.

A single derived parameter, UIBRA, is calculated for use in the `txitax` function. This parameter contains the individual's UIC repayment base amount and is derived from two further parameters: UIBAF, the UI benefit recovery base amount factor, and UIERNMAX, the dollar value of maximum insurable earnings. Please refer to section in this manual for further information on the `txitax` function.

Three derived parameters are calculated for use in the `gis` function. The income breakeven points for GIS/SPA couples and married 1 pensioner couples are calculated here as GISBE1 and GISBE2 respectively. The breakeven points represent the level of family income at which combined GIS/SPA benefits are reduced to zero based on combined family income. They in turn are used to calculate an income crossover point (SPAXO) for the two types of pensioner couples (see following Chart).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

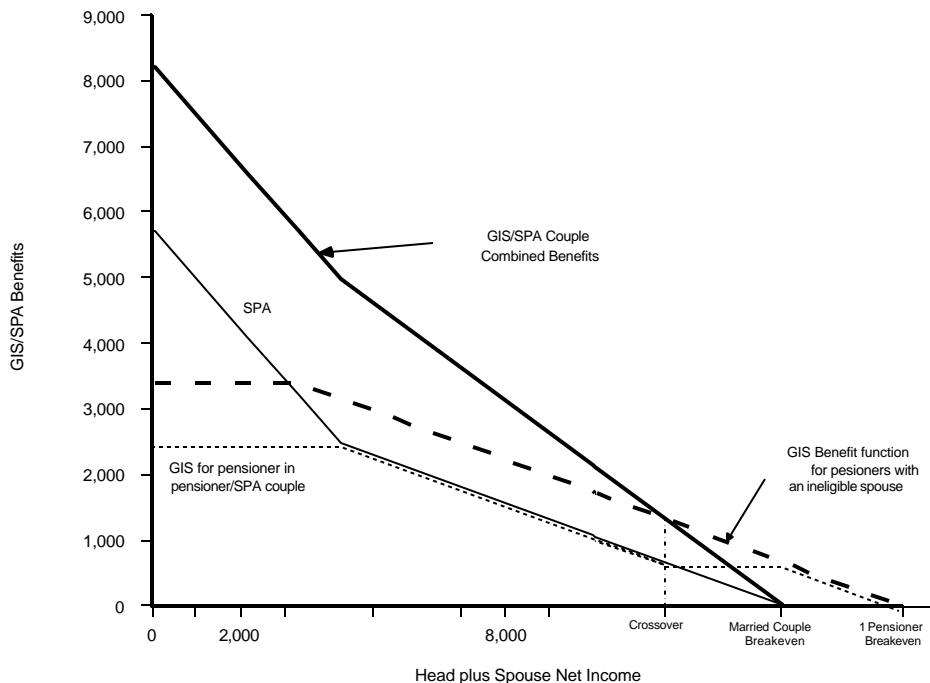


Figure 1 GIS/SPA Benefits for One OAS Pensioner Couples

GISBE1 represents the level of family income at which the GIS benefits of a pensioner married to a non pensioner have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "1 Pensioner Breakeven". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{GISBE1} = \text{BGISS} / \text{GISRRM} + \text{BOAS} + \text{GISRLS}$$

GISBE2 represents the level of family income at which the combined GIS and SPA benefits of a pensioner married to a SPA recipient have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "Married Couple Breakeven".

$$\text{GISBE2} = (\text{BGISM} * 2) / (\text{GISRRM} * 2) + \text{BOAS} / \text{SPA OASRR} + \text{GISRLM}$$

SPAXO represents the level of family income at which the dollar benefits for GIS to a single pensioner married to a non-pensioner spouse exactly equal the combined GIS/SPA dollar benefits payable to a GIS/SPA married couple. On the figure above this is the point on the X axis labelled "Crossover". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{SPAXO} = 2 * \text{GISBE2} - \text{GISBE1}$$

Please refer to the Guaranteed Income Supplement Section of this guide for further details on the use of these derived parameters.

For all of the parameters described above users may refer to the [Parameter Guide](#) for further information.

Edit Checks

Three parameter edit checks are currently implemented in the `mpc` function.

- A check is made to ensure that the tax credit rate parameter `FNTCR` is non-zero. If zero, an error message is issued but processing continues.
- A similar check is made to ensure that the tax credit rate is non-zero. Error handling is also the same as above.
- If the `CTFLAG` parameter is set to 1 (thereby specifying that commodity taxes will be calculated) and the `FXVFLAG` parameter is set to 0 (indicating no FAMEX expenditure data is to be read) then an error message will result and `CTFLAG` will be reset to 0 and no commodity taxes will be calculated.
- If the OAS algorithm is switched off (`OASFLAG=0`) and the GIS algorithm is switched on (`GISFLAG=1`) GIS benefits will be incorrectly calculated as they depend on variables calculated in the `oas` function. If this condition is met an error message will result and `GISFLAG` will be set to 0 and consequently no GIS benefits will be calculated.
- If the GIS algorithm is switched off (`GISFLAG=0`) and the provincial GIS supplement algorithm is switched on (`GISTFLAG=1`) provincial GIS supplement benefits will be incorrectly calculated as they depend on variables calculated in the `gis` function. If this condition is met an error message will result and `GISTFLAG` will be set to 0 and consequently no provincial GIS supplement benefits will be calculated.

Relation to Other SPSM Routines

The `mpc` function is called before `drv` and as such is only executed once for every program run. The function currently calculates parameters and performs edits which can effect a number of functions directly; the `ctmod` function, the `gis` function, the `gist` function, the `txitax` function, and the head/spouse transfer `txhstr` function.

CROSS REFERENCE

| Function | Description |
|----------------------|------------------------------------|
| INPUT PARAMETERS: | |
| <code>FXVFLAG</code> | Read FAMEX expenditure vector file |
| <code>BGISM</code> | Basic GIS - married |
| <code>BGISS</code> | Basic GIS - single |
| <code>BOAS</code> | Basic OAS |
| <code>CTFCID</code> | Federal custom import duties [com] |
| <code>CTFEXD</code> | Federal excise duties [com] |
| <code>CTFEXT</code> | Federal excise taxes [com] |
| <code>CTFGST</code> | Federal GST [com] |
| <code>CTFMFG</code> | Federal manufacturer's sales [com] |

| | |
|-----------|---|
| CTFOEN | Federal other energy taxes [com] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| OASFLAG | Old age security flag |
| QNTCR | Quebec nominal tax credit rate |
| SPAOSRR | OAS portion of SPA taxback rate |
| UIBAF | UI benefit recovery base amount factor (UI and EI) |
| UIBAFNR | UI EI benefit recovery base amount factor for non-repeaters |
| (EI only) | |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIERNMAX | Maximum insurable earnings (UI and EI) |

OUTPUT PARAMETERS:

| | |
|----------|--|
| CTFLAG | Commodity tax activation flag |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| GISBE1 | Breakeven for GIS one pensioner couple |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISTFLAG | Provincial GIS top-up flag |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |

nneg Change negative numbers to zero

SUMMARY

NUMBER nneg(arg);

NUMBER arg;

The nneg function returns either zero or the value of arg, whichever is larger. In other words, nneg changes negative values to zero, leaving positive values unchanged.

SUMMARY

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. Benefits are either full or partial depending on a person's history of residency in Canada. The program is not income tested. The SPSM oas function is based on the age of the individual and, for immigrants, the years since immigration as reported at the time of the SCF survey in April 1985.

The Seniors Benefit program was added to the model based on the description provided with the 1996 Federal Budget. The Seniors Benefit will replace the OAS/GIS benefits in 2001. It will be a tax-free; income tested benefit which will be determined on the basis of the incomes from both spouses. The maximum benefits will be \$120 more than the maximum OAS/GIS for 2001. These rates are fully indexed for inflation.

People aged 60 or over on December 31, 1995 will be able to choose to move to the Seniors Benefit or keep the existing OAS/GIS payments. The SPA program remains in place but is enriched by \$120.

Program Description

As amended in 1957 and 1965 the OAS program provides full benefits to persons born in Canada or those having immigrated to Canada more than 10 years before their 65th birthday with no provisions for partial benefits. In June 1977 the program was modified to provide partial benefits to immigrants having resided in Canada for between 10 to 39 years at the time of their 65th birthday. These individuals are eligible for benefits in proportion to the number of years in Canada at age 65 divided by 40. Note that years of eligibility do not increase after the year of the beneficiary's 65th birthday. Thus an immigrant of twenty years at his/her 65th birthday would be eligible for 20/40 or 50% of full OAS benefits. Persons having immigrated to Canada less than ten years prior to their 65th birthday were ineligible for OAS until 1987. In that year the OAS program was modified to allow for immigrants from certain countries having reciprocal arrangements with Canada to use years of residency in the country of emigration to count towards meeting the minimum 10 years residency requirement. However, in these cases it is only the years of residence in Canada which are used to determine the rate of partial benefits.

SPSM Implementation

The oas function determines benefits based on the age of the individual and the years since immigration as reported at the time of the SCF survey in April 1985. Because OAS provides an individually determined benefit the simulation operates at the level of a household assigning benefits to all eligible individuals. The model first adjusts years since immigration in two ways:

1. It determines the years since immigration at the time of the potential beneficiary's 65th

birthday. This is done by subtracting the difference between the individual's age and 65 years from the reported years since immigration. [immi = immi - (idage-65)]

2. It adjusts the immigration status of persons who were eligible for Full OAS under the original program specifications but would qualify for only partial benefits since 1977. This is done by setting the years since immigration to 40 for persons having 10 or more years since immigration at the time of their 65th birthday if that birthday was in 1977 or earlier. [immi =40 if(immi >=10 and TARGETYEAR- idage <= 12)]

Notice that the years since immigration for any given individual after adjustment number 1 will remain the same regardless of the year for which the simulation is being run. For example an immigrant of 38 years, age 73, would have an adjusted years since immigration of 30 years, (immi = (38-(73-65)=30). Because of adjustment 2 above that individual would receive full OAS benefits in simulations run for 1984 but would receive 75% partial benefits in simulations run for 1988. In other words, a pensioner who is 73 years old in 1984 would have been 65 years old in 1976; the year before partial benefits were introduced. However a 73 year old in 1988 would have been age 65 in 1980; after partial benefits were introduced.

The model next determines if full eligibility requirements have been met for benefits and if so the full year equivalent of maximum OAS benefits are assigned (see BOAS in the Parameter Guide). Next, persons ineligible for OAS are screened out. Lastly, the model assigns partial benefits to persons with an adjusted years since immigration of between 10 and 39 years.

With the new Senior Benefit program, first, the seniors benefit (senben.c) is calculated. Then ccept calls drv again, and the benefit is zeroed out and OAS/GIS is calculated instead. For persons who lost under this change, drv is called a third time with the seniors benefit package.

Interpretation

The results of the model are not directly comparable with and thus will not match administrative OAS expenditure figures. The discrepancy arises due to administrative irregularities as well as survey data deficiencies.

There are five major sources of underestimation by the oas function. The benefits of persons having received benefits during 1984, yet who had died before the date of the survey, will not be accounted for in the SPSD/M. The survey coverage excludes native Canadians on reservations as well as persons living in the Yukon and North West Territories; thus the OAS benefits of these persons are excluded from SPSM totals. Published figures include payments to persons not residing in Canada as well as retroactive lump-sum payments for late applicants. A further provision not accounted for in this algorithm is the use of years of residence in another country to meet minimum residency requirements. This will not affect the model results if run in years before 1988. The effect is small in any case.

Due to the discrepancy between reported age on the SCF and actual age in 1984 overestimation of aggregate OAS benefits for persons aged 65 and 66 arises. For example 25% of those reporting their age as 65 in March of 1985, and thus receiving full OAS

Benefits in SPSM, would actually have been born between January and March 1985 (assuming births are distributed approximately evenly by month). As such they would have actually received no OAS. Furthermore, the other 75% of the 65 year olds and 17% of 66 year olds would have actually received OAS for only part of 1984. Currently, the SPSM makes no stochastic adjustments for such cases.

Relation to Other SPSM Routines

OAS depends on the input parameters for basic OAS benefits and years since immigration. The calculation of OAS and other modeled variables occurs prior to and affects the calculation of net income and related GIS and GIS 'top-up' programs. The modeled benefits are reported in net income, elderly income, disposable income, transfer income, total income, consumable income. The oas function is called before txinet (calculation of individual net income) by drv.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|------------|-----------------------|
| BOAS | Basic OAS |
| OASFLAG | Old age security flag |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| hdageeld | Age of eldest in household |
| hdseqhh | Household sequence number |
| hhnin | Number of individuals in household |
| idage | Age |
| idimmi | Years since immigration |

OUTPUT VARIABLES:

| | |
|----------|----------------------------|
| imioas | OAS benefits |
| imninc | No income flag |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |

| | |
|-----------------|----------------------------|
| pmaddent | Define and add a parameter |
|-----------------|----------------------------|

SUMMARY

The pmaddent function is used to define a new parameter to the SPSM parameter manipulation facilities. Please see the [Programmer's Guide](#) for more information.

randrnd Randomly round a floating point number to an integer

SUMMARY

The `randrnd()` function can be used to round fractional quantities to integer values in such a way that the sum of the values will remain (virtually) unchanged. Conventional rounding techniques do not have this property. For example, say that we have a set of 1000 numbers, each of which has the value 0.1. The sum of this set of numbers is 100.0. If we round each member of this set to the nearest integer, the sum of values would become 0.0. If we rounded randomly up or down, the sum would be 500. Neither of these rounding processes preserve the original sum. What we wish to do is to round 100 of the values up to 1.0 and 900 of the numbers down to 0.0. The `randrnd()` function simplifies this process.

The first argument to `randrnd()` is the value which is to be integerized, while the second is a uniformly distributed random number between 0.0 and 1.0 used to perform the rounding. The second argument is normally one of the built-in random number streams created by the SPSM Random Number Facility (see the [Users' Guide](#) for more details on this facility). The result of `randrnd()` is an unbiased, randomly rounded integerized value. In the following example, the variable `intval` has the value 2.0 for 30% of the time and 3.0 for 70% of the time.

```
intval = randrnd(2.7, idrand0);
```

The `randrnd()` function can be used to simplify operations such as the production of alternate weight files. For a specific example, see the description of the `bldwgt.exe` utility found in the *SPSM Tools Users Manual*.

The `vardef` function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.

round Round to nearest integer

SUMMARY

```
NUMBER round(arg);
```

```
NUMBER arg;
```

The `round` function converts its argument to the nearest whole number.

SUMMARY

Social assistance payments are not currently calculated by the SPSM. Data requirements are too great for a detailed micro-simulation. For example, the database contains no information on the holding or recent sale of liquid or fixed assets. This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here. It is also intended as a function in which algorithms for social assistance or other guarantees can be developed by glass box users.

Program Description

There are a number of federal, provincial and municipal programs which provide some form of social assistance payments to various target groups. The SPSM simulates six GIS supplementation programs (see the description of the gist function) which are classified with the other social assistance programs by the SCF. In fact the SCF records benefits received from over 30 provincial and municipal social assistance programs under one title of which six are simulated by the SPSM. This algorithm is designed to ensure no double counting of provincial GIS supplement program benefits occurs between simulated social assistance (imisa) and the provincial GIS supplement programs (imigist).

SPSM Implementation

If the function is deactivated with SAFLAG, no social assistance benefits are reported for any individual. If the function is turned on the database values of reported Social Assistance payments is used as the reported value of social assistance for all persons under the age of 65. For persons aged 65 and over there are three possible means of calculating social assistance which are controlled by the SAELDOPT parameter. These options are as follows.

- Social assistance is set to zero for all persons aged 65 and over.
- For individuals over age 64 who received simulated Provincial GIS supplementation benefits Social Assistance benefits are set to zero. If no Provincial GIS supplement is assigned to an individual over age 64, the simulated social assistance reported by the SPSM is the same as the reported value on the database.
- For all individuals over the age of 64 the value of simulated social assistance is set to the positive difference between reported and simulated social assistance.

In addition to performing the calculations for Social Assistance, samod computes the splitting of payments between the Federal and Provincial governments. This splitting corresponds to the federal/provincial cost sharing agreements in the Canada Assistance Plan.

The payment splitting is controlled by the parameter SAFS which is the federal proportional share of SA benefits. This parameter is available to be changed in black box mode and will determine the value of the variable imfsa which represents the value of the federal share. The provincial share of SA benefits is calculated as the difference between total SA benefits and the calculated federal amount and is represented by the variable impsa.

Relation to Other SPSM Routines

The samod function is called by drv after the calculation of provincial GIS supplements in gist.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|--|
| SAELDOPT | SA for elderly calculation method [1=~SA,2=GIST->~SA,3=diff] |
| SAFLAG | Social assistance flag |
| SAFS | Federal share of social assistance [prov] |
| SAPFLAG | Social assistance predicted value flag |
| SATARGET | Social assistance target for predicted SA |
| SFAOUT | Proportion of social assistance to eliminate |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hhncf | Number of census families in household |
| idage | Age |
| idisa | Social assistance income |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| imigist | GIS provincial top-up |

OUTPUT VARIABLES:

| | |
|--------|--|
| imfsa | Federal social assistance |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |
| impsa | Provincial social assistance |

SUMMARY

The strn function is used by the SPSM to print prompts and error messages in a language-independent way. The argument to the function identifies which string is to be retrieved. strn retrieves the string from a language-specific database of strings into an internally-maintained buffer and returns a pointer to the retrieved string. This function is not intended to be used by the SPSM user, and is documented here for reference purposes only.

taxbk1

One level tax-back function

SUMMARY

```
NUMBER taxbk1(inc, exmpt, lvl1, rr1);

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level of benefit                       */
NUMBER rr1;          /* reduction rate for tax-back           */
```

The taxbk1 function is used to reduce a benefit at a fixed rate based on income in excess of a specified exemption level. If the benefit (*lvl1) is reduced to zero, taxbk1 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the income in excess of the break-even income for the benefit.

taxbk2

Two level tax-back function

SUMMARY

```
NUMBER taxbk2(inc, exmpt, lvl1, rr1, lvl2, rr2)

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back     */
NUMBER *lvl1;        /* level (#1) of benefit                */
NUMBER rr1;          /* reduction rate (#1) for tax-back     */
NUMBER *lvl2;        /* level (#2) of benefit                */
NUMBER rr2;          /* reduction rate (#2) for tax-back     */
```

The taxbk2 function is used to reduce a two-tiered benefit at a fixed rates based on income in excess of a specified exemption level. The first tier benefit (*lvl1) is first reduced at rate rr1 based on income (inc) in excess of the specified threshold (exmpt). If the first tier benefit is reduced to zero, the second tier of benefit (*lvl2) is reduced at rate rr2 based on remaining income. If the second tier benefit (*lvl2) is reduced to zero, taxbk2 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the

income in excess of the break-even income for the benefit.

SUMMARY

Program Description

Calculation of the Alberta taxes.

When ATXFLG is off, Basic Alberta Tax (imbpt) is a proportion (APTF) of Basic Federal Tax (imbft). A tax reduction is calculated as a basic amount (ATRBC) minus a proportion (ATRF) of Basic Alberta Tax (imbpt). Alberta Tax Payable (imtxp) is calculated as Basic Alberta Tax (imbpt) minus the tax reductions.

The 2000 budget stated that Alberta would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (ATXFLG), a provincial tax table (APTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (APNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (ABXM) |
| impatxc | Age amount tax credit | (AAXM, AAXRR, AAXTD, AAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (AMXM, AMXMT, AEMXM, AEMXMT) |
| impcgtc | Caregiver tax credit | (ACGTC, ACGTCFLG, ACGTCTC, ACGTCTD, ACGTCTK) |
| impchrtc | Charitable donations | (ACHATL1, ACHATR1, ACHATR2) |
| impcppte | CPP/QPP contribution | |
| impdistc | Disability tax credit | (AMAXDX) |
| impdtxc | Dividend tax credit | (ADTCR) |
| impedtxc | Education tax credit | (AEDXPM, AMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (AYPNDL) |
| imptutxc | Tuition Tax credit | (AMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using AAMTOPT.

Calculation of the Alberta Family Employment Tax Credit.

When the parameter AFETCFLAG is set to 1, the value of imiafetc variable is calculated as a percentage (AFETCBR) of nuclear family employment income above a threshold (AFETCCI) to a maximum dollar level which is calculated as AFETCBPC times the number of eligible children (nfnkids) up to a maximum number of children of AFETCNC. The maximum benefit is reduced by a percentage (AFETCRR) of nuclear family net income in excess of the threshold AFETCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AAMTOPT | Alta alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| AAMTPCTF | Alta amt rate as pct of additional fed tax due to minimum tax |
| AAMTPCTM | Alta amt rate as pct of federal minimum tax amount |
| AAMTTX | Alta amt rate as tax on adjusted income |
| AAXM | Alta Age Amount |
| AAXPI | Alta Age Amount phase in rate for 1994 and beyond |
| AAXRR | Alta Age Amount credit reduction rate |
| AAXTD | Alta Age Amount net income turndown |
| ABXM | Alta Basic Personal Exemption/amount |
| ACGTC | Alta Caregiver Tax Credit |
| ACGTCFLG | Alta Caregiver Tax Credit activation flag |
| ACGTCTC | Alta Caregiver tax credit take-up rate by age of elderly [age,rate] |
| ACGTCTD | Alta Caregiver Tax Credit Turn Down Income |
| ACGTCTK | Alta Caregiver tax credit take-up rate by income level [employment income,rate] |
| ACHATL1 | Alta Charitable Donations amount level 1 |
| ACHATR1 | Alta Charitable Donations tax credit rate 1 |
| ACHATR2 | Alta Charitable Donations tax credit rate 2 |
| ADTCR | Alta dividend tax credit rate |
| AEDXPM | Alta Education Amount per month |
| AEMXM | Alta equivalent to married amount |
| AEMXMT | Alta equivalent to married turndown level |
| AFETCBPC | Alberta Family Employment Tax Credit Benefit Per Child |
| AFETCBR | Alberta Family Employment Tax Credit Benefit Rate |
| AFETCCI | Alberta Family Employment Tax Credit Benefit Cut-in Level |
| AFETCFLAG | Alberta Family Employment Tax Credit Activation Flag |
| AFETCNC | Alberta Family Employment Tax Credit Maximum Number of Children |
| AFETCRR | Alberta Family Employment Tax Credit Reduction Rate |
| AFETCTD | Alberta Family Employment Tax Credit Turndown Level |
| AFTAX | Alberta flat surtax rate on taxable income |
| AHEATFLG | Alberta Energy Tax Refund activation flag |
| AHEATREB | Alberta Energy Tax Refund amount |

| | |
|---------|--|
| AMAXDX | Alta Maximum Disability deduction/amount |
| AMAXET | Alta maximum on transfer of education and tuition amount |
| AMXM | Alta married amount |
| AMXMT | Alta married amount turndown level |
| APNTCR | Alta provincial non-refundable tax credit rate |
| APTC | Alberta political contribution table [total donations, donation allowed] |
| APTCBEN | Maximum Alberta political tax credit allowed |
| APTF | Alberta provincial tax fraction |
| APTX | Alta tax table [taxable income, basic provincial tax] |
| ASCI | Alberta surtax cut-in |
| ASF | Alberta surtax fraction |
| ATRBC | Alberta tax reduction basic claim |
| ATRF | Alberta tax reduction fraction |
| ATXFLG | Alta tax on taxable income activation flag |
| AYPNDL | Alta Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |

| | |
|-----------|--|
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| imiafetc | Alberta Family Employment Tax Credit Benefits |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txbc Compute provincial taxes for British Columbia

SUMMARY

When CTXFLG is turned off, the Basic British Columbia Tax (imbpt) is a proportion (CPTF)

of Basic Federal Tax (imbft). British Columbia Tax Payable (imtxp) is the Basic Tax plus the BC Surtax plus the BC Health Care Maintenance Surtax.

The BC Surtax is a proportion (CSF) of Basic BC Tax (imbpt) exceeding the surtax level (CSCI).

The 2000 budget announced that British Columbia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (CTXFLG), a provincial tax table (CPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (CPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (CBXM) |
| impatxc | Age amount tax credit | (CAXM, CAXRR, CAXTD, CAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (CMXM, CMXMT, CEMXM, CEMXMT) |
| impcgtc | Caregiver tax credit | (CCGTC, CCGTCFLG, CCGTCTC, CCGTCTD, CCGTCTK) |
| impchrtc | Charitable donations | (CCHATL1, CCHATR1, CCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (CMAXDX) |
| impdtxc | Dividend tax credit | (CDTCR) |
| impedtxc | Education tax credit | (CEDXPM, CMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (CYPNDL) |
| imptutxc | Tuition Tax credit | (CMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using CAMTOPT.

The British Columbia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The BC provincial credit is modelled as CLVCRT times the gross amount up to CLVCMAX. The credit cannot be more than provincial taxes (imtxp).

B.C. Family Bonus

Total benefits received under the British Columbia Family Bonus program commencing in July 1996.

When the parameter BCFBFLAG is set to one the value of this variable is calculated as BCFBBAS times the number of children in the nuclear family (nfnkids) reduced by a proportion of head plus spouse net income (iminet + imisa) above the turndown of BCFBTD. This proportion for families with one child is BCFBRRS and for multiple child families is BCFBRR. The value calculated in this manner is multiplied times the parameter BCFBPI.

B.C. Family Bonus benefits (imibcfb) are assigned to the mother if present, or if not to the head of the nuclear family.

The calculation of the B.C. Family Bonus was changed to include the level of the National Child Supplement beginning in 1998. The flag BCFBIFS was added to turn on or off the inclusion of the National Child Supplement in the calculation of the B.C. Family Bonus.

The British Columbia Earned Income Benefit which was also introduced in 1998, was added to the code. When BCEIBFLG is assigned a value of 1, the calculation of the British Columbia Earned Income Benefit is activated, depending on the presence of children in the family. For families with lower incomes, the benefit starts to be phased in at BCEIBPI, and reaches its maximum at incomes of BCBEMX. The slope of the phase in is therefore calculated as the maximum working income supplement a family can receive divided by (BCBEMX – BCEIBPI).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BCBEIS1 | B.C. Earned Income Benefit for first child |
| BCBEIS2 | B.C. Earned Income Benefit for second child |
| BCBEIS3 | B.C. Earned Income Benefit for each additional child |
| BCBEITD | B.C. Earned Income Benefit Turndown |
| BCBEMX | B.C. Earned Income Benefit Income Reduction |
| BCBERR1 | B.C. EIB reduction rate for families with 1 child |
| BCBERR2 | B.C. EIB reduction rate for families with 2 children |
| BCBERR3 | B.C. EIB reduction rate for families with 3+ children |
| BCEIBFLG | Activate B.C. Earned Income Benefit Program |
| BCEIBPI | B.C. Earned Income Benefit Income Phase In |
| BCFBBAS | B.C. Family Bonus amount per child |
| BCFBFLAG | Activate B.C. Family Bonus Program |
| BCFBIFS | Activate B.C. Family Bonus to include Federal NCS |
| BCFBNCS1 | B.C. Family Bonus National Child Supplement for first child |
| BCFBNCS2 | B.C. Family Bonus National Child Supplement for second child |
| BCFBNCS3 | B.C. Family Bonus National Child Supplement for each additional child |

| | |
|-------------------------------------|---|
| BCFBNCSSRR1 child | B.C. Family Bonus NCS reduction rate for families with 1 child |
| BCFBNCSSRR2 children | B.C. Family Bonus NCS reduction rate for families with 2 children |
| BCFBNCSSRR3 children | B.C. Family Bonus NCS reduction rate for families with 3+ children |
| BCFBNCSTD | B.C. Family Bonus National Child Supplement Turndown |
| BCFBPI | B.C. Family Bonus phase-in |
| BCFBRR | B.C. Family Bonus multiple child reduction rate |
| BCFBRRS | B.C. Family Bonus single child reduction rate |
| BCFBTD | B.C. Family Bonus Turndown |
| CAMTOPT adj inc, 4=% min amt) | B.C. alternative minimum tax option (1=none, 2=% fed, 3=fed) |
| CAMTPCTF tax | B.C. amt rate as pct of additional fed tax due to minimum tax |
| CAMTPCTM | B.C. amt rate as pct of federal minimum tax amount |
| CAMTTX | B.C. amt rate as tax on adjusted income |
| CAXM | B.C. Age Amount |
| CAXPI | B.C. Age Amount phase in rate for 1994 and beyond |
| CAXRR | B.C. Age Amount credit reduction rate |
| CAXTD | B.C. Age Amount net income turndown |
| CBXM | B.C. Basic Personal Exemption/amount |
| CCGTC | B.C. Caregiver Tax Credit |
| CCGTCFLG | B.C. Caregiver Tax Credit activation flag |
| CCGTCTC [age,rate] | B.C. Caregiver tax credit take-up rate by age of elderly |
| CCGTCTD | B.C. Caregiver Tax Credit Turn Down Income |
| CCGTCTK [employment income,rate] | B.C. Caregiver tax credit take-up rate by income level |
| CCHATL1 | B.C. Charitable Donations amount level 1 |
| CCHATR1 | B.C. Charitable Donations tax credit rate 1 |
| CCHATR2 | B.C. Charitable Donations tax credit rate 2 |
| CDTCR | B.C. dividend tax credit rate |
| CEDXPM | B.C. Education Amount per month |
| CEMXM | B.C. equivalent to married amount |
| CEMXMT | B.C. equivalent to married turndown level |
| CHEATFAM | British Columbia Refundable Energy Credit for families |
| CHEATFLG | British Columbia Refundable Energy Credit activation flag |
| CHEATSNG | British Columbia Refundable Energy Credit for singles |
| CLVCMAX | Maximum B.C. labour-sponsored funds tax credit allowed |
| CLVCRT credit | Percent of B.C. labour-sponsored funds cost allowed as credit |
| CMAXDX | B.C. Maximum Disability deduction/amount |
| CMAXET | B.C. maximum on transfer of education and tuition amount |
| CMXM | B.C. married amount |
| CMXMT | B.C. married amount turndown level |
| CPNTRC | B.C. provincial non-refundable tax credit rate |
| CPTCBEN | Maximum B.C. political tax credit allowed |
| CPTCT allowed] | B.C. political contribution table [total donations, donation allowed] |
| CPTF | British Columbia provincial tax fraction |
| CPTX | B.C. tax table [taxable income,basic provincial tax] |
| CRFLAG | British Columbia rental reduction flag |
| CRTRB | British Columbia renter tax reduction basic credit |
| CRTRD dependants | British Columbia renter tax reduction credit for other dependants |

| | |
|----------|---|
| CRTRP | British Columbia renter tax reduction proportion of rent allowed |
| CRTRPN | British Columbia renter tax reduction proportion of net income |
| CRTRS | British Columbia renter tax reduction credit for spouse |
| CRTRT | B.C. renter tax reduction base amount turndown [dependants, amount] |
| CSCI | British Columbia surtax first cut-in level |
| CSCI2 | British Columbia surtax second cut-in level |
| CSDC | British Columbia provincial surtax dependant credit |
| CSF | British Columbia surtax first level rate |
| CSF2 | British Columbia surtax second level rate |
| CSTC | British Columbia stc amount |
| CSTCFLAG | British Columbia sales tax credit flag |
| CSTCR | British Columbia stc reduction rate |
| CSTHINC | British Columbia family head income threshold (stc) |
| CSTKINC | British Columbia kid income threshold top-up (stc) |
| CSTSINC | British Columbia spousal income threshold top-up (stc) |
| CTCINC | CTC family income scaling factor |
| CTXFLG | B.C. tax on taxable income activation flag |
| CYPNDL | B.C. Pension Income Deduction Amount |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |

| | |
|----------|---|
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchclm | Number of dependent children claimed |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imibceib | B.C. Earned Income Benefit |
| imibcfb | B.C. Family Bonus |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |

| | |
|----------|--|
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txcalc Calculate federal income tax

SUMMARY

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Federal Labour Sponsored Venture Capital Tax credit
- Basic Federal Tax (including tax credits transfers from dependants or spouse)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement
- Federal refundable medical expense supplement
- Caregiver Tax Credit

Federal Dividend Tax Credit

If the filer declared dividends from taxable Canadian corporations, he or she is eligible to claim the Dividend Tax Credit which amounts to a fixed proportion of taxable dividends. This credit is non-refundable, i.e., it may be used to reduce Basic Federal Tax, but an unused portion is not refunded.

SPSM Implementation

The Federal Dividend Tax Credit (imfdtxc) is calculated as a proportion (FDTCR) of Net Taxable Dividends (imidivt). The amount is added to Total Non-transferable Tax Credits (imtaxcr) which is applied to reduce Basic Federal Tax (imbft).

Federal Dividend Tax Credit

The Labour-sponsored venture capital funds tax credit is modeled from the imputed gross amount purchased (idlbtxg). The credit (imlbtxc) is equal to FLVCRT times the gross

amount (idlabt_{xg}) up to a maximum (FLVCMAX). The rate is provincially based.

Basic Federal Tax

Basic Federal Tax is defined as Federal Tax Payable on Taxable Income minus certain tax credits.

SPSM Implementation

Basic Federal Tax (imbft) is calculated the same way whether or not the tax credits proposed by the White Paper are applied. First, Federal Tax Payable on Taxable Income (imfedtax) is calculated using the interpolating lookup function lkup1 to determine taxes payable on Taxable Income (imitax) from the table FTX.

Dependants are treated separately from the head and spouse since the rules applying to the transfer of deductions from dependant to parent differ from those applying to the transfer of deductions from the spouse.

Transfers from Dependant to Parent

In calculating the dependant's Basic Federal Tax, the following nontransferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Age Tax Credit (imatxc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Federal Dividend Tax Credit (imfdtxc)
- Medical Expense Tax Credit (immedatc)
- Pension Income Tax Credit (impentxc)
- UI Contributions Tax Credit (imuictc)

A dependant may transfer an unused portion of certain tax credits to a supporting parent. Since a limit may be imposed on the amount of the combined Education Tax Credit and Tuition Tax Credit, these are treated separately from the Disability Tax Credit.

If a dependant requires all transferable tax credits to further reduce Basic Federal Tax, i.e., Basic Federal Tax (imbft) exceeds Total Transferable Tax Credits, then the tax credits are subtracted from imbft and no transfer occurs.

If the dependant's Total Transferable Tax Credits (txcrt) exceeds Basic Federal Tax, imbft is reduced to zero and the amount potentially transferable to a supporting parent is calculated as the amount of Disability Tax Credit (imdisatc) not required to reduce Basic Federal Tax plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imttxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

The total amount of tax credits transferable from all dependants is accumulated in the variable ctxcrt which is subsequently used to reduce Basic Federal Tax for the parent with the higher Net Income (iminet).

These algorithms do not allow the partitioning of the dependant's tax credits between both supporting parents and, therefore, in some cases, the total taxes paid by the family may not be minimized.

Transfers From Spouse

In calculating the Basic Federal Tax of the head and spouse, the following non-transferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Tax Credit for Dependant Children (imctxcs)
- Federal Dividend Tax Credit (imfdtxc)
- Married Tax Credit (immartxc)
- Medical Expense Tax Credit (immedatc)
- UI Contributions Tax Credit (imuictc)

An unused portion of certain transferable tax credits may be transferred from the spouse. The transferable tax credits are:

- Age Tax Credit (imatxc)
- Disability Tax Credit (imdisatc)
- Pension Income Tax Credit (impentxc)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)

Since a limit may be imposed on the amount of the combined Education and Tuition Tax Credits, these are treated separately from the others.

If the filer requires all Transferable Tax Credits (txcrt) to reduce Basic Federal Tax (i.e., imbft exceeds txcrt) then the tax credits are subtracted from Basic Federal Tax and no transfer occurs.

If the filer's Transferable Tax Credits (txcrt) exceed Basic Federal Tax, then imbft is reduced to zero and the remainder of the Potentially Transferable Tax Credits (ttxcrt) is calculated as the sum of:

- Disability Tax Credit (imdisatc)
- Age Tax Credit (imatxc)
- Pension Income Tax Credit (impentxc)

which is not required to reduce Basic Federal Tax to zero plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imtxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

Although this value is calculated for both head and spouse, the one with the higher Net Income (iminet) actually receives the transfer. The amount transferred from the spouse is stored in the variable imstxcrt. The amount transferred from all dependants is stored in imctxcrt.

Federal Surtax

In 1985 a Federal Surtax was introduced as an additional tax based on Basic Federal Tax payable.

SPSM Implementation

The model allows for two surtax levels and two surtax rates. The total Federal Surtax (imfsur) is calculated as:

- a proportion (FSURR1) of Basic Federal Tax exceeding Surtax Level 1 (FSURL1), plus
- a proportion (FSURR2) of Basic Federal Tax exceeding Surtax Level 2 (FSURL2), minus
- the amount of the additional Federal Foreign Tax Credit from 1986 forward (represented by variable (idfdsft)).

The result is then added to Federal Taxes (imftax) (minus certain federal tax credits) to derive Federal Taxes Payable (imtxf).

Federal Surtax Reduction

The Federal Surtax reduction (imfsurtr) announced in the 1998 federal budget is calculated. The maximum value that the reduction may reach is FSURTRMX. The reduction is reduced by a proportion (FSURTRRR) of basic federal tax (imbft) which exceeds a certain level (FSURTRRL). This reduction is then subtracted from the federal surtax (imfsur).

Federal Taxes Payable

Federal Taxes Payable (imtxf) is defined as Federal Tax (imftax) plus the Federal Surtax (see above) minus the following tax credits:

- Federal Other Tax Credits
- Federal Political Contribution Tax Credit (imfptc), and

Alternate Minimum Tax

In 1986, a minimum tax on individuals was introduced with the intention of increasing the tax liability of those high income individuals who use the tax incentives provided by the current law to structure their affairs so as to pay little or no tax.

The Alternative Minimum Tax requires the calculation of an adjusted taxable income disallowing certain deductions, a list of which follows, which are added back to taxable income.

- Pension Income Deduction
- Interest and Dividend Income Deduction
- Disability Deduction Transferred from Dependant
- Education Deduction Transferred from Dependant
- Deductions Transferred from Spouse
- Employee Home Relocation Loan Deduction
- Stock Option and Shares Deduction
- Contribution to Deferred Income Plans (RPP and RRSP contributions)
- non-taxable portion of capital gains
- capital cost allowance on MURBS and Canadian Films

The grossed-up portion of taxable dividends and Allowable Business Investment Loss are subtracted from taxable income.

The minimum tax is then calculated as a proportion of this adjusted taxable income exceeding the exemption level.

SPSM Implementation

If the Minimum Tax Rate (AMTTX) is not set to zero, the minimum tax algorithms are executed.

The first step recalculates an adjusted taxable income for minimum tax purposes (imamtinc) by adding the following items to imitax:

- RPP Contributions (idrpp) when AMTRPFLG is set to 1
- RRSP Contributions (idrrsp) when AMTRPFLG is set to 1
- Other Deductions from Total Income (idothded, representing Capital Cost Allowances)
- the non-taxable portion of Capital Gains (idicapg * (AMTINCRT - CAPGIR))
- exploration and development expenses (idexplor)
- employee home relocation loan deduction (idemplo)
- stock option and shares deduction when AMTSTK is set to 1
- limited partnership losses (idpartlo)
- allowable other years non-capital losses (idnclos)

The taxable portion of dividends (imidivt) times AMTDIV, net non-deductible capital losses, the allowable portion of business investment losses (imiloss) times the applicable rates defined as $((AMTINCRT - CAPGIR)/CAPGIR)$ and the basic exemption (AMTEX) are subtracted from this value.

The Basic Minimum Tax (ambft) is calculated as a proportion (AMTTX) of Adjusted Taxable Income (imamtinc).

The second step in this process adjusts the Basic Minimum Tax (ambft) to account for allowable tax credits. This requires subtracting the following tax credits from Basic Minimum Tax:

- Basic Tax Credit (imbtc)
- Spouse or Equivalent Tax Credit (immartxc)
- Age Tax Credit (imatxc)
- Tax Credit for Dependant Children (imctxcs)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)
- Medical Expense Tax Credit (immedatc)
- Charitable Donations Tax Credit (imchartc)
- Disability Tax Credit (imdisatc) for self
- Other Dependent Tax Credit (imothpe)
- CPP/QPP Contribution Tax Credit (imcppctc)
- UI Contribution Tax Credit (imuictc)
- Basic Personal Amount Supplement (imbts)
- Caregiver Tax Credit (imcgtc)

If the value of the Basic Minimum Tax (ambft) exceeds Basic Federal Tax (imbft), Federal Tax Payable (imtxf) is recalculated as Basic Minimum Tax (ambft) plus any federal surtaxes on ambft. The federal surtax is calculated in the same manner as on Basic Federal Tax, previously described.

The database does not contain sufficient detail to accurately represent some of the deductions specified in the regulations concerning the calculation of the Minimum Tax. The Disability Deduction and Education Deduction transferred from dependants are not differentiable from those deductions claimed on behalf of the filer. The variable idothded (Other Deduction's from Total Income) includes Capital Cost Allowances on MURBS and Canadian Films but it also contains amounts for moving expenses and alimony payments. It is difficult to estimate the impact of these inaccuracies except to say that they are likely small compared to the large amounts of income and other deductions for the high income persons for whom the Minimum Tax is intended.

Quebec Tax Abatement

The Quebec Tax Abatement is a refundable credit on federal taxes provided to Quebec residents in lieu of direct cost-sharing by the federal government under the federal-provincial fiscal arrangements. It reduces the federal income tax payable by Quebec residents and may provide a refund. The abatement amounts to 16.5% of Basic Federal Tax.

SPSM Implementation

If the filer resides in Quebec, the full Quebec Tax Abatement (qta) is calculated as a proportion (QTAP) of Basic Federal Tax (imbft). This is divided into two portions for

accounting purposes:

- imqtaa is the Quebec Tax Abatement Applied to reduce federal taxes
- imqtar is the Quebec Tax Abatement Refunded

If the Quebec Tax abatement exceeds the Federal Tax payable then a refund is made for the balance of the abatement (imqtar) and the amount of Federal tax payable is reduced by the amount of the abatement. Users may wish to note that this abatement refund was an interesting side effect of the Federal Tax reduction in effect prior to 1986 (see notes in this section).

Federal Refundable Medical Expense Supplement

SPSM Implementation

The refundable medical expense supplement (immedref) was added to imfortc. The program is only available to persons aged 18 and over who have earnings over MEDREMIN and who had allowable medical expenses (immeda). The maximum supplement is calculated as the minimum of MEDRRATE times the allowable medical expenses and MEDRMAX. The benefit is reduced by MEDRRR times the family income over the turndown which is the sum of the basic exemption (BXM), the married exemption (MXM) and the maximum disability amount (MAXDX).

Caregiver Tax Credit

The calculation of the Caregiver Tax Credit (imcgtc) is activated by the flag CGTCFLG. The credit reduces federal taxes and started in 1998. The base level of the credit is CGTC. A take-up rate CGTCTC based on age of the potential parent assigns individuals with idefrh =3 as a parent according to SCF 1994 data. Users have access to a take-up rate CGTCTK based on employment income to select the appropriate number of beneficiaries.

The benefit, imcgtc, is reduced for each dollar of net income, iminet, in excess of CGTCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AMTDIV | Alternative minimum tax: percentage of taxable dividends |
| AMTEX | Alternate minimum tax: exemption level |
| AMTFORTX | Alternative minimum tax: Foreign Income Tax Rate |
| AMTINCRT | Alternative minimum tax: Inclusion Rate |
| AMTNEGTI | Alternative minimum tax: Allow Negative Taxable Income Flag |
| AMTPRVDF | Alternative minimum tax: prov. tax difference |
| definition[prov] | |
| AMTRPFLG | RRSP/RPP included in Alternate minimum tax (1=included) |
| AMTSTK | Alternative minimum tax: Stock Option Proportion |

| | |
|------------|---|
| AMTTX | Alternate minimum tax rate |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CGTC | Caregiver Tax Credit |
| CGTCFLG | Caregiver Tax Credit activation flag |
| CGTCTC | Caregiver tax credit take-up rate by age of elderly [age,rate] |
| CGTCTD | Caregiver Tax Credit Turn Down Income |
| CGTCTK | Caregiver tax credit take-up rate by income level [employment income,rate] |
| FDTCR | Federal dividend tax credit rate |
| FLVCMAX | Maximum labour-sponsored funds tax credit allowed |
| FLVCRT | Percent of labour-sponsored funds cost allowed as credit [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| FPTC | Federal political contribution table [total donations,donation allowed] |
| FPTCBEN | Maximum federal political tax credit allowed |
| FSURL1 | Federal surtax level 1 |
| FSURL2 | Federal surtax level 2 |
| FSURR1 | Federal surtax rate 1 |
| FSURR2 | Federal surtax rate 2 |
| FSURTRMX | Maximum federal surtax reduction |
| FSURTRRL | Federal surtax reduction reduction level |
| FSURTRRR | Federal surtax reduction reduction rate |
| FTX | Federal tax table [taxable income,basic federal tax] |
| GSTREBFLAG | Database variable(gstreb) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MAXET | Maximum on transfer of education and tuition amount |
| MEDREMIN | Minimum earnings for refundable medical expense supplement |
| MEDRMAX | Maximum expenses allowed for medical expense supplement |
| MEDRRATE | Proportion of expenses allowed for medical expense supplement |
| MEDRRR | Reduction rate for the medical expense supplement |
| MXM | Married exemption/amount |
| QTAP | Quebec tax abatement proportion of basic federal tax |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |

| | |
|----------|--|
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgstreb | GST rebate (457) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnclos | Allowable other years non-capital loss (252) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imbtcs | Basic personal tax credit supplement |
| imcapgx | Modelled capital gains deduction (254) |
| imchartc | Charitable donations tax credit |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imctxcs | Dependent children tax credits |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |
| imtutxc | Tuition tax credit |
| imuic | UIC contributions |
| imuictc | UIC contributions tax credit |

OUTPUT VARIABLES:

| | |
|----------|---|
| imamtdf | Difference due to minimum tax |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |

| | |
|----------|---|
| imatxcrt | Total tax credits applied |
| imbft | Basic federal tax |
| imcgtc | Caregiver Tax Credit Level |
| imcgtcp | Dependant caregiver tax credit amount |
| imctxcrt | Tax credits transferred from children |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imfdtxc | Federal dividend tax credit |
| imfedtax | Federal tax before tax credits |
| imfortc | Federal other refundable tax credits |
| imfortxc | Federal foreign tax credit (509) |
| imfptc | Federal Political Contribution Tax Credit |
| imfsur | Federal surtax |
| imfsurtr | Federal surtax reduction |
| imlabtxc | Federal labour-sponsored funds tax credit |
| immedref | Refundable medical expense supplement (452) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imoftca | Other federal tax credits applied (416) |
| imqtaa | Quebec tax abatement (applied) |
| imqtar | Quebec tax abatement (refundable) |
| imstxcrt | Tax credits transferred from spouse |
| imtaxcr | Total tax credits |
| imttxcrt | Total tax credits transferred |
| imtxf | Federal income tax payable |

txccea Compute child care expense allowance

SUMMARY

The txccea function calculates the value of the child care expense deduction.

Description of tax measure

Child care expenses are amounts paid for child care services to allow the parent or "supporting person" to:

- a) earn income from employment or self-employment, (this does not include a period of unemployment) or
- b) take an occupational training course for which the person received an adult training allowance, or
- c) carry on research or similar work for which the person received a grant.
- d) go to school full-time

A filer is eligible to claim child care expenses if:

- a) there is no other supporting person
- b) there is a supporting person with a higher net income (excluding child care expenses) than the filer
- c) there is a supporting person with a net income lower than the filer but
 - i. the filer and supporting person were separated for at least 3 months, or

- ii. the supporting person was in full-time attendance at a designated educational institution, or
- iii. the supporting person was infirm or in prison for at least 2 weeks.

A combination of limitations is applied to the amount claimable:

1. Two-thirds of earned income, and
2. a fixed amount per eligible child up to a fixed maximum is applied if the net income of the filer is less than that of a supporting person (conditions (a) and (b) above).

Under condition (c) above, i.e., the income of the supporting person is lower than that of the filer, the following additional limitation applies:

3. fixed weekly amount per child up to a maximum, multiplied by the number of weeks of separation, attendance at an educational institution, infirmity or imprisonment.

In 1982, the Child Care Expense Deduction was always taken by the mother of the child if she was present. Since then, the deduction or tax credit is normally allocated to the spouse with the lower net income, exclusive of the child care expense deduction, unless that person is separated, in school, infirm or in prison.

SPSM Implementation

The amount of Child Care Expenses Allowed is derived from income tax records during the database creation process (see the *Database Creation Guide*). This value represents the amount allowed according to the base year regulations. Though this amount may be grown or diminished by a fixed factor (GFC CET), the rules described above cannot be easily altered in the current version of SPSM.

The parameter CCEROPT determines which spouse in a two-parent family claims the Child Care Expense Deduction. If CCEROPT is given a value of 1, the deduction is always taken by the mother. With a value of 2, the deduction is taken by the parent with the lower Net Income (iminet).

The condition for a temporarily absent, lower income spouse (condition c. above) is not checked.

On the database, only one spouse of a two-parent family will have been attributed a value for Child Care Expense Deduction Allowed. The assignment of this value is done before we have complete information about the relative net incomes and may therefore be given to an inappropriate person. The model uses the current value of Net Income (iminet) to re-allocate the deduction if necessary.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| CCEAEMPF | CCEA fraction of employment income (Limit `B') |
| CCEALIM | CCEA overall limit |
| CCEAOAGE | CCEA Maximum eligible age for oldest child |
| CCEAOLD | CCEA old child limit |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| CCEAYNG | CCEA young child limit |
| CCEROPT | Child care expense deduction recipient [1=mother,2=lower income] |
| CCESFLAG | CCE full-time student flag |
| CCESOLD | CCEA old child limit for full-time students |
| CCESYNG | CCEA young child limit for full-time students |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| INPUT VARIABLES: | |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| ideducm | Eligible months of education allowance |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idsex | Sex |
| imccez | Is CCE zeroed? |
| imisa | Social assistance (or replacement program) |
| OUTPUT VARIABLES: | |
| imcce | Child care expenses allowed |
| imcce | Child care expenses claimed on behalf of child |
| imdedft | Deductions from total income |
| iminet | Net income |
| imninc | No income flag |

SUMMARY

The federal Child Tax Credit and the Child Tax Benefit provide benefits to help low and middle income families meet the costs of raising children under the age of 18. The txctc function calculates benefits from the federal Child Tax Credit (CTC) program based upon the number of children in a family and the net income of the family. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

The level of benefits varies with the number of children.

Program Description

The federal Child Tax Credit provides benefits to help low and middle income families meet the costs of raising children under the age of 18. It was implemented in 1979 and is administered by Revenue Canada, Taxation, through the income tax system.

Any person who receives Family Allowances is eligible to apply for the Child Tax Credit. The credit is available on behalf of a child for whom Family Allowances were paid for in the month of January following a given taxation year. An eligible person who voluntarily refrains from receiving Family Allowances may still claim the Child Tax Credit. The CTC must be applied for by filing an income tax return regardless of the income of the eligible parent or guardian. A foster parent in receipt of Special Allowances is not eligible for the CTC. Canadian residents living outside Canada, but paying Canadian taxes may apply for the credit.

The amount of the CTC is determined by the number of eligible children and the family's income. Family income is defined as the net income (as defined for income tax purposes) of both parents, whether married or not (provided they are living together), or the net income of a single parent. The net income of any other person who is claiming a personal exemption for a dependent child (whether or not the person lives with the claimant of the CTC) must also be included in family income. For families with taxable incomes the refundable credit to which they are entitled reduces the tax which must be paid; families whose taxes are less than the credit, or who pay no taxes at all receive a non-taxable lump sum payment.

The maximum annual credit is payable if net family annual income is less than a specified level of income called a benefit reduction level or turndown. Families with net incomes above this turndown are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum CTC for eligible parent(s) is zero. In 1993, the CTC was replaced by the Child Tax Benefit. This program is comprised of two parts: the basic Child Tax Benefit, and the Earnings supplement (also called the Working income supplement). The basic child tax benefit consists of \$1,020 per child, plus \$75 for the third child and subsequent children. There is an additional \$213

for each child under 7 with no child care expenses. The benefit is reduced at family incomes over \$25,921 at a 5% rate (or 2.5% if only 1 child).

The Working Income Supplement was a maximum of \$500 per family. It started at earnings of \$3,750, reached the maximum at earnings of \$10,000, and was then reduced, reaching \$0 at family incomes of \$25,921.

In 1997, the Working Income Supplement was enriched. Instead of \$500 per family, the benefit was \$605 for the first child, \$405 for the second child, and \$330 for the third and subsequent children. It was phased in at family earnings of \$3,750, reached a maximum at \$10,000, and was phased out starting at family incomes of \$20,921. The reduction rates were 12.1% for families with 1 child, 20.2% for families with 2 children, and 26.8% for families with 3 or more children.

In 1998, the program was renamed the Canada Child Tax Benefit (CCTB). The basic benefit has the same level and structure of the Child Tax Benefit. The Working Income Supplement was replaced by the CCTB National Child Benefit Supplement. It is no longer dependent on earnings, and therefore is not phased in. Otherwise, it follows the same rules as the 1997 Working Income Supplement.

SPSM Implementation

The `txctc` function calculates the federal Child Tax Credit based on the number of children in a family and the net income of the family. Residency requirements are deemed to have been met in all cases. The function always allocates the Child Tax Credit to the mother unless one is not present in the nuclear family. The function only outputs a value for the federal child tax credit and this reflects the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txctc` function operates at the nuclear family level. It first calculates a local variable for the family's net income by adding the eldest member's net income and that of their spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are then obtained by multiplying the number of children in the nuclear family by the maximum benefit per child (`nfkids * CTCPC`). The maximum CTC is then reduced at the specified reduction rate (`CTCRR`) applied to family net income in excess of the CTC turndown (`CTCTD`). This reduction is performed using the `taxbak1` function. Finally the federal Child Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

When the `FCBEIE` flag is turned on, the Working Income Supplement has a different rate according to the number of children in the household, `FCBEIS1`, `FCBEIS2`, `FCBEIS3` and is also reduced at varying rates, `FCBERR1`, `FCBERR2`, `FCBERR3`. The enriched WIS is phased in starting at family incomes `FCBECI` and reaches its maximum at `FCBEMX`. The phase in rate is linear and depends again on the number of children in the family.

There was also a fix for the Quebec child tax benefits. The benefits (`QCBC3`) are now being assigned to the third and each additional child in a family.

Interpretation

Results obtained from the SPSM with respect to Child Tax Credit benefits differ from Revenue Canada administrative data. Overall the SPSM reports 101.9% more 1984 tax year benefits than does Revenue Canada for provincial Canada. However, the number of children for which the credit is paid is 99.6% of Revenue Canada's figures. One would expect the number of children on the SPSD to be low due to the non-coverage of persons residing on reservations and outside Canada. Thus there would seem to be a small deficit on the SPSD in the net income of families with eligible children.

Relation to Other SPSM Routines

The txctc function is called by drv. The function outputs one dollar value variable that is used in memo1 for reporting purposes.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| ACBC1 | Alberta Child benefit per child aged 0 - 6 |
| ACBC2 | Alberta Child benefit per child aged 7 - 11 |
| ACBC3 | Alberta Child benefit per child aged 12- 15 |
| ACBC4 | Alberta Child benefit per child aged 16- 17 |
| CTCERF | CTC child care expense reduction fraction |
| CTCINC | CTC family income scaling factor |
| CTCOPT | Child tax credit option |
| CTCPC | Child tax credit per child |
| CTCREF | CTC post-reform rules flag |
| CTCRR | Child tax credit reduction rate |
| CTCSUP | CTC young child supplement |
| CTCTD | Family income child tax credit turndown |
| CTCTUR | CTC take up rate table [benefit,rate] |
| FCBBAS | Basic child benefit (per child) |
| FCBECI | Child benefits earning supplement cut-in level |
| FCBEIE | Flag for WIS dependent on number of children |
| FCBEIS | Child benefits earned income supplement |
| FCBEIS1 | Enriched WIS for first child |
| FCBEIS2 | Enriched WIS for second child |
| FCBEIS3 | Enriched WIS for each additional child |
| FCBEMX | Earnings where WIS phase-in is at maximum |
| FCBERR | Child benefits earning supplement reduction rate |
| FCBERR1 | WIS reduction rate for families with 1 child |
| FCBERR2 | WIS reduction rate for families with 2 children |
| FCBERR3 | WIS reduction rate for families with 3+ children |
| FCBESR | Child benefits earned income supplement rate |
| FCBETD | Child benefits earning supplement turndown level |
| FCBLRG | Supplement for 3rd and subsequent kids |
| FCBRR | Multi-children family income reduction rate |

| | |
|-------------|---|
| FCBRRS | Single-child family income reduction rate |
| FCBTD | Federal child benefits family income turndown |
| FCBYNG | Supplement for children under age 7 |
| FCBYNGR | Child care expense reduction rate |
| PYINC | Deflator to calculate previous year income |
| QCBC1 | Quebec Child benefit for 1st child |
| QCBC2 | Quebec Child benefit for 2nd child |
| QCBC3 | Quebec Child benefit for 3rd child |
| QCBCFLG | Quebec Child benefit flag for Quebec calculation |
| methodology | |
| QCBCS | Quebec Child benefit supplement child aged 12- 17 |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idrand | Random numbers [array] |
| idsex | Sex |
| imcce | Child care expenses claimed on behalf of child |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--|
| imctc | Child tax credit |
| imfcben | Total Federal Child Benefits |
| imfcbenb | Total Federal Child Benefits Base |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imninc | No income flag |

txfstc Compute federal sales tax credit

SUMMARY

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales

Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

Program Description

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. It was implemented for the 1986 and subsequent tax years and is administered by Revenue Canada, Taxation, through the income tax system.

Upon application, through the filing of an income tax return, the federal sales tax credit is available to any individual who at the end of the year was married, had a child, or was over 18 years of age. Eligible individuals may claim the credit for themselves, their qualified relations, and one spouse. Individuals who are not subject to tax in Canada or who were confined to a prison or similar institution for a period of over six months in the year for which a claim is made may not claim the credit. A married couple may make only one claim.

Maximum family benefits are a function of the type and number of individuals in the family as well as the net income of the family. There are three individual credit maximums; one for the filer; one for a spouse with whom the filer resided at the end of the year; and one for any other person under the age of 18 at the end of the year who was a child of the individual or their spouse or was a person in respect of whom the individual or his spouse has claimed a personal deduction. Family net income is the net income, for tax purposes, of the head of the family and their spouse if present.

The maximum annual credit is payable if net family annual income is less than a specified level of income (called turndowns, exemptions, or benefit reduction levels). Families with net incomes above this reduction point are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum STC is zero. In 1986 the maximum credit was \$50 per adult and \$25 per dependent child, the reduction point was \$15,000 and the reduction rate was 5%. So, for example, a family with a spouse and two eligible children and a net income of \$17,000 would receive a tax credit of \$100.00. (The 1986 credit becomes zero for families of this type with a net income at or above \$18,000.)

SPSM Implementation

The `txfstc` function calculates the federal Sales Tax Credit based on the number, age, and type of persons in a family and the net income of the family. The function always allocates the Sales Tax Credit to the spouse with the higher net income in the nuclear family. The function outputs values for the federal Sales Tax Credit and these reflect the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txfstc` function operates at the nuclear family level. It first increments two local variables based on information on the eldest member of the nuclear family; one for the family's net income by adding the eldest member's net income; and one for the maximum family benefits by adding the maximum entitlement for a filer. The program next increments both local

variables for the spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are incremented last by multiplying the number of children in the nuclear family by the maximum benefit per child ($nfnkids * FSTCC$). The maximum STC is then reduced at the specified reduction rate (FSTCR) applied to family net income in excess of the STC reduction point (FSTCL). This reduction is performed using the `taxbak1` function. Finally the federal Sales Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

The federal sales tax credit is claimable at age 19. Parents may claim additional amounts for children aged 18 and younger. When calculating the GST credit, the income concept used is the previous year's incomes. The GST credit for a given year, say 1992, would represent the amounts paid from July 1992 to July 1993.

Interpretation

Results obtained from the SPSM with respect to Sales Tax Credit benefits have no valid Revenue Canada administrative data with which to compare the results. In general, the SPSM should be slightly low due to certain coverage issues. Further analysis will be required to correctly estimate who in a married couple is claiming the benefit. Take-up issues may also be relevant.

Relief for Heating Expenses

When `HEATRLFLG` is turned on, persons will receive a transfer from the federal government for the relief of heating expenses (`imheatrl`). In order to receive it, a person has to have received a GST credit (`imfstc`). Qualifying persons who live with a spouse or children receive `HEATFAM` and others receive `HEATSNG`.

Note that, as indicated in the federal economic statement 2000, in order to receive a check in 2001 a person had to qualify for the GST credit in January 2001 or June 2000. In the SPSM this is the modeled GST credit for 2000 (we assume that the entire check is given in June), based on 1999 income. In order to simplify the code, we used receipt of the 2001 GST credit as a proxy for receipt of the 2000 GST credit. Given the fact that there was no change in the rules governing the GST credit in these two years, this should have a small effect.

Relation to Other SPSM Routines

The `txfstc` function is called by `drv`. The function outputs one variable that is used in `memo1` for reporting purposes. The function makes use of (calls) the `taxbak1` function.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| FSTCC | Federal sales tax credit amount for dependant |
| FSTCF | Federal sales tax credit amount for filer |
| FSTCL | Federal sales tax credit reduction level |
| FSTCR | Federal sales tax credit reduction rate |
| FSTCS | Federal sales tax credit amount for spouse |
| GSTAC | GST additional credit amount |
| GSTAR | GST additional credit rate of net income |
| GSTASPFLAG | Maximum GST additional credit for single parents flag |
| GSTAXM | GST additional credit exemption |
| GSTCTUNC | GST credit take up by number of children |
| GSTFLAG | GST credit activation flag |
| HEATFAM | Federal relief for heating expenses for families |
| HEATRLFLG | Federal relief for heating expenses activation flag |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| INPUT VARIABLES: | |
| cfageeld | Age of eldest in census family |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idrand | Random numbers [array] |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| OUTPUT VARIABLES: | |
| imfstc | Federal sales tax credit |
| imheatrl | Federal relief for heating expenses |
| imninc | No income flag |

SUMMARY

When IMSHTOPT is set to 1, imputation of provincial paid rents and property taxes are calculated based on Greenbook data, when set to .2 they are based on FAMEX. The rent and property tax are imputed to head's of census families and census family spouses reporting positive net income.

CROSS REFERENCE**Function Description**

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| IMSHTOPT | Paid rent and property tax imputation option |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| fxio | I/O expenditure categories [array] |
| fxprtax | Property tax |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hnnin | Number of individuals in household |
| idcfrh | Relationship to census family head |
| idhhrh | Relationship to head of household |
| idproptx | Net property taxes paid (556) |
| idrentpd | Total rental payments (555) |

OUTPUT VARIABLES:

| | |
|----------|---------------------------|
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |

SUMMARY

This function calculates exemptions or tax credits for dependants as well as performing transfers of deductions between spouses. The algorithms included in this function are:

- calculate and allocate Tax Credits for Wholly Dependant Children
- calculate and allocate Spouse (or Married) Tax Credit
- calculate Spouse (or Married) Equivalent Tax Credit
- calculate Deductions Transferred from Spouse

Calculate and Allocate Tax Credits for Wholly Dependant Children

Before 1988, filers with dependant children were eligible to claim a personal exemption based upon the age and net income of the child. The exemption was calculated as a fixed amount (adjusted annually) minus a proportion of the child's income exceeding the reduction level. The amounts varied with the age of the child. Children under 18 years of age were treated differently from children 18 and over. This claim could be split between supporting parents or grandparents.

The June 1987 White Paper on Tax Reform proposed the conversion of the exemption on behalf of children under 18 into a tax credit and the elimination of the exemption for children 18 and over.

SPSM Implementation

(Note: this paragraph needs to be rewritten.) The amount of the tax credit on behalf of dependants under 18 is calculated by subtracting a proportion (YCTCR) of the child's Net Income (iminet) which exceeds the Reduction Level (YCTCT) from the Maximum Young Child Tax Credit (YCTC).

The amounts for all children are accumulated in ctxct which may later be adjusted by the calculation of the Spouse Equivalent Tax Credit. If a spouse is present, the one with the higher Net Income iminet receives the full amount of the tax credit for all dependent children (imtxcs) which is used to reduce Basic Federal Tax imbft in the function txcalc.

There is no tax credit for dependent children 18 and over. The model has no provision for a tax credit for infirm dependants aged 18 and over.

The model does not partition exemptions for wholly dependant children between spouses as is allowed in tax regulations. If it were partitioned, certain families would pay slightly lower taxes.

Spouse Tax Credit

Persons legally married during the taxation year are eligible to claim a non-refundable Spouse Tax Credit. The tax credit amounts to a fixed amount reduced by a proportion of the spouse's net income exceeding a specified level. Net income for this purpose includes the spouse's GIS/SPA benefits.

SPSM Implementation

The Spouse Tax Credit (immartxc) amounts to a fixed value (MXM) reduced by the amount of the spouse's Net Income (imdepni) exceeding the reduction level (MXMT). This is

calculated only for the spouse with the higher Net Income.

The Spouse Tax Credit (immartxc) is used to reduce Basic Federal Tax in the function txcalc.

Although the regulations allow special considerations for persons who changed marital status during the taxation year, they are not implemented in the model.

Equivalent-to- Spouse Tax Credit

Filers who are single, divorced, separated or widowed and supported a relative related by blood, marriage or adoption are eligible to claim that relative for the Equivalent-to-Spouse Tax Credit, amounting to a fixed value reduced by a proportion of the relative's net income exceeding a reduction level.

SPSM Implementation

The SPSM calculates the Equivalent-to-Spouse Tax Credit on behalf of dependant children, not other relatives who may be eligible. If a non-claimable dependant is present, he or she is chosen to be claimed for the credit. If there is no such dependant, then the one with the lowest Net Income (iminet) is claimed.

The credit is calculated as a fixed amount (EMXM) reduced by the amount of the dependant's Net Income (imdepni) exceeding the reduction level (EMXMT). If the credit is being claimed on behalf of a dependant who is also eligible for the Wholly Dependant Child Tax Credit, the amount claimed for that dependant is subtracted from the total Wholly Dependant Child Tax Credit and the total number of children claimed is reduced by one.

The Spouse Equivalent Tax Credit is added to Total Nontransferable Tax Credits (imtaxcr) which is subtracted from Basic Federal Tax (imbft) in the function txcalc.

Calculate supplement to the basic personal tax credit

The supplement to the basic personal tax credit announced in the 1998 federal budget is calculated by reducing the maximum supplement (BXMS) by a proportion (BXMSRR) of taxable income above the level of the basic exemption (BXM) plus the maximum supplement (BXMS). The supplement is added to the basic personal tax credit (imbtc). Persons who claim the married amount or equivalent-to-spouse amount get an additional supplement. This program was cancelled in the 1999 federal budget.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----|---------------------------------|
| BXM | Basic personal exemption/amount |
|-----|---------------------------------|

| | |
|--------|--|
| BXMS | Basic personal exemption supplement |
| BXMSPI | Basic personal exemption supplement phase in |
| BXMSRR | Basic personal exemption supplement reduction rate |
| EMXM | Married equivalent exemption/amount |
| EMXMT | Married equivalent exemption/amount turndown level |
| FNTCR | Federal non-refundable tax credit rate |
| MXM | Married exemption/amount |
| MXMT | Married exemption/amount turndown level |
| YCXM1 | Dependent child amount (1st child) |
| YCXM2 | Dependent child amount (2nd child) |
| YCXM3 | Dependent child amount (3rd ,etc.) |
| YCXMT | Dependent child exemption/amount turndown level |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imbtcs | Basic personal tax credit supplement |
| imcchc | Child's non-refundable credit |
| imcemc | Child's equivalent to married credit |
| imchclm | Number of dependent children claimed |
| imctxcs | Dependent children tax credits |
| imdepni | Dependant's net income |
| immartxc | Married tax credit claimed |

txinet Compute net income

SUMMARY

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures which are discussed in order in terms of the description of the tax measure and its SPSM implementation.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Calculate Taxable Dividends
- Calculate Taxable Capital Gains
- Calculate Total Income
- CPP/QPP Contributions Tax Credit

- Unemployment Insurance Contributions Tax Credit
- Tuition Fees Tax Credit
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

Program Description

Other Allowable Employment Expenses

Certain special employment expenses not claimable elsewhere are allowed.

According to the 1984 definition, these expenses include:

- employee's expenses for travel, office and wages to assistants,
- commission sales employees may claim certain expenses paid to earn their income,
- transport employees may deduct the cost of meals and lodging while away from home, and
- power saw operators may claim expenses incurred in operating the power saw.

This is a special deduction from employment income and is not available to most employees.

SPSM Implementation

The value for Other Allowable Employment Expenses (idalexp) already exists on the database. This value is derived from actual taxation statistics. For more details, please see the [Database Creation Guide](#). This value is multiplied by the parameter ALEXPP (Proportion of Other Allowable Expenses to Use as a Deduction) to obtain imalexp, the modeled amount for Other Allowable Expenses.

Calculate Taxable Capital Gains

Capital Gains arise when an individual sells a property for more than it originally cost. If a property is sold for less than it cost, a capital loss may be claimable.

Only a portion of Capital Gains received are considered taxable. Similarly only a portion of capital losses may be claimed as a loss. The value of idicapg represents the actual amount of the Capital Gain or Loss Allowed. Losses, in 1984, were limited to \$2,000. This represents the lower limit of the variable idicapg. Modeled Taxable Capital Gains or Losses imicapgt are calculated by multiplying idicapg by the Capital Gains Inclusion Rate (CAPGIR).

Calculate Taxable Dividends

To avoid double taxation of dividends earned in Canadian business, the dividends from taxable Canadian corporations are treated differently from other sources of income. Before taxation, these dividends are "grossed-up" or increased to an amount which approximates the underlying corporate tax already paid on these earnings. A Dividend Tax Credit is paid based on the grossed-up amount and approximated the corporate taxes already paid.

The gross-up tax credit system ensures that income earned by Canadian corporations and then distributed in the form of dividends bears the same amount of total tax as if the income were earned directly by the shareholders.

SPSM Implementation

Total Dividends Received is represented on the database by the variable `idivid`. The taxable amount (`imidivt`) which is added to total income is calculated by multiplying `idivid` by the Federal Dividend Gross-up Rate (FDGUR).

Calculation of Total Income

At this point, the SPSM is able to calculate a first approximation of total income for tax purposes. This is not a final value since Family Allowances cannot be allocated to the mother or father until the Net Income of both is known. This temporary value of Total Income (`itot`) is the sum of:

| | |
|------------------------|--|
| <code>idiemp:</code> | Earnings From Employment |
| <code>idisenf:</code> | Self-employment Earnings (Non-farm), optionally scaled by the parameter <code>FACTISENF</code> |
| <code>idisefm:</code> | Self-employment Earnings (Farm) |
| <code>idiint:</code> | Interest Income |
| <code>idioinv:</code> | Other Investment Income |
| <code>idicqp:</code> | CPP/QPP Benefits Received |
| <code>iditogv:</code> | Other Taxable Government Income |
| <code>idipens:</code> | Pension Income |
| <code>iditoth:</code> | Other Taxable Income |
| <code>imiuib:</code> | Modeled Unemployment Insurance Benefits Received |
| <code>imiotg:</code> | Modeled New Taxable Demogrants |
| <code>imioas:</code> | Modeled OAS Benefits |
| <code>imidivt:</code> | Modeled Taxable Amount of Dividends |
| <code>imicapgt:</code> | Modeled Taxable Capital Gains and Losses |

Calculate CPP/QPP Contribution Tax Credit

All Canadians aged 18 to 64 and in the labour force are covered by either the Canada Pension Plan (CPP) or the Quebec Pension Plan (QPP). The pension plans provide retirement benefits as well as survivor benefits for a widow or dependant when the contributor dies prematurely, a death benefit and disability benefits. The plans are publicly funded, based on contributions from all employed persons aged 18 to 70 with pensionable earnings.

Contributions to the Canada and Quebec Pension Plans are based on employment income and are usually made through payroll deductions. Self-employed persons make their contribution through the tax system, the amount of the contribution is added to federal taxes payable.

The amount contributed is not subject to taxation and is therefore either deducted from total income or treated as a tax credit.

In most cases, an employee and his or her employer will contribute the same amount to the employee's pension plan. Self-employed persons contribute a twice the rate of employees.

Although employees have their CPP/QPP contribution deducted from their paycheck, refunds for overpayment are made through the personal income tax system.

SPSM Implementation

CPP/QPP Contributions are calculated separately on employment and self-employment earnings. Employment earnings subject to contribution are calculated by subtracting the amount of exemptable earnings (CPPXM) from Earnings from Employment (*idiemp*). This amount cannot exceed the Maximum Earnings Subject to Contribution (YMPE minus CPPXM). Earnings Subject to Contribution are then multiplied by the CPP/QPP contribution rate (WSCF) to derive the amount of the contribution (*wscon*).

Contributions from self-employment earnings (*secon*) is a proportion (SECF) of Earnings from Employment (*idiemp*) plus Earnings from Self-employment (*idisenf* + *idisefm*) that are in excess of the Annual Exemption Level (CPPXM) and less than the year's Maximum Pensionable Earnings Level, less a multiple (WSCM) of contributions made on Earnings from Employment (*wscon*). WSCM is the ratio of the contribution rate on earnings from self-employment to the rate on earnings from employment.

The total CPP/QPP Contribution is the sum of the Contribution Payable on Earnings from Employment (*wscon*) plus the Contribution Payable on Earnings from Self-employment (*secon*).

There is no information in the database concerning the actual amount deducted through payroll deductions; therefore, refunds for overpayment cannot be calculated.

The CPP/QPP Contribution tax credit (*imcppctc*) is calculated as a proportion (FNTCR) of the total contributions (*imcqqpc*). The tax credit is applied in the function *txcalc*.

When CPPSEDEDFLG is turned on, a fraction (CPPSEDFRC) of a person's contributions to

the CPP/QPP in regards to their self employment earnings are treated as an exemption (imcppse) and is added to imdedft. The rest, along with the contributions on wages and salaries, can still be claimed as a tax credit (imcppct).

Unemployment Insurance Contributions

Unemployment Insurance is intended to provide short-term financial support to the unemployed. It also provides benefits for those suffering from extended sickness, for women leaving the labour force temporarily because of pregnancy and childbirth, and supplementary benefits to unemployed fishermen and to persons undertaking manpower training courses. The program is given its mandate by the Unemployment Insurance Act (1971). The act covers nearly all members of the labour force except self-employed persons and those who earn less than the minimum insurable earnings. The program is funded by employee and employer contributions as well as additional revenue from the consolidated revenue fund.

Contributions are calculated as a proportion of weekly earnings. Only earnings above the minimum insurable earnings and less than the maximum insurable earnings are subject to contribution.

Unemployment Insurance premiums are deducted from the employee's paycheck by the employer. Reimbursements for overpayment are made through the tax system. The amount contributed is not subject to tax. Before 1988, UI contributions were deducted from total income. The June 1987 White Paper on Tax Reform proposed the conversion of this deduction into a non-refundable tax credit.

Two major Employment Insurance Reforms were added, the difference in contributions, and the benefits repayable.

SPSM Implementation

The database contains no detail on an individual's weekly distribution of earnings throughout the year. Weekly earnings are estimated by dividing the annual Earnings from Employment (idiemp) by the Number of Weeks Worked (idlyww). This assumes that the earnings were evenly distributed throughout the year. It also assumes that the earner worked at least 20 hours during each week.

If average weekly earnings are less than $UIMINPCT * UIERNMAX$, no UI contributions are made. Otherwise, the annual UI Contribution (imuic) are calculated as a proportion (UIPF) of average weekly earnings not exceeding the Maximum Weekly Earnings Subject to Contribution (UIERNMAX), multiplied by the number of weeks worked.

The UI Contribution Tax Credit (imuictc) is calculated as a proportion (FNTCR) of the contributions. This tax credit is later applied to reduce Basic Federal Tax in the function txcalc.

When Employment Insurance is activated (UIEIOPT = 2), then the EI contributions (imuic) are calculated using the UI contribution rate on earnings (UIPF) with no weekly maximums and no exemptions for low income. The EI contribution refund (imuicrf) is then calculated

and subtracted from the contributions.

The method of calculating UI/EI benefit recovery (*imuibr*) is also changed when *UIEIOPT* is activated. When *UIEIREPOPT* is set to 1, it now depends on the amount of previous weeks of EI received. If employment insurance benefits (*imiuib*) have been received and net income is in excess of: (a) *UIBRA* for persons with previous EI receipt, or (b) *UIBRANR* for persons with little previous benefits or for persons not on regular EI claims; *UIEIRPR* is applied to the lower of (a) total EI benefits and (b) the excess net income up to a maximum percent of their total benefits (*UIEIBRP*), to calculate the repayment.

When *UIEIREPOPT* is set to 2, sickness, maternity, and parental benefits are exempt from benefit repayment. Persons who claim EI for the first time are also exempt from benefit repayments. For the rest, the repayment is equal to the *UIEIRPR* times the minimum of net income in excess of *UIBRANR* and EI benefits.

See *UIEIRPR*, *UIBRANR*, *UIEIBRP*, *UIBRA*, and *UIEINRT* for more details.

Tuition Fees

Tuition fees paid to an educational institution may be claimed as a tax credit by the student or may be transferred to a spouse or supporting parent.

SPSM Implementation

A value for Tuition Deduction Allowed in the base year (*idtuitn*) exists on the database. This value is imputed from income tax records (see the [*Database Creation Guide*](#)). To calculate the Tuition Tax Credit, *idtuitn* is multiplied by the Federal Non-Refundable Tax Credit Rate *FNTCR* and the result (*imtutxc*) is later applied as a tax credit in the function *txcalc*.

Assign Taxable Family Allowance

For tax purposes, Family Allowances are attributed to the person who claims a personal exemption (or post-reform, a tax credit) for the child. The model assumes that the exemptions are allocated to the spouse with the higher net income (*iminet*, excluding FA) if present. This is the spouse who would benefit most from claiming the children and, therefore, this is the one who also must claim Taxable Family Allowances.

Calculate Net Income

Net Income (*iminet*) is calculated as Total Income (*imitot*) minus All Deductions from Total Income (*imdedft*). *imdedft* is the sum of:

| | |
|------------------|--|
| <i>idrpp</i> : | Registered Pension Plan Contributions |
| <i>idrrsp</i> : | Registered Retirement Savings Plan Contributions |
| <i>iddues</i> : | Union and Professional Dues |
| <i>imiloss</i> : | Allowable Business Investment Loss |

idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions
imuic: optionally, UI Contributions
idtuin: optionally, Tuition Fees
imcce: optionally, Child Care Expense Deduction Allowed (calculated separately in function txcea)

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALEXPP | Proportion of other allowable employment expenses to use as deduction |
| CAPGIR | Capital gains inclusion rate |
| CPP60T64 | CPP/QPP Contributions Take up (60 - 64) by earnings with CPP income |
| CPPGT64 | CPP/QPP Contributions Take up (over 64) by earnings with CPP income |
| CPPLT60 | CPP/QPP Contributions Take up (under 60) by earnings with CPP income |
| CPPSEDEDFLG | CPP/QPP contribution deduction for self-employed earnings flag |
| CPPSEDFRC | CPP/QPP contribution deduction fraction for self-employed earnings |
| CPPXM | CPP/QPP exemptible earnings |
| FACTISENF | Scale-up factor for non-farm self-employment income |
| FARR | Family allowance repayment rate |
| FATBPI | Family allowance take-back phase in |
| FATD | Family allowance turndown income |
| FDGUR | Federal dividend gross-up rate |
| FNTCR | Federal non-refundable tax credit rate |
| NETOASFLG | Net the clawback from Old Age Security |
| OASRR | OAS reduction rate |
| OASTBPI | OAS take-back phase in |
| OASTD | OAS turndown income |
| REPNETFLAG | Social program repayments reduce net income flag |
| SECF | CPP/QPP contribution rate on self-employment earnings |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |
| UIBRP | UI benefit recovery portion (UI only) |

| | |
|------------|--|
| UIEIBRP | Maximum clawback under EI reform [Past Wks ben][Rate] (EI only) |
| UIEINRT | UI EI Non repeater level for higher clawback turndown (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIREF | EI contribution refund cut-in (EI only) |
| UIEIREFTK | EI contribution refund take up |
| UIEIREPOPT | EI Benefit repayment option (1=repeaters have higher rate,2=one rate)(EI only) |
| UIEIRPR | UI EI benefit clawback rate (EI only) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIMINPCT | Exemption limit (percent of maximum insurable earnings) (UI only) |
| UIPF | UI contribution rate on earnings (UI and EI) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| WSCF | CPP/QPP contribution rate on employment earnings |
| WSCM | Ratio of self-employed to employed contribution fraction |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|----------|--|
| hdprov | Province |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcarry | Carrying charges (221) |
| iddalimo | Alimony paid (220) |
| iddues | Union and professional dues (212) |
| idexplr | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idlyww | Weeks worked |
| idmovexp | Imputed moving expenses (219) |
| idothded | Other deductions from total income (232) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idtuitn | Tuition fees (320) |
| iduirank | Predicted ranked likelihood of getting UI |
| imiotg | Other taxable demogrants |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| nfineld | Eldest person in nuclear family [pointer] |
| nfnspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |
| ubcalpd | Benefits paid in calendar year |

| | |
|---------|---------------------------|
| ubeiwbp | Weeks of past EI benefits |
| ucbtyp | Claim type |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|----------|---|
| imalexp | Allowable employment expenses |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedft | Deductions from total income |
| imfar | Family allowance recovery |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imioas | OAS benefits |
| imitot | Total income |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imtfa | Taxable family allowances |
| imtutxc | Tuition tax credit |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |
| imuicrf | UI EI contribution refund |
| imuictc | UIC contributions tax credit |

txitax Compute taxable income and individual credits

SUMMARY

The process of computing taxable income is divided into two separate routines. Deductions and tax credits which are not dependent upon information from other members of the family (e.g., Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

The algorithms contained in txitax are:

- Basic Personal Tax Credit
- Age Tax Credit
- Pension Income Deduction
- Medical Expense Tax Credit, Charitable Donations Tax Credit
- Disability Tax Credit
- Education Tax Credit
- Capital Gains Deduction

- UI Benefit Repayment Payable
- Family Allowance and OAS Repayment Payable (optional)
- Employee Home Relocation Loan Deduction
- Stock Option Deduction

Basic Personal Tax Credit

The non-refundable Basic Personal Tax Credit is calculated by assigning the value of the parameter BXM (Basic Personal Tax Credit) to the variable imbtc (Modeled Basic Personal Tax Credit) which is applied to reduce Basic Federal Tax in the function txcalc.

Age Tax Credit

All Canadians who were 65 years of age or older on December 31st of the taxation year would be eligible to claim the Age Tax Credit.

When the Age Tax Credit is calculated, imatxc (Modeled Age Tax Credit) receives the value assigned to the parameter AXM. The function txcalc performs any applicable transfer of the tax credit from the spouse and applies the tax credit to reduce Basic Federal Tax.

Pension Income Tax Credit

Certain pension income from a pension plan or upon the death of a spouse qualifies for a Pension Income Tax Credit. The deduction amounted to the lesser of the maximum deduction (fixed at \$1,000) and eligible income. Any amount of this deduction not required to reduce taxable income to zero is transferable to the spouse.

The June, 1987 White Paper on Tax Reform proposed the conversion of this deduction into a tax credit amounting to a proportion of eligible income up to a maximum of \$170. This tax credit would also be transferable.

SPSM Implementation

The Modeled Pension Income Tax Credit (impentxc) is assigned the minimum of:

- a) qualified pension income (idipens) and
- b) the Maximum Allowable Tax Credit (YPNDL),
times the Tax Credit Rate (FNTCR).

Any portion of the Pension Income Tax Credit not required to reduce a filer's Basic Federal Tax to zero is transferable to the spouse. The transfer is calculated in the function txcalc.

Medical Expense Tax Credit

The filer is allowed a non-refundable tax credit for certain medical expenses paid on behalf of the filer, spouse or dependants. All medical expenses claimed require supporting proof to be allowed as a tax credit and only medical expenses in excess of 3% of net income are claimable.

SPSM Implementation

The value of Medical Expenses Allowed (immeda) is calculated as the value of the gross medical expenses from the database (idmedgro) less either MEDANF percent of net income or MEDALL, whichever is less. The Medical Expense Tax Credit (immedatc) is calculated as a proportion (FNTCR) of the value of Medical Expenses Allowed (immeda). The Medical Expense Tax Credit is applied to reduce Basic Federal Tax in the function txcalc.

Although medical expenses paid on behalf of dependants are claimable by either spouse, no transfers between spouses are made for this tax credit.

Charitable Donations Tax Credit

The filer is allowed a non-refundable tax credit on behalf of charitable donations and gifts to Canada or a province. SPSM Implementation

The database contains a value for gross charitable donations (idcharit). The allowable charitable donations (imchara) are calculated as the lesser of idcharit and CHATNF percent of net income. The value of gifts or donations to Canada, a province or a cultural institution are then added to imchara.

A two-tier, non-refundable Charitable Donation Tax Credit (imchartc) is calculated. Allowable Donations (imchara) up to a set amount (CHATL1) are converted at the first tax credit rate (CHATR1) and the remainder is converted at the second rate (CHATR2).

The Charitable Donations Tax Credit is a component of the total non-refundable tax credits used to calculate Basic Federal Tax in the function txcalc.

Disability Tax Credit

Disabled persons whose impairment has markedly restricted or is expected to restrict their activities of daily living for a continuous period of at least 12 months are eligible to claim a special Disability Tax Credit. SPSM Implementation

The Disability Tax Credit (imdisatc) is assigned the value of the parameter MAXDX (Maximum Disability Tax Credit) for filers with reported disability amounts for self (iddisslf) or other dependents (iddisoht). Any portion of the tax credit not required to reduce Basic Federal Tax to zero may be transferred to the spouse or a supporting parent in the function txcalc.

Education Tax Credit

The Education Tax Credit represents the amount that students with full-time attendance at a designated post-secondary institution may claim. The number of eligible months is multiplied by a maximum allowable amount per month. The filer may transfer to a spouse, parent or grandparent the part of the education tax credit that is not needed to reduce the federal income tax to zero.

SPSM Implementation

The Education Tax Credit (*imedtxc*) is calculated as the number of eligible months of education amount (*ideducm*) multiplied by the Education Tax Credit per Month (*EDXPM*). The function *txcalc* may transfer unused amounts of the tax credit to a parent or spouse.

Capital Gains Deduction

Since 1985, a deduction has been allowed on behalf of capital gains income. The Capital Gains Deduction is being phased in with an increasing annual deduction limit amounting to \$10,000 in 1985 and \$25,000 in 1986. The amount an individual may claim during his or her lifetime is limited to a fixed amount. These measures were introduced in the May, 1985 Budget Papers and subsequently modified in the June, 1987 White Paper on Tax Reform.

SPSM Implementation

The Capital Gains Deduction is calculated as the minimum of:

- a) the Annual Capital Gains Deduction Limit (The Annual Limit based on gross Capital Gains, *CAPGAL*, times the Capital Gains Inclusion Rate, *CAPGIR*, and
- b) Taxable Capital Gains (*imicapgt*) minus:
 - Allowable Business Investment Loss (*idcloss*)
 - Net Capital Losses of Other Years (*imiloss*)

The resultant deduction is added to Total Deductions from Net Income (*imdedfn*).

The database contains no information on the filer's previous Capital Gains Deduction and therefore, the lifetime limit cannot be applied.

Unemployment Insurance Benefit Repayment Payable

If an individual has received Unemployment Insurance Benefits and his or her Net Income exceeds a fixed amount (\$38,610 in 1986), a portion of the benefits must be repaid. This repayment is added to Federal Taxes Payable. The amount repaid becomes a deduction from Net Income.

SPSM Implementation

The amount repayable is a proportion (*UIBRP*) of the UI Benefits received (*imiuib*) or a proportion of Net Income exceeding the Repayment Level (*UIBRA*) whichever is less. The Repayment Amount (*imuibr*) is a proportion (*UIBRP*) of the lesser of:

- (a) *imiuib*: Modeled UI Benefits
- (b) *iminet* *UIBRA*: the amount by which Net Income exceeds the Repayment Level

The value of *imuibr* is added into the variable *imrepay* which accumulates modeled repayment amounts. *imrepay* is added to Total Deductions from Net Income (*imdedfn*).

Family Allowance and OAS Repayments

The SPSM includes optional algorithms which allow the analysis of certain modifications to Family Allowances and the Old Age Supplement. These algorithms are presented with the SPSD/M for illustrating a glass box application. Users may consult the *Programmer's Guide* for further details.

The Family Allowance Repayment is calculated if the parameter FARR (Family Allowance Repayment Rate) is non-zero. The repayment is calculated as the lesser of:

- a) a proportion (FARR) of family net income (the net income of the head plus the net income of the spouse) exceeding the Family Allowance Reduction Level (FATD), and
- b) Taxable Family Allowances Received (imtfa).

The OAS repayment is based on the filer's own Net Income and is computed as the lesser of:

- a) OAS Received (imioas), and
- b) a proportion (OASRR) of Net Income (iminet) exceeding the OAS Repayment Reduction Level (OASTD).

Neither the FA nor the OAS repayments are stored in separate variables. They are accumulated into the variable imrepay which is applied as a deduction from Net Income in the function txitax and is added to Taxes Payable in the function memo1.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AXM | Age amount |
| AXPI | Age amount phase in rate for 1994 and beyond |
| AXRR | Age amount credit reduction rate |
| AXTD | Age amount net income turndown |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CHATL1 | Charitable donations amount level 1 |
| CHATNF | Charitable donations maximum net income fraction |
| CHATR1 | Charitable donations tax credit rate 1 |
| CHATR2 | Charitable donations tax credit rate 2 |
| EDXPM | Education amount per month |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MEDALL | Medical allowance maximum lower limit |
| MEDANF | Medical allowance lower limit net income fraction |
| REPNETFLAG | Social program repayments reduce net income flag |
| YPNDL | Maximum pension income deduction/amount |
| INPUT VARIABLES: | |
| hnnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idcapgex | Capital gains exemptions (254) |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idclose | Allowable other years capital loss (253) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idemplo | Employee home relocation loan dedn (248) |
| idforavg | Forward averaging amount withdrawal (237) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idipens | Pension income (115) |
| idmedgro | Medical expenses, gross (330) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idstkded | Stock option deduction (249) |
| imicapgt | Capital gains (taxable) |
| iminet | Net income |
| imninc | No income flag |
| imrepay | Social Benefits Repayments |

OUTPUT VARIABLES:

| | |
|----------|---|
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imcapgex | Modelled capital gains deduction (254) |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchartc | Charitable donations tax credit |
| imdedfn | All deductions from net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |

txman Compute provincial taxes for Manitoba

SUMMARY

When MTXFLG is turned off, Manitoba Basic Provincial Tax (imbpt) is calculated as a proportion (MPTF) of Basic Federal Tax (imbft).

The Manitoba Surtax is calculated based on a series of family credits. The surtax is added to Basic Provincial Tax to derive Manitoba Tax (imtxp).

When the tax on taxable income flag is turned on (MTXFLG), a provincial tax table (MPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax).

Non-refundable tax credits are calculated using the non-refundable tax credit rate (MPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (MBXM) |
| impatxc | Age amount tax credit | (MAXM, MAXRR, MAXTD, MAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (MMXM, MMXMT, MEMXM, MEMXMT) |
| impcgtc | Caregiver tax credit | (MCGTC, MCGTCFLG, MCGTCTC, MCGTCTD, MCGTCTK) |
| impchrctc | Charitable donations | (MCHATL1, MCHATR1, MCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (MMAXDX) |
| impdtxc | Dividend tax credit | (MDTCR) |
| impedtxc | Education tax credit | (MEDXPM, MMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (MYPNDL) |
| imptutxc | Tuition Tax credit | (MMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using MAMTOPT.

The refundable learning tax credit (immanltc) is equal to MANLTCF times (the tuition amount (idtuitn) plus the education amount (imeducm * EDXPM) plus the education amounts transferred from a spouse or kids (imedrcv) minus the education amounts which have been transferred to a spouse or parents (imedtrf)). It is included in the refundable tax credits (imptc). Beginning in 1998, the credit is limited to MANLTMAX for each student.

The Manitoba labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Manitoba provincial credit is modelled as MLVCRT times the gross amount up to MLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Manitoba homeowner's school tax assistance was introduced in 1993 and is part of the total property tax credit (impptxtc). MSCHFLAG turns it on or off. In order to qualify for assistance, Manitoba residents must be homeowners and be older than MSCHAGE. The basic credit is MSCHBXM which is reduced by income over the turndown MSCHTD by a rate MSCHRR. The value of the benefit is also rounded (see MSCHRND). The benefit may not exceed school taxes paid (idmschpd) less the minimum threshold of MSCHMNTH. The school tax assistance is added to the basic property tax credit and applied against occupancy

costs in order to derive the total property tax credit (impptxtc).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| EDXPM | Education amount per month |
| MAMTOPT | Man. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| MAMTPCTF | Man. amt rate as pct of additional fed tax due to minimum tax |
| MAMTPCTM | Man. amt rate as pct of federal minimum tax amount |
| MAMTTX | Man. amt rate as tax on adjusted income |
| MANLTCF | Manitoba learning tax credit factor |
| MANLTMAX | Manitoba learning tax credit maximum amount per student |
| MAXM | Man. Age Amount |
| MAXPI | Man. Age Amount phase in rate for 1994 and beyond |
| MAXRR | Man. Age Amount credit reduction rate |
| MAXTD | Man. Age Amount net income turndown |
| MBXM | Man. Basic Personal Exemption/amount |
| MCAXM | Manitoba cost-of-living age credit |
| MCBXM | Manitoba cost-of-living basic credit |
| MCDISEX | Manitoba cost-of-living disability credit |
| MCEMXM | Manitoba cost-of-living married equivalent credit |
| MCFINCR | Manitoba cost-of-living family income reduction rate |
| MCGTC | Man. Caregiver Tax Credit |
| MCGTCFLG | Man. Caregiver Tax Credit activation flag |
| MCGTCTC | Man. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| MCGTCTD | Man. Caregiver Tax Credit Turn Down Income |
| MCGTCTK | Man. Caregiver tax credit take-up rate by income level [employment income,rate] |
| MCHATL1 | Man. Charitable Donations amount level 1 |
| MCHATR1 | Man. Charitable Donations tax credit rate 1 |
| MCHATR2 | Man. Charitable Donations tax credit rate 2 |
| MCMXM | Manitoba cost-of-living married credit |
| MCODISEX | Manitoba cost-of-living old disabled dependant credit |
| MCSAXM | Manitoba cost-of-living spouse age credit |
| MCSDISEX | Manitoba cost-of-living spouse disabled credit |
| MCYCXM | Manitoba cost-of-living young dependants credit |
| MDTCR | Man. dividend tax credit rate |
| MEDXPM | Man. Education Amount per month |
| MEMXM | Man. equivalent to married amount |
| MEMXMT | Man. equivalent to married turndown level |
| MHMASOPT | Manitoba homeowner assistance option (1=Model 2=database) |
| MLVCMAX | Maximum Man. labour-sponsored funds tax credit allowed |
| MLVCRT | Percent of Man. labour-sponsored funds cost allowed as credit |
| MMAXDX | Man. Maximum Disability deduction/amount |
| MMAXET | Man. maximum on transfer of education and tuition amount |

| | |
|----------|---|
| MMXM | Man. married amount |
| MMXMT | Man. married amount turndown level |
| MNITR | Manitoba net income tax rate |
| MPAXM | Manitoba property tax credit senior citizen credit |
| MPBXM | Manitoba property tax credit basic credit |
| MPFINCRR | Manitoba property tax credit family income reduction rate |
| MPMINC | Manitoba property tax credit minimum credit |
| MPMNTH | Manitoba property tax minimum threshold |
| MPNTCR | Man. provincial non-refundable tax credit rate |
| MPRIR | Manitoba property tax credit rental inclusion rate |
| MPTC | Manitoba political contribution table [total donations,donation allowed] |
| MPTCBEN | Maximum Manitoba political tax credit allowed |
| MPTF | Manitoba provincial tax fraction |
| MPTX | Man. tax table [taxable income,basic provincial tax] |
| MRAXM | Manitoba tax reduction age credit |
| MRBXM | Manitoba tax reduction basic credit |
| MRDISEX | Manitoba tax reduction disability credit |
| MREMXM | Manitoba tax reduction married equivalent credit |
| MRMXM | Manitoba tax reduction married credit |
| MRODISEX | Manitoba tax reduction old disabled dependant credit |
| MRSAXM | Manitoba tax reduction spouse age credit |
| MRYCXM | Manitoba tax reduction young dependants credit |
| MSAXM | Manitoba surtax age credit |
| MSBXM | Manitoba surtax basic credit |
| MSCHAGE | Manitoba school tax minimum age |
| MSCHBXM | Manitoba school tax basic amount |
| MSCHFLAG | Manitoba school tax assistance activation flag |
| MSCHMNTH | Manitoba school tax minimum threshold |
| MSCHRND | Manitoba school tax assistance rounding unit |
| MSCHRR | Manitoba school tax reduction rate |
| MSCHTD | Manitoba school tax turndown |
| MSDISEX | Manitoba surtax disability credit |
| MSEMXM | Manitoba surtax married equivalent credit |
| MSMXM | Manitoba surtax married credit |
| MSODISEX | Manitoba surtax old disabled dependant credit |
| MSSAXM | Manitoba surtax spouse age credit |
| MSYCXM | Manitoba surtax young dependants credit |
| MTCINCFL | Manitoba tax credit income definition flag |
| MTRNIO | Manitoba tax reduction net income offset |
| MTXFLG | Man. tax on taxable income activation flag |
| MYPNDL | Man. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdtenur | Tenure |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |

| | |
|----------|---|
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idmschpd | Manitoba school taxes paid |
| idothpe | Other dependant exemptions (305) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imatxc | Age tax credit |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imstxcrt | Tax credits transferred from spouse |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------|
| imbpt | Basic provincial tax |
| immanltc | Manitoba learning tax credit |
| immhmas | Manitoba Homeowners Assistance |

| | |
|-----------|---|
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impptxtc | Provincial Property tax tax credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impттxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnb Compute provincial taxes for New Brunswick

SUMMARY

When BTXFLG is turned off, the basic Provincial Tax (imbpt) for New Brunswick is simply a proportion (BPTF) of Basic Federal Tax (imbft).

The 2000 budget announced that New Brunswick would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (BTXFLG), a provincial tax table (BPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (BPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|---------|-----------------------|----------------------|
| impbtc | Basic amount | (BBXM) |
| impatxc | Age amount tax credit | (BAXM, BAXRR, BAXTD, |

| | | |
|-----------|--|--|
| | | BAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (BMXM, BMXMT, BEMXM, BEMXMT) |
| impcgtc | Caregiver tax credit | (BCGTC, BCGTCFLG, BCGTCTC, BCGTCTD, BCGTCTK) |
| impchrctc | Charitable donations | (BCHATL1, BCHATR1, BCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (BMAXDX) |
| impdtxc | Dividend tax credit | (BDTCR) |
| impdtxc | Education tax credit | (BEDXPM, BMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (BYPNDL) |
| imptutxc | Tuition Tax credit | (BMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using BAMTOPT.

The New Brunswick labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The New Brunswick provincial credit is modeled as BLVCRT times the gross amount up to BLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Child Tax Benefit

When NBCTBFLG is assigned a value of 1, the New Brunswick Child Tax Benefit calculation is activated. imnbcben is the total benefits received under the New Brunswick Child Benefits program announced in the 1997 New Brunswick Budget and commencing in April 1997. A first component is the base amount, imnbcbb, which is calculated as the base amount per child, NBCBBAS, times the number of children. The level of benefit is reduced, based on family income, at a rate NBCBRRS for families with only one child, and at rate NBCBRR for the others.

If the family gross employment income is higher than a threshold, NBCBECI, then the maximum supplement is NBCBEIS. The supplement is reduced at a rate NBCBESR for each \$ of employment income exceeding the threshold FCBECI. If the family income is higher than NBCBETD then the supplement is reduce at a rate NBCBERR. The final value of the work income supplement is stored in imnbwis.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BAMTOPT | N.B. alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| BAMTPCTF | N.B. amt rate as pct of additional fed tax due to minimum tax |
| BAMTPCTM | N.B. amt rate as pct of federal minimum tax amount |
| BAMTTX | N.B. amt rate as tax on adjusted income |
| BAXM | N.B. Age Amount |
| BAXPI | N.B. Age Amount phase in rate for 1994 and beyond |
| BAXRR | N.B. Age Amount credit reduction rate |
| BAXTD | N.B. Age Amount net income turndown |
| BBXM | N.B. Basic Personal Exemption/amount |
| BCGTC | N.B. Caregiver Tax Credit |
| BCGTCFLG | N.B. Caregiver Tax Credit activation flag |
| BCGTCTC | N.B. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| BCGTCTD | N.B. Caregiver Tax Credit Turn Down Income |
| BCGTCTK | N.B. Caregiver tax credit take-up rate by income level [employment income,rate] |
| BCHATL1 | N.B. Charitable Donations amount level 1 |
| BCHATR1 | N.B. Charitable Donations tax credit rate 1 |
| BCHATR2 | N.B. Charitable Donations tax credit rate 2 |
| BDCR | N.B. dividend tax credit rate |
| BEDXPM | N.B. Education Amount per month |
| BEMXM | N.B. equivalent to married amount |
| BEMXMT | N.B. equivalent to married turndown level |
| BLVCMAX | Maximum N.B. labour-sponsored funds tax credit allowed |
| BLVCRT | Percent of N.B. labour-sponsored funds cost allowed as credit |
| BMAXDX | N.B. Maximum Disability deduction/amount |
| BMAXET | N.B. maximum on transfer of education and tuition amount |
| BMXM | N.B. married amount |
| BMXMT | N.B. married amount turndown level |
| BPNTCR | N.B. provincial non-refundable tax credit rate |
| BPTC | New Brunsw. political contribution table [total donations,donation allowed] |
| BPTCBEN | Maximum New Brunswick political tax credit allowed |
| BPTF | New Brunswick provincial tax fraction |
| BPTX | N.B. tax table [taxable income,basic provincial tax] |
| BSCI | New Brunswick provincial tax above which surtax applies |
| BSF | New Brunswick provincial surtax rate |
| BTRBAS | Base N.B. low income tax reduction |
| BTRRR | N.B. low income tax reduction Reduction Rate |
| BTRSP | N.B. low income tax reduction for spouse or equivalent-to-spouse |
| BTRTD | N.B. low income tax reduction Turndown |
| BTXFLG | N.B. tax on taxable income activation flag |
| BYPNDL | N.B. Pension Income Deduction Amount |

| | |
|----------|---|
| CTCINC | CTC family income scaling factor |
| NBCBBAS | NB Basic child benefit (per child) |
| NBCBECI | NB Child benefits earning supplement cut-in level |
| NBCBEIS | NB Child benefits earned income supplement |
| NBCBERR | NB Child benefits earning supplement reduction rate |
| NBCBESR | NB Child benefits earned income supplement rate |
| NBCBETD | NB Child benefits earning supplement turndown level |
| NBCBPI | NB Child benefits phase-in rate |
| NBCBRR | NB Multi-children family income reduction rate |
| NBCBRRS | NB Single-child family income reduction rate |
| NBCBTD | NB child benefits family income turndown |
| NBCTBFLG | NB child benefit activation flag |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinseld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtsg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |

| | |
|-----------|--|
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnbcbb | NB child tax Benefits base amount |
| imnbcben | Total NB child tax Benefits |
| imnbwis | NB child tax Benefits WIS |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transferred |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnfld Compute provincial taxes for Newfoundland

SUMMARY

When NTXFLG is turned off, Basic Provincial Tax (imbpt) for Newfoundland is simply a

proportion (NPTF) of Basic Federal Tax (imbft).

For Newfoundland, the SPSM calculates provincial surtax (impsur) as NSF percent of provincial taxes (imtxp) above the level NSCI.

The 2000 budget stated that Newfoundland would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (NTXFLG), a provincial tax table (NPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (NPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (NBXM) |
| impatxc | Age amount tax credit | (NAXM, NAXRR, NAXTD, NAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (NMXM, NMXMT, NEMXM, NEMXMT) |
| impcgtc | Caregiver tax credit | (NCGTC, NCGTCFLG, NCGTCTC, NCGTCTD, NCGTCTK) |
| impchrctc | Charitable donations | (NCHATL1, NCHATR1, NCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (NMAXDX) |
| impdtxc | Dividend tax credit | (NDTCR) |
| impedtxc | Education tax credit | (NEDXPM, NMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (NYPNDL) |
| imptutxc | Tuition Tax credit | (NMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using NAMTOPT.

A new refundable sales tax credit was modeled and added to the provincial tax credit (imptc). Similar to the federal credit, it allows for NSTCA dollars for each adult, NSTCC dollars for each child, and it reduced starting at family incomes over NSTCL at a rate of NSTCR.

Newfoundland and Labrador Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget. The Newfoundland and Labrador Child Benefit (imncb) is a tax-free monthly payment to help low-income families with the cost of raising children under age 18. Benefits from this program are combined with the Canada Child Tax Benefit into a single monthly payment. The program was implemented in July 1999.

SPSM Implementation

This benefit is turned by NCBFLG. Under the Newfoundland and Labrador Child Benefit program, you may be entitled to receive a benefit of NCB1 for the first child, NCB2 for the second child, NCB3 for the third child, and NCB4 for each additional child. The benefit is reduced when net family income is greater than NCBTD and is completely phased out when net family income is at least NCBPO. The benefit (imncb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| NAMTOPT | NFLD alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| NAMTPCTF | NFLD amt rate as pct of additional fed tax due to minimum tax |
| NAMTPCTM | NFLD amt rate as pct of federal minimum tax amount |
| NAMTTX | NFLD amt rate as tax on adjusted income |
| NAXM | NFLD Age Amount |
| NAXPI | NFLD Age Amount phase in rate for 1994 and beyond |
| NAXRR | NFLD Age Amount credit reduction rate |
| NAXTD | NFLD Age Amount net income turndown |
| NBXM | NFLD Basic Personal Exemption/amount |
| NCB1 | Nfld. child benefit for first child |
| NCB2 | Nfld. child benefit for second child |
| NCB3 | Nfld. child benefit for third child |
| NCB4 | Nfld. child benefit for 4th and subsequent child |
| NCBFLG | Newfoundland child benefit activation flag |
| NCBPI | Nfld. child benefit program phase in |
| NCBPO | Nfld. child benefit family income phase out |
| NCBTD | Nfld. child benefit family income turndown |
| NCGTC | NFLD Caregiver Tax Credit |
| NCGTCFLG | NFLD Caregiver Tax Credit activation flag |
| NCGTCTC | NFLD Caregiver tax credit take-up rate by age of elderly [age,rate] |
| NCGTCTD | NFLD Caregiver Tax Credit Turn Down Income |
| NCGTCTK | NFLD Caregiver tax credit take-up rate by income level [employment income,rate] |
| NCHATL1 | NFLD Charitable Donations amount level 1 |
| NCHATR1 | NFLD Charitable Donations tax credit rate 1 |
| NCHATR2 | NFLD Charitable Donations tax credit rate 2 |
| NDTCR | NFLD dividend tax credit rate |
| NEDXPM | NFLD Education Amount per month |
| NEMXM | NFLD equivalent to married amount |
| NEMXMT | NFLD equivalent to married turndown level |
| NHEATFLG | Newfoundland home heating fuel rebate activation flag |

| | |
|----------|---|
| NHEATREB | Newfoundland home heating fuel rebate amount |
| NLVCMAX | Maximum NFLD labour-sponsored funds tax credit allowed |
| NLVCRT | Percent of NFLD labour-sponsored funds cost allowed as credit |
| NMAXDX | NFLD Maximum Disability deduction/amount |
| NMAXET | NFLD maximum on transfer of education and tuition amount |
| NMXM | NFLD married amount |
| NMXMT | NFLD married amount turndown level |
| NPNTCR | NFLD provincial non-refundable tax credit rate |
| NPTC | Newfoundland political contribution table [total donations, donation allowed] |
| NPTCBEN | Maximum Newfoundland political tax credit allowed |
| NPTF | Newfoundland provincial tax fraction |
| NPTX | NFLD tax table [taxable income, basic provincial tax] |
| NSCI | Newfoundland provincial tax above which surtax applies |
| NSCI2 | Newfoundland provincial surtax level 2 |
| NSF | Newfoundland provincial surtax rate |
| NSF2 | Newfoundland provincial surtax rate 2 |
| NSTCA | NFLD sales tax credit amount for adults |
| NSTCC | NFLD sales tax credit amount for children |
| NSTCFLAG | NFLD sales tax credit activation flag |
| NSTCL | NFLD sales tax credit reduction level |
| NSTCR | NFLD sales tax credit reduction rate |
| NTXFLG | NFLD tax on taxable income activation flag |
| NYPNDL | NFLD Pension Income Deduction Amount |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfageeld | Age of eldest in census family |
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| fxio | I/O expenditure categories [array] |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |

| | |
|----------|---|
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| imigist | GIS provincial top-up |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imncb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |

impuictc Prov UI/EI contributions tax credit
 imtxp Provincial income tax payable

txns Compute provincial taxes for Nova Scotia

SUMMARY

This function calculates provincial taxes and credits for Nova Scotia. The programs simulated are as follows:

- Basic provincial tax
- Two level surtax
- Family tax reduction
- Phamacare tax and tax credits
- Provincial foreign tax credit
- Provincial political tax credit
- Provincial labour-sponsored venture capital tax credit
- Stock savings plan tax credit
- Home ownership savings plan tax credit
- Direct Assistance

Basic Provincial Tax

When VTXFLG is turned off, the algorithm first calculates basic provincial tax. Basic provincial tax (imbpt) for Nova Scotia is calculated as a proportion (VPTF) of Basic Federal Tax (imbft). Provincial taxes payable (imtxp) are then initialized to the value of basic provincial tax (imbpt).

The 2000 budget announced that Nova Scotia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (VTXFLG), a provincial tax table (VPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (VPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (VBXM) |
| impatxc | Age amount tax credit | (VAXM, VAXRR, VAXTD, VAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (VMXM, VMXMT, VEMXM, VEMXMT) |
| impcgtc | Caregiver tax credit | (VCGTC, VCGTCFLG, VCGTCTC, VCGTCTD, VCGTCTK) |
| impchrtc | Charitable donations | (VCHATL1, VCHATR1, |

| | | |
|-----------|-----------------------------|------------------|
| | | VCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (VMAXDX) |
| impdtxc | Dividend tax credit | (VDTCR) |
| impedtxc | Education tax credit | (VEDXPM, VMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (VYPNDL) |
| imptutxc | Tuition Tax credit | (VMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using VAMTOPT.

Provincial Surtax

The Nova Scotia surtax (impsur) is calculated as VSF percent of provincial taxes (imtxp) above the level VSCI plus VSF2 percent of provincial taxes above the level VSCI2. This amount is then added to provincial taxes payable (imtxp).

Family Tax Reduction

Program Description

The Nova Scotia tax reduction for low income individuals and families was introduced in 1994. To be eligible for the reduction a filer must be either over age 18, or have a spouse, or be a parent. This a family based tax reduction and only one person of a married couple may claim the reduction. The reduction has prescribed maximum amounts for the claimant, a spouse and children. There is an equivalent to married amount in cases where a claimant has filed for the federal equivalent to married non-refundable tax credit. The total of these amounts is then subject to a family income test.

SPSM Implementation

The calculation closely follows the structure on form T1C (N.S.). Individuals are first tested for eligibility on the basis of age (idage), marital status (idspoflg), and parental status. Parental status is only relevant for young (<19) families and single parents and so is tested using relation to head (idcfrh == 0) and presence of young children (nfnkids).

Persons without a spouse are assigned the basic amount (VTRBAS). Heads of census families with a spouse are assigned the basic and spouse amounts (VTRBAS + VTRSP). Equivalent to married amounts (VTREM) are given to spouseless heads who claim the federal married tax credit (immartxc). Amounts for children are given to the head of the census family. No child amounts are given with respect to children who triggered the equivalent to married amount.

The maximum deduction is then reduced by a fixed proportion (VTRRR) of the net income (iminet) of the head plus spouse (if present) in excess of the income base amount (VTRTD). This calculation is performed for persons without spouses or heads of census families with

spouses. The amounts for families with spouses are then assigned to the spouse with the higher net income. The tax reduction thus calculated is written to the non-refundable provincial tax reduction variable (imptr) and is used to decrease provincial taxes payable (imtxp).

Pharmacare Program

Program Description

Introduced in the 1995 provincial budget, the pharmacare program consists of an annual pharmacare premium payable by all seniors and a refundable tax credit for low income seniors.

SPSM Implementation

The pharmacare premium (VPHPREM) is assigned to the variable impeht for all Nova Scotians age 65 or older. This amount is then used to increase provincial taxes payable (imtxp).

The pharmacare refundable tax credit (impehtc) is calculated for all Nova Scotia seniors in receipt of GIS benefits (imigis). It is calculated as the basic tax credit (VPHTC) less a fixed proportion (VPHRR) of income (imgisinc) above a threshold (VPHTD). The pharmacare refundable tax credit (impehtc) is added to the variable for refundable provincial tax credits (imptc).

Starting in 1996, the tax credit no longer depended on whether or not a person received GIS. Instead, the credit is taxed back depending on family income. When VPHOPT is set to 1, the program depends on GIS receipt, and when it is set to 2 it depends on family income. There are now two turndowns, VPHTD for singles (also used in the original program) and VPHTDC for couples.

Provincial Foreign Tax Credit

The provincial foreign tax credit is imputed from the Greenbook (idprvftc). Only the amount of the foreign tax credit required to reduce provincial tax payable (imtxp) to zero is applied to the variable for non-refundable provincial tax credits (imnptc). Provincial tax payable (imtxp) is then reduced by the amount imnptc.

Political Contribution Tax Credit

Labour Sponsored Venture Capital Tax Credit

The Nova Scotia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Nova Scotia provincial credit is modeled as

VLVCRT times the gross amount up to VLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Direct Assistance

Program Description

Introduced in the 1997 provincial budget, direct assistance gives a benefit to low income Nova Scotians who would not be otherwise eligible for the tax reduction.

Beginning in 2000, direct assistance is only granted to families with children.

SPSM Implementation

Nova Scotia residents 19 and over are eligible for direct assistance if their income is below the cut-off (VDACI for families or VDASI for single individuals). The benefits are VDACB for families and VDASB for single individuals.

Differences between the SPSM estimate and reality will primarily come from two problems. Persons are eligible for Direct Assistance if they were full time students for 4 months or less or if they received Social Assistance for three months or less. In the SPSM model, anyone who is a full-time student in March (idestat==1) or anyone who receives Social Assistance was deemed ineligible for the program. This should lower estimates. But since people have to apply for the program, the take-up is probably not going to be 100% which will increase the SPSM estimate.

Nova Scotia Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget.

SPSM Implementation

The benefit is turned on by the flag VCBFLG, and families whose net income is less than VCBTD are eligible. They receive VCBBAS1 for their first child, VCBBAS2 for their second child, and VCBBAS3 for their third and each additional child. The benefit is completely phased out when the family net income reaches VCBPO. The benefit (imnscb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

CTCINC CTC family income scaling factor
 PYINC Deflator to calculate previous year income
 VAMTOPT N.S. alternative minimum tax option (1=none, 2=% fed, 3=fed
 adj inc, 4=% min amt)
 VAMTPCTF N.S. amt rate as pct of additional fed tax due to minimum
 tax
 VAMTPCTM N.S. amt rate as pct of federal minimum tax amount
 VAMTTX N.S. amt rate as tax on adjusted income
 VAXM N.S. Age Amount
 VAXPI N.S. Age Amount phase in rate for 1994 and beyond
 VAXRR N.S. Age Amount credit reduction rate
 VAXTD N.S. Age Amount net income turndown
 VBXM N.S. Basic Personal Exemption/amount
 VCBBAS1 NS child benefit for first child
 VCBBAS2 NS child benefit for second child
 VCBBAS3 NS child benefit for third or additional child
 VCBFLG NS child benefit activation flag
 VCBPO NS child benefit family income phase out
 VCBTD NS child benefit turndown
 VCGTC N.S. Caregiver Tax Credit
 VCGTCFLG N.S. Caregiver Tax Credit activation flag
 VCGTCTC N.S. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 VCGTCTD N.S. Caregiver Tax Credit Turn Down Income
 VCGTCTK N.S. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 VCHATL1 N.S. Charitable Donations amount level 1
 VCHATR1 N.S. Charitable Donations tax credit rate 1
 VCHATR2 N.S. Charitable Donations tax credit rate 2
 VDACB NS Direct assistance benefit for couples
 VDACI NS Direct assistance maximum income for couples
 VDAFLAG NS Direct assistance benefit flag
 VDAFWC NS Direct assistance benefit for families with children
 flag
 VDASB NS Direct assistance benefit for singles
 VDASI NS Direct assistance maximum income for singles
 VDTCR N.S. dividend tax credit rate
 VEDXPM N.S. Education Amount per month
 VEMXM N.S. equivalent to married amount
 VEMXMT N.S. equivalent to married turndown level
 VLVCMAX Maximum N.S. labour-sponsored funds tax credit allowed
 VLVCRT Percent of N.S. labour-sponsored funds cost allowed as
 credit
 VMAXDX N.S. Maximum Disability deduction/amount
 VMAXET N.S. maximum on transfer of education and tuition amount
 VMXM N.S. married amount
 VMXMT N.S. married amount turndown level
 VPHOPT Nova Scotia pharmacare premium option (1=GIS, 2=income)
 VPHPREM Nova Scotia pharmacare premium
 VPHRR Nova Scotia pharmacare tax credit reduction rate
 VPHTC Nova Scotia pharmacare refundable tax credit
 VPHTD Nova Scotia pharmacare tax credit turndown
 VPHTDC Nova Scotia pharmacare tax credit turndown for couples
 VPNTCR N.S. provincial non-refundable tax credit rate
 VPTC Nova Scotia political contribution table [total
 donations,donation allowed]
 VPTCBEN Maximum Nova Scotia political tax credit allowed

| | |
|--------|---|
| VPTF | Nova Scotia provincial tax fraction |
| VPTX | N.S. tax table [taxable income,basic provincial tax] |
| VSCI | Nova Scotia provincial tax above which surtax applies |
| VSCI2 | Nova Scotia provincial tax above which surtax applies (2nd level) |
| VSF | Nova Scotia provincial surtax rate |
| VSF2 | Nova Scotia provincial surtax rate (2nd level) |
| VTRBAS | Nova Scotia tax reduction basic amount |
| VTREM | Nova Scotia tax reduction equivalent to spouse amount |
| VTRKID | Nova Scotia tax reduction child amount |
| VTRRR | Nova Scotia tax reduction family income reduction rate |
| VTRSP | Nova Scotia tax reduction spouse amount |
| VTRTD | Nova Scotia tax reduction family income turndown |
| VTXFLG | N.S. tax on taxable income activation flag |
| VYPNDL | N.S. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idestat | Educational status |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtvg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imcemc | Child's equivalent to married credit |
| imchara | Allowable charitable donations and gifts (calculated) |

| | |
|----------|--|
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imgisinc | Individual's income for GIS/SPA reduction |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| idinspo | Person's spouse [pointer] |
| imbpt | Basic provincial tax |
| iminsda | NS Direct Assistance Program |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imnscb | Nova Scotia Child Benefit |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impeht | Provincial elderly health tax |
| impehtc | Provincial elderly health tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |

imtxp Provincial income tax payable

txont Compute provincial taxes for Ontario

SUMMARY

When OTXFLG is turned off, the Ontario Provincial Tax (imbpt) is calculated as a proportion (OPTF) of Basic Federal Tax (imbft). Added to Basic for some years is the Social Services Maintenance Tax which is a proportion (OSSMR) of Basic Provincial Tax (imbpt) exceeding the tax level (OSSML).

When the tax on taxable income flag is turned on (OTXFLG), a provincial tax table (OPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (OPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (OBXM) |
| impatxc | Age amount tax credit | (OAXM, OAXRR, OAXTD, OAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (OMXM, OMXMT, OEMXM, OEMXMT) |
| impcgtc | Caregiver tax credit | (OCGTC, OCGTCFLG, OCGTCTC, OCGTCTD, OCGTCTK) |
| impchrctc | Charitable donations | (OCHATL1, OCHATR1, OCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (OMAXDX) |
| impdtxc | Dividend tax credit | (ODTCR) |
| impdtxc | Education tax credit | (OEDXPM, OMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (OYPNDL) |
| imptutxc | Tuition Tax credit | (OMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using OAMTOPT.

Ontario provides a tax reduction for persons with a low taxable income. This reduction amounts to a proportion (OTRF) of taxable income (imitax) below the Ontario Tax Reduction Level (OMTY). This is subtracted from Basic Provincial Tax to derive Provincial

Tax Payable (imtxp).

The Ontario labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Ontario provincial credit is modeled as OLVCRRT times the gross amount up to OLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Employer Health Tax (imonteht) only applies to self-employed persons, and is calculated when OEHTFLAG is set to 1. When a person's income from self-employment is less than OEHTTD1, the Employer Health Tax is calculated using the rate OEHTRR1 on self-employment earnings over the exemption OEHTEX. When a person's income from self-employment is less than this value, but greater than OEHTTD1, the Employer Health Tax is calculated by adding OEHTRR1 times the difference between the first turndown (OEHTTD1) and the exemption rate (OEHTEX) and OEHTRR2 times the difference between earnings from self-employment and OEHTTD1. When self-employment earnings are greater than OEHTTD2, the Ontario Employer Health Tax is calculated as OEHTRR3 times earnings from self-employment which are greater than the exemption OEHTEX.

When the parameter OCCEAFLG is set to 1, the child care expense credit is calculated. The maximum amount of the benefit is calculated as the lower of either OCCEAPCT times actual child care expenses (imccea), or of a specified amount per child (OCCEAYNG) times the number of children age 6 and under in the census family. Maximum family benefits are then reduced by a proportion (OCCEARR) of family net income above the threshold (OCCEATD). The model assigns the imputed Child Care credit (imoccea) to the mother, if present.

When OCWISFLG is set to 1, the supplement for working families is calculated as a percentage (OCWISRR) of family income over a threshold OCWISTD. The percentage depends on the number of children under the age of 7 in the family. The Supplement cannot exceed OCCEAYNG times the number of children under the age of 7. In single parent families, the maximum cannot exceed OCWISSP times the number of children under the age of 7 as announced in the Ontario 2000 Budget. The benefit which is given is the maximum value of either the supplement or the childcare expenses credit.

The taxpayer dividend (imotxdv) announced in the 2000 Budget was implemented. It is equal to taxes paid in the previous year up to a maximum (OTXDVMAX). People who paid over 0\$ in taxes would get a minimum rebate of OTXDVMIN. The benefit is included in refundable tax credits of 2000. Since it is based on the previous year's taxes, the taxes are multiplied by OPYTAX in order to estimate the lagged effect.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CAPGIR | Capital gains inclusion rate |
| OAMTOPT | Ont. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| OAMTPCTF | Ont. amt rate as pct of additional fed tax due to minimum tax |
| OAMTPCTM | Ont. amt rate as pct of federal minimum tax amount |
| OAMTTX | Ont. amt rate as tax on adjusted income |
| OAXM | Ont. Age Amount |
| OAXPI | Ont. Age Amount phase in rate for 1994 and beyond |
| OAXRR | Ont. Age Amount credit reduction rate |
| OAXTD | Ont. Age Amount net income turndown |
| OBXM | Ont. Basic Personal Exemption/amount |
| OCAPGIR | Ont. Capital Gains Inclusion Rate |
| OCCEAFLG | Ont. Child Care Expense Credit activation flag |
| OCCEAPCT | Ont. Child Care Expense Credit qualifying percentage |
| OCCEARR | Ont. Child Care Expense Credit benefit reduction rate |
| OCCEATD | Ont. Child Care Expense Credit family income turndown |
| OCCEAYNG | Ont. Child Care Expense Credit allowance per child |
| OCGIRFLG | Ont. Capital Gains Inclusion Rate Activation Flag |
| OCGTC | Ont. Caregiver Tax Credit |
| OCGTCTFLG | Ont. Caregiver Tax Credit activation flag |
| OCGTCTC | Ont. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| OCGTCTD | Ont. Caregiver Tax Credit Turn Down Income |
| OCGTCTK | Ont. Caregiver tax credit take-up rate by income level [employment income,rate] |
| OCHATL1 | Ont. Charitable Donations amount level 1 |
| OCHATR1 | Ont. Charitable Donations tax credit rate 1 |
| OCHATR2 | Ont. Charitable Donations tax credit rate 2 |
| OCWISFLG | Ont. Child Care Working Income Supplement activation flag |
| OCWISRR | Ont. Child Care Working Income Supplement Rate [children][rr] |
| OCWISSP | Ont. Child Care Working Income Supplement maximum benefit for single parents |
| OCWISTD | Ont. Child Care Working Income Supplement minimum earnings |
| ODTCR | Ont. dividend tax credit rate |
| OEDXPM | Ont. Education Amount per month |
| OEHTDRR | OEHT - Income Tax Deduction Rate |
| OEHTEX | OEHT - Exemption |
| OEHTFLAG | OEHT - Ontario Employer Health Tax Flag |
| OEHTRR1 | OEHT - Rate 1 |
| OEHTRR2 | OEHT - Rate 2 |
| OEHTRR3 | OEHT - Rate 3 |
| OEHTTD1 | OEHT - Turndown 1 |
| OEHTTD2 | OEHT - Turndown 2 |
| OEMXM | Ont. equivalent to married amount |
| OEMXMT | Ont. equivalent to married turndown level |

| | |
|----------|---|
| OLVCMAX | Maximum Ont. labour-sponsored funds tax credit allowed |
| OLVCRT | Percent of Ont. labour-sponsored funds cost allowed as credit |
| OMAXDX | Ont. Maximum Disability deduction/amount |
| OMAXET | Ont. maximum on transfer of education and tuition amount |
| OMTY | Ontario tax reduction limit |
| OMXM | Ont. married amount |
| OMXMT | Ont. married amount turndown level |
| OPCRA | Ontario property tax college residence amount |
| OPNTCR | Ont. provincial non-refundable tax credit rate |
| OPOCAR | Ontario property tax percent of occupancy cost |
| OPOCM | Ontario property tax maximum occupancy cost |
| OPRIR | Ontario property tax credit rental inclusion rate |
| OPSMAX | Ontario property/sales tax credit maximum |
| OPTC | Ontario political contribution table [total donations,donation allowed] |
| OPTCBEN | Maximum Ontario political tax credit allowed |
| OPTCFLAG | Ontario political contribution refundable tax credit flag |
| OPTF | Ontario provincial tax fraction |
| OPTX | Ont. tax table [taxable income,basic provincial tax] |
| OPYTAX | Estimate of previous year's Ontario taxes |
| ORDOPT | Ontario tax reduction calculation option |
| OSPOCM | Ontario seniors property tax maximum occupancy cost |
| OSSML | Ontario surtax first cut-in level |
| OSSML2 | Ontario surtax second cut-in level |
| OSSMR | Ontario surtax first level rate |
| OSSMR2 | Ontario surtax second level rate |
| OSSTCP | Ontario seniors sales tax credit percent of income |
| OSTCB | Ontario sales tax credit basic credit |
| OSTCD | Ontario sales tax credit dependant credit |
| OSTCFLAG | Ontario seniors tax credit claimed flag |
| OSTCNIBA | Ontario seniors tax credit net income base amount |
| OSTCP | Ontario sales tax credit percent of income |
| OSTCS | Ontario sales tax credit spouse credit |
| OTCNIBA | Ontario tax credit net income base amount |
| OTRBPA | Ontario tax reduction basic personal amount |
| OTRDCA | Ontario tax reduction dependant child amount |
| OTRDDA | Ontario tax reduction disabled dependant amount |
| OTRF | Ontario tax reduction Ontario tax multiplier |
| OTRFP | Ontario tax reduction personal amount multiplier |
| OTXDVMAX | Maximum taxpayer dividend |
| OTXDVMIN | Minimum taxpayer dividend for people with non-zero taxes |
| OTXFLG | Ont. tax on taxable income activation flag |
| OYPNDL | Ont. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |

| | |
|----------|---|
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcapgex | Capital gains exemptions (254) |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnfn | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imccea | Child care expenses allowed |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdedft | Deductions from total income |
| imdepni | Dependant's net income |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfnkids | Number of children in nuclear family |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imiotax | Ontario taxable income |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| imonteht | Ontario Employers Health Tax (Self-employed) |
| imotxdv | Ontario Taxpayer Dividend |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgctc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txpei Compute provincial taxes for P.E.I.

SUMMARY

When PTXFLG is off, the Basic Provincial Tax (imbpt) for Prince Edward Island is simply a proportion (PTF) of Basic Federal Tax (imbft).

The 2000 budget announced that PEI would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (PTXFLG), a provincial tax table (PPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (PPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (PBXM) |
| impatxc | Age amount tax credit | (PAXM, PAXRR, PAXTD, PAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (PMXM, PMXMT, PEMXM, PEMXMT) |
| impcgtc | Caregiver tax credit | (PCGTC, PCGTCFLG, PCGTCTC, PCGTCTD, PCGTCTK) |
| impchrctc | Charitable donations | (PCHATL1, PCHATR1, PCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (PMAXDX) |
| impdtxc | Dividend tax credit | (PDTCR) |
| impedtxc | Education tax credit | (PEDXPM, PMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (PYPNDL) |
| imptutxc | Tuition Tax credit | (PMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using PAMTOPT.

The Prince Edward Island labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Prince Edward Island provincial credit is modeled as PLVCRT times the gross amount up to PLVCMAX. The credit cannot be more than provincial taxes (imtxp).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| PAMTOPT | P.E.I. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| PAMTPCTF | P.E.I. amt rate as pct of additional fed tax due to minimum tax |
| PAMTPCTM | P.E.I. amt rate as pct of federal minimum tax amount |
| PAMTTX | P.E.I. amt rate as tax on adjusted income |
| PAXM | P.E.I. Age Amount |
| PAXPI | P.E.I. Age Amount phase in rate for 1994 and beyond |
| PAXRR | P.E.I. Age Amount credit reduction rate |
| PAXTD | P.E.I. Age Amount net income turndown |
| PBXM | P.E.I. Basic Personal Exemption/amount |
| PCGTC | P.E.I. Caregiver Tax Credit |

PCGTCTCFLG P.E.I. Caregiver Tax Credit activation flag
PCGTCTC P.E.I. Caregiver tax credit take-up rate by age of elderly
[age,rate]
PCGTCTD P.E.I. Caregiver Tax Credit Turn Down Income
PCGTCTK P.E.I. Caregiver tax credit take-up rate by income level
[employment income,rate]
PCHATL1 P.E.I. Charitable Donations amount level 1
PCHATR1 P.E.I. Charitable Donations tax credit rate 1
PCHATR2 P.E.I. Charitable Donations tax credit rate 2
PDTCR P.E.I. dividend tax credit rate
PEDXPM P.E.I. Education Amount per month
PEMXM P.E.I. equivalent to married amount
PEMXMT P.E.I. equivalent to married turndown level
PLVCMAX Maximum P.E.I. labour-sponsored funds tax credit allowed
PLVCRT Percent of P.E.I. labour-sponsored funds cost allowed as
credit
PMAXDX P.E.I. Maximum Disability deduction/amount
PMAXET P.E.I. maximum on transfer of education and tuition amount
PMXM P.E.I. married amount
PMXMT P.E.I. married amount turndown level
PPNTCR P.E.I. provincial non-refundable tax credit rate
PPTC P.E.I. political contribution table [total
donations,donation allowed]
PPTCBEN Maximum P.E.I. political tax credit allowed
PPTF P.E.I. provincial tax fraction
PPTX P.E.I. tax table [taxable income,basic provincial tax]
PSCI P.E.I. provincial tax above which surtax applies
PSF P.E.I. provincial surtax rate
PTRBAS Base PEI low income tax reduction
PTRKID PEI low income tax reduction for dependent child
PTRRR PEI low income tax reduction Reduction Rate
PTRSP PEI low income tax reduction for spouse or equivalent-to-
spouse
PTRTD PEI low income tax reduction Turndown
PTXFLG P.E.I. tax on taxable income activation flag
PYPNDL P.E.I. Pension Income Deduction Amount

INPUT VARIABLES:

cfin First person in census family [pointer]
cfinch First child in census family [pointer]
cfineld Eldest person in census family [pointer]
cfinspo Spouse of eldest [pointer]
cfnchild Number of children (including 18+)
cfnpers Number of persons in census family
cfspoflg Census family contains married couple
efin First person in economic family [pointer]
efnpers Number of persons in economic family
hhncf Number of census families in household
hhnef Number of economic families in household
hhnin Number of individuals in household
hhnnf Number of nuclear families in household
idage Age
idcfrh Relationship to census family head
iddisab Disability status
iddisoth Disability amount for dependants (318)
iddisslf Disability amount for self (316)
ideducm Eligible months of education allowance

| | |
|----------|---|
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impdtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |

| | |
|----------|-------------------------------------|
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txprov Compute provincial taxes

SUMMARY

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax as in Newfoundland, Prince Edward Island, New Brunswick and Nova Scotia to a parallel of the federal system in Quebec. The other provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|--------|----------|
| hdprov | Province |
|--------|----------|

txqcalc Calculate income tax (Quebec)

SUMMARY

The txqcalc function calculates Quebec income tax for those individuals affected.

SPSM Implementation

Each census family is processed in turn. First, the basic provincial tax is computed via a table look-up for each person. Next the non-refundable tax credits are applied and unused credits are transferred between spouses, if appropriate. Subsequently, the 'family situation' and 'eligible income' are computed followed by the family tax reduction. After the family tax reduction has been calculated, the refundable property tax credit is computed.

Relation to Other SPSM Routines

txqcalc is called from within txprov and is in a subsidiary relationship to it. It does not call, and is not called by, any further functions.

Sales tax credit

The refundable sales tax credit (imqstr) is activated when QSTRFLAG is set to 1. The sales tax credit includes a base credit (QSTRBCRD), a credit (QSTRCHILD) is added for each child in the family. A second credit is added (QSTRFTP3) when no spouse is present and at least one dependent child is present. And finally another credit is added (QSTRFTP4) is for a person living alone or with at least one dependent. The credit is reduced by the income considered at a rate QSTRRR.

Housing of Parent tax credit

The Housing of Parent Tax Credit (imqhptc) calculation is activated by a flag (QHPTCFLG) and the base tax credit is QHPTC. An economic family is eligible to the imqhptc if the parent or grandparent of the head of the economic family, or his/her spouse is in the economic family. A take-up rate QHPTCTC based on age of the potential parent assigns individuals with idefrh=3 as a parent according to SCF data. A take-up rate QHPTCTK based on employment income select the appropriate number of beneficiaries according to Portrait de la fiscalité des particuliers au Québec.

Medical Expenses tax credit

The calculation of the refundable tax credit for medical expenses is activated by the flag QMRTCFLG. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). The tax credit is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. Eligibility is also limited to persons aged 18 and over with employment related earnings greater than QMEDRMIN. The medical expenses tax credit was introduced in 1997.

Dues as non-refundable tax credit

Starting in 1997, dues that where a deduction (iddues) in txqinet are a tax credit activated by the option QDUESOPT = 2. The value of the tax credit is imquetc. When QDUESOPT = 1, the dues are calculated in txqinet.

Tuition as non-refundable tax credit

Starting in 1997, tuition are considered as a deduction (idtuitn) in txqinet are now a tax credit activated by the option QTUIOPT = 2. The value of the tax credit is imquitc.

Family Allowance Tax Credit

The Quebec Family Allowance Tax Credit started in September 1997 but is implemented in the model starting 1998. The Quebec Family Allowance Tax Credit is a credit based on

previous year net family income and is non-taxable. The maximum credits vary with the number of children (QFATCMXK), and a supplement QFATCSUP is allocated to single parent families. For families with 4 kids and more, a supplement, QFATCK6, is added that varies with the number of kids and the number of kids under 6 years of age. The credit is the maximum until it reaches the first turn down income level with a specific reduction rate. The sequence of turn down incomes and reduction rates for single parent families are in QFATCSRR and for married couples in QFATCMRR. The turning point at QFATD4K is increased by QFATD4KI for each child over three. The benefits are reduced up to a minimum based on the number of children in the family (QFATCMNK) until the net family income reaches the last turning point in either QFATCSRR or QFATCMRR. At this last turning point the benefits are starting to reduce until they reach a minimum for payments of QFATCMIN. The program is implemented by copying the reduction rate table (QFATCSRR or QFATCMRR) into a temporary table. Then another temporary table assigns benefits and reduction rates to turning point incomes. Finally, the calculated benefits, imqfatc, are assigned to the women in the married couples or to the head of the single parent family. When activated, the take-up rate, QFATCTK, selects the assigned individual only if a random number is higher than the level specified by its total income. As a standard, QFATCTK is set to zero and all individuals are selected.

Alternative Minimum Tax

The Alternative Minimum Tax in Quebec started in 1986 and is now fully implemented. The calculation is activated by QAMTXFLG. The calculation of the income considered is slightly different than the Federal Alternative Minimum Tax because of difference in the rates considered for:

- . the inclusion of an amount of capital in the income considered (QCAPAMTX),
- . the dividing factor for the dividends (QDIVRAT), and
- . the allowable taxable portion the capital gains (QAMTINCRT - QCAPGIR).

The exemption level is QAMTX and the tax rate is QAMTTX. When the Alternative Minimum Tax is higher than the calculated tax using the standard algorithm, the difference is stored in imqamt. A flag, imqamtfg, identifies the individuals with the modified income tax. In 1995, the definition of income was changed and QAMTXREF indicates new components used in the calculation of taxable income.

When QAMTXSTKFLG is set to 1, the stock option deduction (imqstkdd) can be deducted when calculating the Quebec Alternative Minimum Tax.

Political Contribution

Starting in 1995, the political contribution is subject to two rates (QPCTR) instead of one (QPTC). The calculation procedure for 1995 and after is activated when QPCOPT is set to 2, otherwise it is the single rate that applies.

Labour-sponsored venture capital tax credit

The Quebec labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Quebec provincial credit is modeled as QLVCRT times the gross amount up to QLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Simplified tax program (low income credit)

The simplified tax program, which includes a flat tax credit, started in 1998. People were allowed to decide whether it was in their benefit to fill out the simplified or general tax form. A worksheet was provided in order to facilitate the choice.

The SPSM has implemented this tax system in the following way. When QSFOPT is set to 1, everyone in Quebec fills out the general tax form. This is the system which was in place prior to 1998. If QSFOPT is set to 2, then everyone fills in the simplified tax form. And when QSFOPT is set to 3, then an optimization procedure is run. In this scenario, an approximation of the worksheet which was provided with the 1998 tax form is calculated prior to the computation of taxes. People are assigned to either the general tax form (which includes all deductions) or the simplified tax form (which includes few deduction but an additional credit - QSFTC). The variable imqsfllg notes which form was chosen.

A person can transfer all of their extra credits and deductions to their spouse when both spouses fill out the simplified tax form. When using the general form, only a limited number of deductions can be transferred. Because the worksheet does not take into account all the inter-spouse complexities, the optimization procedure will tend to overstate taxes. While it is very accurate for single persons, it tends to maximize the individual's gain which is not necessarily the couple's gain. The model may therefore slightly overstate Quebec taxes.

At the same time, the number of income tax brackets in QTX is reduced from 5 to 3, the Surtax and the Tax Reduction are eliminated.

This tax change also signified the replacement of the age, living alone, and retirement credits with a combined family-based credit (imqcalr).

Improved Tax System for Self Employed Workers

The improved tax system for self employed workers in Quebec was added. This improved system was announced in the Quebec 2000 Budget to enable the increasing number of self-employed workers to benefit from the simplified tax form. This system will standardize the tax treatment applicable to that part of the contribution paid by a worker in respect of pensionable self-employed earnings that could be equated with an employer's contribution, and refrain from excluding a growing number of self-employed workers from the simplified tax system. When activated (QITSFSEW), it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new

deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine the contribution to the Health Services Fund payable by individuals. The calculated amount of the contributions to be converted is held in imqcpse.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. The value of the tax credit is calculated in txqitax.

Refundable Tax Credit for Medical Expenses

When QMRTCFLG is assigned to 1, the Quebec refundable tax credit for medical expenses (imqmedrc) is calculated for persons aged 18 and over who had employment related earnings greater than QMEDRMIN. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). It is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. When QMRTCFLG is assigned to 0, the calculation of the Quebec refundable tax credit for medical expenses is suppressed.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| PYINC | Deflator to calculate previous year income |
| QAMTCBX | Quebec Alternative Minimum Tax Calculate Basic Exemption |
| QAMTDIV | Quebec Alternative Minimum Tax Taxable Dividend Limit |
| QAMTINCRT | Quebec Alternative Minimum Tax Inclusion Rate |
| QAMTNEGTTI | Quebec Alternative Minimum Tax Allow Negative Taxable |
| Income | |
| QAMTRITC | Quebec Alternative Minimum Tax Retirement Income Credit |
| Deduction | |
| QAMTRPFLG | RRSP/RPP included in Quebec Alternative Minimum Tax |
| (1=include) | |
| QAMTTX | QAMTX tax rate |
| QAMTX | QAMTX exemption level |
| QAMTXFLG | Quebec alternative minimum tax, QAMTX, activation flag |
| QAMTXREF | Quebec alternative minimum tax 1995 reform indicator (flag) |

| | |
|------------------|--|
| QAMTXSTKFLG | QAMTX stock option deduction inclusion (1=stk can be deducted) |
| QAPFFLG | Quebec anti-poverty fund activation flag |
| QAPFRAT | Quebec anti-poverty fund rate |
| QAXM | Quebec age exemption/amount |
| QBXM | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPAMTX | QAMTX taxable capital ratio |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |
| QCCETCR | Refundable CCE credit rate [net income, % cce claimable] |
| QCRDFLG | Quebec income credit flag [1=if social contribution are deducted] |
| QDIVRAT | QAMTX dividends ratio |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEIA1 | Quebec eligible income family type #1 |
| QEIA2 | Quebec eligible income family type #2 |
| QEIA3 | Quebec eligible income family type #3 |
| QEIA4 | Quebec eligible income family type #4 |
| QEIA5 | Quebec eligible income family type #5 |
| QEIAA | Quebec eligible income aged amount |
| QFAMDED | Quebec Family related deduction on income in refundable credits |
| QFAMFLG | Quebec family income deduction activation flag |
| QFAMNETI | Quebec family allowance tax credit net income concept flag |
| QFAMRAT | Quebec family income rate |
| QFATCHIRR | QFATC High income reduction rate |
| QFATCHITD | QFATC High income turndown |
| QFATCK6 | QFATC Supplement for kids under 6 in large families |
| [#kids][#kids<6] | |
| QFATCK6PYR | QFATC supplement for kids under 6 phase out year proportion |
| QFATCK6YR | QFATC Supplement for kids under 6 phase out year |
| QFATCMIN | QFATC minimum benefit paid |
| QFATCMNK | QFATC Minimum benefits by kid rank |
| QFATCMRR | QFATC turn down income levels and reduction rate for married parents |
| QFATCMXK | QFATC Maximum benefits by kid rank |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFATCSRR | QFATC turn down income levels and reduction rate for single parent |
| QFATCSUP | Quebec Family Allowance Tax Credit Supplement for single parent |
| QFATCTK | QFATC Take-up rates by total income |
| QFATD4K | QFATC turn down income for 4 children and more |
| QFATD4KI | QFATC turn down income increase by child for 4 children and more |
| QFTRA1 | Quebec family tax reduction family type #1 |
| QFTRA2 | Quebec family tax reduction family type #2 |
| QFTRA3 | Quebec family tax reduction family type #3 |
| QFTRA4 | Quebec family tax reduction family type #4 |
| QFTRFLAG | Quebec family tax reduction activation flag |
| QFTRRR | Quebec family tax reduction reduction rate |

QGIFTOPT Quebec gifts as tax credit
 QHPTC Quebec Housing Parent Tax Credit
 QHPTCFLG Quebec Housing Parent Tax Credit activation flag
 QHPTCTC QHPTC take-up rate by age of elderly [age,rate]
 QHPTCTK QHPTC take-up rate by income level [employment income,rate]
 QHSCI Quebec surtax first cut-in level
 QHSCI2 Quebec surtax second cut-in level
 QHSF Quebec surtax first level rate
 QHSF2 Quebec surtax second level rate
 QITSFSEW Quebec improved tax system for self-employed worker
 activation flag
 QLAXM Quebec living alone exemption/amount
 QLVCMAX Maximum Quebec labour-sponsored funds tax credit allowed
 QLVCRT Percent of Quebec labour-sponsored funds cost allowed as
 credit
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDRATE Proportion of expenses allowed for refundable tax credit
 for medical expenses
 QMEDRMAX Maximum expenses allowed for Que. refundable tax credit for
 medical expenses
 QMEDRMIN Minimum earnings for Quebec refundable tax credit for
 medical expenses
 QMEDRRR Reduction rate for the Que. refundable tax credit for
 medical expenses
 QMEDRTD Turndown level for Que. refundable tax credit for medical
 expenses
 QMRTCFLG Quebec refundable tax credits for medical expenses
 activation flag
 QNTCR Quebec nominal tax credit rate
 QPCOPT Quebec political contribution option
 QPCTR Quebec political contribution tax rates
 QPTC Quebec political contribution table [total
 donations,donation allowed]
 QPTCBEN Maximum Quebec political tax credit allowed
 QPTRGISB Quebec property tax rebate GIS bonus
 QPTRMTP Quebec property tax minimum tax per person
 QPTRMTR Quebec property tax maximum tax for reduction
 QPTRRR Quebec property tax rebate reduction rate
 QPTRTF Quebec property tax fraction
 QRTRFLAG Quebec real estate rebate activation flag
 QSFDISFLAG Quebec Simplified Form Disability tax credit inclusion flag
 QSFOPT Quebec Simplified Form Option (1=general 2=simplified
 3=optimized)
 QSFTC Quebec Simplified Form tax credit
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QSTRBCRD Quebec sales tax rebate base credit
 QSTRCHILD Quebec sales tax rebate children dependent credit
 QSTRFLAG Quebec sales tax rebate activation flag
 QSTRFTP3 Quebec sales tax rebate family type 3 credit
 QSTRFTP4 Quebec sales tax rebate family type 4 credit
 QSTROPT Quebec sales tax rebate option=1 based on imigis, =2
 otherwise
 QSTRRR Quebec sales tax rebate reduction rate
 QTRBE Quebec Tax Reduction Breakeven
 QTROPT Quebec Tax Reduction calculation option 1=universal
 2=income tested

| | |
|------------|---|
| QTRP | Quebec tax Reduction proportion |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QYPDL | Quebec deduction limit for pension income |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfindeld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdnadult | Number of adults in household |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idnorth | Northern deductions (255) |
| idpartlo | Limited partnership losses (251) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsex | Sex |
| idspoflg | Person has spouse |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| immtot | Total income |
| improptx | Imputed property tax paid |
| imqalexp | Quebec allowable employment expenses |
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |

| | |
|----------|--|
| imqcchc | Quebec child's non-refundable credit |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdctc | Quebec dependent child tax credits |
| imqdedfn | Quebec all deductions from net income |
| imqdedft | Quebec deductions from total income |
| imqdistc | Quebec disability tax credit |
| imqduetc | Quebec Dues Tax Credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqidivt | Quebec taxable dividends |
| imqinet | Quebec net income |
| imqitax | Quebec taxable income |
| imqitot | Quebec total income |
| imqlatc | Quebec living alone tax credit |
| imqmeda | Quebec medical expenses allowed |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |
| imqritc | Quebec retirement income tax credit |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqstkdd | Quebec modelled Stock option deduction (249) |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| implvctc | Provincial labour-sponsored funds tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impsur | Provincial surtax |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| imqamt | Quebec Minimum Tax Amount |
| imqamtfg | Quebec Minimum Tax flag |
| imqapf | Quebec Anti-Poverty Fund |
| imqcalr | Quebec combined age, living alone, retirement credit |
| imqcceni | Quebec net income for refundable cce credit calculation |
| imqccetc | Quebec refundable child care expenses Tax Credit |
| imqdtxc | Quebec dividend tax credit |
| imqei | Quebec eligible income for tax reduction |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqfs | Quebec family situation (1-5) |
| imqftr | Quebec family tax reduction |
| imqhptc | Quebec Home Parent Tax Credit level |
| imqittr | Quebec income tested tax reduction |
| imqmedrc | Quebec refundable tax credit for medical expenses |
| imqptr | Quebec property tax refund |
| imqstr | Quebec sales tax refund |
| imqtca | Quebec tax credits applied |
| imqtct | Quebec tax credits transferable |
| imqtcts | Quebec tax credits transferred from spouse |
| imqtottc | Quebec total tax credits |

imtxp Provincial income tax payable

txqceea Compute child care expense allowance (Quebec)

SUMMARY

Since the amounts allowable for the Child Credit Expense Deduction differ slightly between the federal and Quebec provincial tax systems, it would be desirable to use the actual amount allowed for Quebec provincial tax purposes in the calculation of this deduction. The rules for eligibility exactly parallel the federal (see txceea). The algorithms are therefore essentially the same as the ones modeling the allocation of the federal Child Care Expense Deduction.

Unlike the federal algorithm, child care expenses are always treated as a deduction from total income. There is no option for treating them as a tax credit.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|----------|---|
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| QCCEAC1 | Quebec CCEA earned income fraction (1 child) |
| QCCEAC2 | Quebec CCEA earned income fraction (2 children) |
| QCCEAC3 | Quebec CCEA earned income fraction (3+ children) |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |

INPUT VARIABLES:

| | |
|----------|---|
| cfinch | First child in census family [pointer] |
| cfined | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |

OUTPUT VARIABLES:

| | |
|----------|---|
| imqccea | Quebec child care expenses allowed (dedn) |
| imqdedft | Quebec deductions from total income |
| imqinet | Quebec net income |

txqhstr Compute family-related deductions or credits (Quebec)

SUMMARY

This function parallels txhstr which performs similar calculations for federal taxes. The major difference is that the model does not incorporate the conversion of deductions into tax credits for the calculation of Quebec taxes. The algorithms include:

- calculate and allocate Personal Exemptions for Wholly Dependent Children
- calculate and allocate Married Exemption
- calculate Family Support Exemption (similar to federal Married Equivalent Exemption)
- calculate and transfer deductions from spouse

Calculate and Allocate Personal Exemptions for Wholly Dependent Children

Quebec filers with dependent children are eligible to claim an exemption based on the age and net income of the child. The exemption is calculated as a fixed amount minus a proportion of the child's net income exceeding the reduction level. The young child exemption is claimable on behalf of children aged 16 or 17. The old child exemption is claimable on behalf of children 18 and over but under 21, or over 20 and attending school full-time.

For taxation year 1986 and later, the definition of dependant's net income for the purpose of calculating the Exemption for Wholly Dependent Children requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The exemptions for all children are accumulated in cdeds which may later be adjusted by the calculation of the Family Support Exemption. If a spouse is present, the one with the higher Net Income (imqinet) receives the full amount of the exemption for all dependent children (imqcdeds) which is used to reduce Taxable Income (imqitax).

The model does not partition the exemptions for dependent children between spouses as is allowed by the tax regulations. This means that the tax burden of spouses with similar net incomes is not minimized.

In calculating the amount of the exemption, the model does not adjust the Net Income of the dependant to include certain non-taxable amounts of the Guaranteed Income Supplement (GIS), Spouse's Allowance (SPA) or Social Assistance as is specified in the Quebec tax regulations.

Calculate and Allocate Married Tax Credit

Persons legally married during the taxation year are eligible to claim a Married Tax Credit amounting to a fixed value reduced by the spouse's net income. The definition of spouse's net income for the purpose of calculating the Married Tax Credit requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The Married Tax Credit (imqmtc) is calculated only for the spouse with the lower Net Income (imqinet). It amounts to a fixed value (QMXM) reduced by the other spouse's Net Income. imqmtc is used to reduce the taxable income (imqitax) of the claiming spouse.

Note that the value of Net Income is not adjusted to include GIS, SPA, Social Aid and non-taxable amounts from international sources. GIS and SPA are calculated later in the model and the amounts are not available when this function is executed. Non-taxable amounts from international sources cannot be separated from other non-taxable income in the database.

Calculate Family Support Exemption

The definition of the Family Support Exemption is similar to the federal Married Equivalent Exemption. Filers who are single, divorced, separated or widowed and who supported a relative related by blood, marriage or adoption are eligible to claim that relative for a Family Support Exemption. This exemption amounts to a fixed value reduced by a proportion of the dependant's net income exceeding a reduction level.

The definition of the dependant's net income for the purpose of calculating the Family Support Exemption requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- Earnings from international sources which are tax exempt in Canada

SPSM Implementation

SPSM calculates the Family Support Exemption on behalf of dependent children and not other relatives who may be eligible.

The model attempts to make the claim on behalf of the dependant for whom a claim will benefit the filer most. The first choice for the exemption is a dependant who is not claimable for the child exemption, i.e., one who is 15 years of age or younger, or one who is over 21 and not attending an educational institution. If more than one dependant is eligible under these conditions, then the one with the lower Net Income (imqinet) is chosen. If there is no such dependant, the dependant claimable for the child exemption with the lowest Net Income is chosen.

If the Family Support Exemption is claimed on behalf of a dependant who is also claimable for the child exemption, the accumulated amount of the child exemption is adjusted by subtracting the amount claimed for that dependant.

The Family Support Exemption (imqmarex) is added to Total Personal Exemptions (imqpex) and subtracted from Taxable Income (imqitax).

Calculate and Transfer Deductions From Spouse

As in the federal case (see the function txhstr) Quebec allows the transfer of certain deductions from the spouse in the calculation of provincial income taxes. Deductions that may be transferred are:

- Age Exemption
- Interest and Dividend Income Deduction
- Deduction for Retirement Income
- Disability Deduction

Only the amount not required to reduce the spouse's taxable income to zero may be transferred. There is a limit to the amount of combined Interest and Dividend Income Deduction and Pension Income Deduction transferable which amounts to the unused proportion of the Married Exemption, i.e., if the full Married Exemption was claimed, no portion of these two deductions may be transferred.

SPSM Implementation

For the spouse with the lower Net Income (imqinet) the model calculates a value for potentially transferable deductions as the sum of:

- Age Exemption (imqaxm)
- Disability Deduction (imqdisex)

the lesser of:

- Total Pension Income Deduction (imqpendn) and Interest Income Deduction (imqintdn),
and
- the unused portion of the Married Exemption (QMXM minus imqmarex).

minus any amount required to reduce the spouse's Taxable Income to zero (imqinet minus QBXM).

The amount transferred from the spouse is subtracted from the filer's Taxable Income (imqitax) and added to Total Deductions from Net Income (imqdedfn). The spouse's Taxable Income and deductions are not adjusted because, if a transfer occurs, taxable income is zero by definition. The amounts recorded for the individual deductions (e.g., imqaxm, imqpendn) are not adjusted to reflect the transfer.

The value of Net Income used in the calculation of the transfer is not adjusted to include GIS, SPA and Social Aid income.

Calculate Living alone tax credit

The calculation of the living alone tax credit imqlatc is based on the value of the tax credit QLAXM adjusted by the nominal tax credit rate (QNTCR).

Starting in 1996, the calculation of the living alone tax credit is subject to turndown income (QLAXTD) and a reduction rate (QLAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QLAXPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqlatc is set to zero.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QLAXM | Quebec living alone exemption/amount |
| QLAXPI | Quebec living alone phase-in |
| QLAXRR | Quebec living alone reduction rate |
| QLAXTD | Quebec living alone turn down |
| QLPXM | Quebec lone parent exemption/amount |
| QMEDINC | Income definition for Que. refundable tax credit for medical expenses |
| QMXM | Quebec married exemption/amount |
| QNTCR | Quebec nominal tax credit rate |
| QPSXM | Quebec post-secondary exemption/amount |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QYCXM1 | Quebec dependent child #1 amount |
| QYCXM2 | Quebec dependent child #2 amount |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |

| | |
|----------|--|
| cfspoflg | Census family contains married couple |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idestat | Educational status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqinet | Quebec net income |
| imqitot | Quebec total income |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imqcchc | Quebec child's non-refundable credit |
| imqdctc | Quebec dependent child tax credits |
| imqdepni | Quebec dependant's net income |
| imqlatc | Quebec living alone tax credit |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |

txqinet Compute net income (Quebec)

SUMMARY

The Quebec provincial personal income tax system largely parallels the federal system: deductions and exemptions reduce total income to a taxable amount for which the basic provincial tax is calculated, then tax credits are applied to derive the amount of provincial tax payable. The function calculates net income for Quebec taxpayers and is similar to the process for calculating net income for federal income tax purposes.

SPSM Implementation

The algorithms for calculating Net Income for Quebec Provincial Income Tax Purposes are similar to the algorithms for calculating federal Net Income described under the function txinet. The major difference is that there are no options to treat deductions and personal exemptions as tax credits.

Whenever possible values already calculated in the computation of federal Net Income are applied here. The implementation of specific measures are described below.

Employment Expense Deduction

The calculation of the Quebec Employment Expense Deduction (imqdedia) is the same as the federal case. imqdedia is a proportion (QEAP) of Earnings from Employment (idiemp) up to a maximum deduction of QEAMAX. There is no flag controlling the calculation of

this value. If this deduction is to be eliminated, the values of QEAP and QEAMAX may be set to zero.

This value is added into Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Other Allowable Employment Expenses

The model assumes that the definition for Other Allowable Employment Expenses as applied to Quebec Provincial Taxes is the same as the federal definition (see txinet). The same value as used in the federal algorithm (idalexp) is used here. The value of idalexp may be scaled up or down by supplying an appropriate value for the parameter QALEXP (Proportion of Other Allowable Employment Expenses to Use as a Deduction).

The amount idalexp is added to Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Calculate Taxable Capital Gains

Capital Gains are treated as they are for federal taxes (see function txinet). Taxable Capital Gains for Quebec Provincial Tax Purposes (imqcapgt) is calculated as Total Capital Gains Received (idicapg) multiplied by the Capital Gains Inclusion Rate for Quebec Provincial Taxes (QDGUR).

Taxable Dividends

The treatment of dividends is similar to the federal algorithms described under the function txinet. Taxable Dividends for Quebec Provincial Taxes (imqdivt) are calculated as Total Dividends Received (idivid) multiplied by the Quebec Dividend Gross-up Rate (QDGUR).

Calculation of Total Income

As in the federal case (see function txinet), Total Income at this stage does not include Family Allowances which cannot be allocated until it is known whether the mother or the father have the higher net income. Total Income (imqitot) is calculated as the sum of:

| | |
|----------|---|
| idiemp: | Earnings From Employment |
| idisenf: | Self-employment Earnings (Non-farm), optionally scaled by the parameter FACTISENF |
| idisefm: | Self-employment Earnings (farm) |
| idiint: | Interest Income |
| idioinv: | Other Investment Income |
| idicqp: | CPP/QPP Benefits Received |
| iditogv: | Other Taxable Government Income |
| idipens: | Pension Income |
| iditoth: | Other Taxable Income |
| imiuib: | Modeled Unemployment Insurance Benefits Received |
| imiotg: | Modeled New Taxable Demogrants |
| imffa: | Modeled Family Allowance Benefits (optional) |

imioas: Modeled OAS Benefits
 imqidivt: Modeled Taxable Amount of Dividends for Quebec
 imqcapgt: Modeled Taxable Capital Gains and Losses for Quebec

The parameter QFAIFLAG controls whether federal Family Allowances are included in total income. If QFAIFLAG is set to one then imffa is added to imqitot. Also, Employment Expenses (imqdedia) and Other Allowable Employment Expenses (imqalexp) are added into All Deductions from Total Income (imqedft) and not subtracted from Total Income as in the federal algorithms.

Calculation of Net Income

All Deductions from Total Income (imdedft) is calculated as the sum of:

idrpp: Registered Pension Plan Contributions
 idrrsp: Registered Retirement Savings Plan Contributions
 iddues: Union and Professional Dues
 idtuin: optionally, Tuition Fees
 imqiloss: Allowable Business Investment Loss
 idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
 idcarry: Carrying Charges (interest on money borrowed to earn investment income)
 imcqppc: optionally, CPP/QPP Contributions (calculated in txinet)
 imuic: optionally, UI Contributions (calculated in txinet)
 imqceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txqceca)
 imqdedia: Employment Expenses
 imqalexp: Other Allowable Employment Expenses

Dues as a tax credit

The dues as a deduction is activated by the option QDUESOPT = 1. Starting in 1997, dues are used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Tuition as a tax credit

The tuition as a deduction is activated by the option QTUIOPT = 1. Starting in 1997, tuition is used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Improved Tax System for Self-Employed Workers

The improved tax system for self employed workers in Quebec was added. When activated by QITSFSEW, it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine

the contribution to the Health Services Fund payable by individuals.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CPPXM | CPP/QPP exemptible earnings |
| QALEXP | Quebec proportion of other allowable employment expenses to use |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCPPOPT | Quebec CPP/QPP contribution deduction/credit option [1=deduction,2=credit] |
| QDGUR | Quebec dividend gross-up rate |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEAMAX | Quebec maximum employment allowance deduction |
| QEAP | Proportion of earnings for Quebec employment allowance deduction |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QITSSEF | Quebec percentage of self-employ CPP/QPP contributions to convert to deduction |
| QMAXDX | Quebec maximum disability deduction/amount |
| QMEDANF | Quebec medical allowance lower limit net income fraction |
| QNTCR | Quebec nominal tax credit rate |
| QREPNETFG | Social program repayments reduce Quebec net income flag |
| QSFDISFLAG | Quebec Simplified Form Disability tax credit inclusion flag |
| QSFOPT | Quebec Simplified Form Option (1=general 2=simplified 3=optimized) |
| QSFSMXI | Quebec simplified form spouse maximum income for work sheet |
| QSFTC | Quebec Simplified Form tax credit |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QUICOPT | Quebec UI contributions deduction/credit option [1=deduction,2=credit] |
| WSCF | CPP/QPP contribution rate on employment earnings |
| YMPE | CPP/QPP maximum pensionable earnings |
| INPUT VARIABLES: | |
| hhnin | Number of individuals in household |
| idalexp | Other allowable employment expenses (229) |

| | |
|----------|--|
| idcarry | Carrying charges (221) |
| idcclos | Allowable other years capital loss (253) |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqpp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmedgro | Medical expenses, gross (330) |
| idmovexp | Imputed moving expenses (219) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imcqqpc | CPP/QPP contributions |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imiotg | Other taxable demogrants |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|--|
| imqalexp | Quebec allowable employment expenses |
| imqcapgt | Quebec taxable capital gains |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdedia | Quebec employment allowance |
| imqdedft | Quebec deductions from total income |
| imqduetc | Quebec Dues Tax Credit |

| | |
|----------|--|
| imqidivt | Quebec taxable dividends |
| imqiloss | Quebec Modelled Business investment losses (243) |
| imqinet | Quebec net income |
| imqitot | Quebec total income |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |

txqitax Compute taxable income and individual credits (Quebec)

SUMMARY

The process of computing taxable income for Quebec provincial taxes parallels that of the federal method. The following deductions are calculated and subtracted from Net Income (imqinet) to derive a tentative value for Taxable Income (imqitax):

| | |
|-----------|---|
| imqpendn: | Pension Income Deduction |
| imqintdn: | Interest Income Deduction |
| imqstddn: | Combined Medical Expense Deduction, Charitable Donations and Gifts to Canada or a Province |
| imqdisex: | Disability Deduction |
| imqdedfn: | Calculate Deductions from Net Income |
| imqaxm: | Age Exemption |
| imqexm: | Basic Exemption |

The computation of Taxable Income is completed by the function txqhstr which calculates exemptions for dependents and performs the transfer of deductions between members of the family.

Unlike the algorithms for the calculation of Federal Taxable Income, this function contains no options for converting these deductions into tax credits.

Pension Income Deduction

Depending upon the filer's age and the type of income, pension and retirement income may be eligible for the Pension Income Deduction. Any portion of this deduction not required to reduce a filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Modeled Pension Income Deduction (imqpendn) is calculated as the lesser of:

- a) Eligible Pension Income (idipens), and
- b) the Maximum Pension Income Deduction (QYPDL)

The Modeled Pension Income Deduction (imqpendn) is added to Total Deductions from Net

Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet).

The function txqhstr may transfer some amount of the Pension Income Deduction to the spouse. In this event, adjustments are made to imqdedfn and imqinet but not to imqpendn.

The model assumes that the value of idipens represents pension income eligible for this deduction. No further checks are made to ensure that the pension is of the appropriate type for the age of the filer.

After the reform in 1988, the non-refundable tax credit for pension income (imqritc) was the minimum of the base credit (QYPDL) and the eligible pension income (idipens). Starting in 1996, the calculated deduction for pension income (imqritc) based on the credit (QYPDL) is now subject to turn-down income (QYPTD) and a reduction rate (QYPRR) for pension income (idipens) in excess. In 1996 the reduction is only 50% and 100% after and it is controlled by the phase in variable QYPPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqritc is set to zero.

Interest Income Deduction

Interest income and dividends from Canadian sources are eligible for the Interest Income Deduction. This deduction amounts to the lesser of a fixed amount and the eligible income. Any portion of the deduction not required to reduce the filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Interest and Dividend Income Deduction (imqintdn) is calculated as the lesser of:

- a) the Maximum Interest and Dividend Income Deduction (QYIDL), and
- b) the sum of Interest Income (idiint) and Dividends (imqidivt) minus Carrying Charges (idcarry).

The deduction is added to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet) to derive Taxable Income (imqitax).

Since the Interest and Dividend Income Deduction is transferable between spouses, the function txqhstr may adjust the values of imqdedfn and imqitax. The value of imqintdn is not adjusted to reflect a transfer to the spouse.

Medical Expense and Charitable Donations Deduction

The filer is allowed a deduction for certain medical expenses, charitable donations and gifts to Canada or a province. In 1984, eligible medical expenses were deductible if they exceeded 3% of Net Income. Deductible charitable donations were limited to 20% of Net Income.

Before 1997, the calculation of the medical exemption in txqitax was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997,

(with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

SPSM Implementation

The database contains variables representing the federal Medical Expense Deduction Allowed (immeda) and combined Eligible Charitable Donations and Gifts to Canada or a Province (imchara). Net Medical Expenses represent medical expenses in excess of 3% of Net Income. Eligible Charitable Donations represent charitable donations not exceeding QCHATNF percent of Net Income.

The Combined Medical Expense and Charitable Donations Deduction (imqstddn) is calculated by taking the higher of:

- a) the Standard Deduction (QSTD), which may be zero, and
- b) the sum of Net Medical Expenses Allowed (imqmeda), Eligible Charitable Donations and Gifts to Canada or a Province (imqchara).

The variable imqstddn is added to Total Deductions from Net Income (imqdedfn) which is subsequently used to reduce Taxable Income.

Disability Deduction

As in the case of the federal income tax system, Quebec allows a special deduction for blind persons or persons confined to a bed or a chair. Any unused portion of the Disability Deduction may be transferred to a spouse or supporting parent.

SPSM Implementation

The database contains a value of the Disability Deduction Allowed on behalf of the filer (iddisslf), spouse or dependents (iddisoth). If either of these values are non-zero, the Quebec Disability Deduction (imqdisex) takes on the value assigned to the parameter QMAXDX. imqdisex is added in to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income.

Since this deduction is potentially transferable, the function txqhstr checks the relative net incomes of the head and spouse and performs any necessary transfers. The values of imqdedfn and imqitax are adjusted to reflect these changes. The value of imqdisex is not updated if the Disability Deduction is transferred to a spouse.

The model does not transfer unused portions of the Disability Deduction from dependant to parent. This probably does not cause a large error since the value on the database already takes into account amounts transferred from the spouse or dependents. The transfer between head and spouse is repeated in txqhstr because the estimate of Net Income is more accurate at this stage than during the database creation process.

Calculate Deductions from Net Income

The variable imqdedfn stores the value of All Deductions from Net Income. It is calculated

as the sum of:

| | |
|-----------|---|
| imqstdn: | Combined Medical Expense and Charitable Donations Deduction |
| imqintdn: | Interest and Dividend Income Deduction |
| imqpendn: | Pension Income Deduction |
| imqdisex: | Disability Deduction |
| imuibr: | Unemployment Insurance Benefits Reimbursed |
| idclos: | Capital Losses from Other Years |
| idnclos: | Non-capital Losses from Other Years |

The variable imqdedfn is subtracted from Net Income (imqinet) and may be adjusted in the function txqhstr if deductions are transferred between spouses.

The model does not include the Exemption for Members of a Religious Order, the Exemption for Dependents Aged 21 and Over Suffering from a Physical or Mental Infirmary, Deduction for a Home Relocation Loan, the Sociétés de placements dans l'entreprise québécois Deduction, or the Capital Gains Deduction.

Basic Exemption

Each filer claims a Basic Exemption which is subtracted from Net Income. The Amount of the Basic Exemption for Quebec Provincial Income Taxes is increased occasionally.

SPSM Implementation

For all filers with income, the Quebec Basic Exemption (QBXM) is added to the variable imqexm which accumulates personal exemptions. imqexm is subsequently added to imqpex which accumulates all exemptions and is later subtracted from Net Income imqinet.

Age Exemption

All filers who were 65 years of age or older during the taxation year claim the Age Exemption. The value of the Age Exemption is increased occasionally. Any unused portion of the Age Exemption may be transferred to the spouse.

SPSM Implementation

The Modeled Quebec Age Exemption (imqaxm) is assigned the value of the parameter QAXM for all filers 65 or over (idage \geq 65) if they have income (imninc $>$ 0). This value is added to imqexm (All Personal Exemptions on behalf of filer) which is subsequently added to imqpex (All Personal Exemptions) and subtracted from Net Income imqinet. The function txqhstr may transfer the unused portion of the Age Exemption to the spouse and make corresponding adjustments to the value of imqinet but not to imqaxm.

Starting in 1996, the calculation of the age exemption tax credit is subject to turndown income (QAXTD) and a reduction rate (QAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QAXPI.

Medical exemption calculation

Before 1997, the calculation of the medical exemption was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997, the calculation of the medical exemption is transferred to txqhstr (with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. Beginning in 2000, there are two tax credit rates applied to gifts in Quebec. The activation flag, QGIFTHCR, is used to implement the calculation. Allowable gifts up to QGIFTL1 use the QNTCR. The higher credit rate QGFTCR is applied to allowable gifts over QGIFTL1. The total value of the tax credit is imqchatc.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| QAXM | Quebec age exemption/amount |
| QAXPI | Quebec age exemption reduction phase in |
| QAXRR | Quebec age exemption reduction rate |
| QAXTD | Quebec age exemption income turn down |
| QBXN | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCHATNF | Quebec charitable donations maximum % net income |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QGFTCR | Quebec credit rate for gifts over upper limit |
| QGIFTFLG | Quebec max to gifts to Federal/Province/Crown activation flag |
| QGIFTHCR | Quebec higher tax credit on large gifts activation flag |
| QGIFTL1 | Quebec minimum gift limit subject to higher credit rate |
| QGIFTOPT | Quebec gifts as tax credit |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSCFLAG | Quebec Health Services Fund Contribution calculation flag |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QMAXDX | Quebec maximum disability deduction/amount |

QMEDALL Quebec medical allowance maximum lower limit
 QMEDANF Quebec medical allowance lower limit net income fraction
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDOPT Quebec Medical Tax Credit option
 QNFSDED Quebec deduction of net federal supplements (SPA and GIS)
 from net income flag
 QNTRC Quebec nominal tax credit rate
 QREPNETFG Social program repayments reduce Quebec net income flag
 QSADED Quebec deduction of social assistance benefits from net
 income flag
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QYPDL Quebec deduction limit for pension income
 QYPPI Quebec deduction phase-in for pension income
 QYPRR Quebec deduction reduction rate for pension income
 QYPTD Quebec deduction turn down for pension income

INPUT VARIABLES:

hhnin Number of individuals in household
 idage Age
 idcagpex Capital gains exemptions (254)
 idcarry Carrying charges (221)
 idcfrh Relationship to census family head
 idcharit Charitable donations (340)
 idclos Allowable other years capital loss (253)
 iddalimo Alimony paid (220)
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 idemplo Employee home relocation loan dedn (248)
 idgifts Gifts to Canada/provinces/culture (342)
 ididiv Dividend income (actual)
 idiemp Wages & salaries
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idmedgro Medical expenses, gross (330)
 idnclos Allowable other years non-capital loss (252)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idspoflg Person has spouse
 idstkded Stock option deduction (249)
 imigis GIS benefits
 imioas OAS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 imninc No income flag
 imoasr OAS recovery
 imqalexp Quebec allowable employment expenses
 imqcapgt Quebec taxable capital gains
 imqcppse Quebec self-employ. QPP/PPP Cont. deduction
 imqiloss Quebec Modelled Business investment losses (243)
 imqinet Quebec net income
 imqitot Quebec total income
 imqsfflg Quebec simplified tax form flag 0=general 1=simplified
 imrepay Social Benefits Repayments
 imuibr UI benefit recovery

OUTPUT VARIABLES:

| | |
|----------|--|
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |
| imqchara | Quebec allowable charitable donations(calc) |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqdedfn | Quebec all deductions from net income |
| imqdistc | Quebec disability tax credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqitax | Quebec taxable income |
| imqmeda | Quebec medical expenses allowed |
| imqritc | Quebec retirement income tax credit |
| imqstkdd | Quebec modelled Stock option deduction (249) |

txque Compute provincial taxes for Quebec

SUMMARY

For residents of Quebec, the calculation of provincial taxes roughly approximates the process of calculating federal taxes. The SPSM divides this task among three functions which are described in another section of this document:

1. txqinet calculates total and net income tax
2. txqitax calculates a provisional value for taxable income subject to updating by txqhstr
3. txqhstr performs the calculation of personal exemptions for dependents and the allocation of deductions between head and spouse

The value of Taxable Income (imqitax) calculated by txqhstr is used to look up a value for Basic Provincial Tax (imbpt) in the tax table (QTX).

The Quebec Dividend Tax Credit (imqdtxc) is calculated as a proportion (QDTCR) of Taxable Dividends (imqidivt) and is subtracted from Basic Provincial Tax to derive Provincial Tax Payable (imtxp). Also subtracted is the Quebec Tax Reduction which is a proportion (QTRP) of Provincial Tax Payable (imtxp).

txsask Compute provincial taxes for Saskatchewan

SUMMARY

When STXFLG is off, Saskatchewan Basic Provincial Tax is a proportion (SPTF) of Basic Federal Tax (imbft). A flat surtax, calculated as a proportion (SFTAX) on Net Income (iminet) is added to Basic Tax.

The 2000 budget announced that Saskatchewan would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (STXFLG), a provincial tax table (SPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (SPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (SBXM) |
| impatxc | Age amount tax credit | (SAXM, SAXRR, SAXTD, SAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (SMXM, SMXMT, SEMXM, SEMXMT) |
| impcgtc | Caregiver tax credit | (SCGTC, SCGTCFLG, SCGTCTC, SCGTCTD, SCGTCTK) |
| impchrctc | Charitable donations | (SCHATL1, SCHATR1, SCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (SMAXDX) |
| impdtxc | Dividend tax credit | (SDTCR) |
| impedtxc | Education tax credit | (SEDXPM, SMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (SYPNDL) |
| imptutxc | Tuition Tax credit | (SMAXET) |
| impuictc | EI contributions tax credit | |
| imsctxc | Saskatchewan Non-refundable child tax credit | (SCNTC) |
| imssstxc | Saskatchewan senior supplement tax credit | (SSSTC) |

The option to apply a minimum tax is controlled using SAMTOPT.

Adjusted Saskatchewan Tax Payable (before a tax reduction is applied, is stored in the temporary variable a) is calculated as Basic Saskatchewan Tax (imbpt) plus a proportion (SSF) of Basic Saskatchewan Tax exceeding the Saskatchewan Surtax Level (SSCI).

Saskatchewan also implements a system of tax reductions for senior citizens and persons with dependent children. The Basic Tax Reduction (STRBR) is augmented by the Senior Citizen's Tax Reduction (STRSC) if the filer is age 65 or older. A tax reduction per child under 18 (STRPC) up to a maximum total for all children (STRCL) is also added. The number of children claimable for this tax reduction is taken from imnfach, the number of children eligible for Family Allowances.

The total potential tax credit is reduced by a proportion (STRRR) of the tax credit exceeding Adjusted Saskatchewan Tax Payable a to derive Reduced Saskatchewan Tax Payable imtxp.

Starting in 1992, a surtax (SDSF) for the reduction of the deficit is applied to the tax (imtxp). In 1995, an amount (SDSRA) was deducted from the surtax.

The Saskatchewan labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Saskatchewan provincial credit is modeled as SLVCRT times the gross amount up to SLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Saskatchewan Child Benefit and Saskatchewan Employment Supplement announced in the 1998 budget are modeled. When the SCBFLG is activated, families receive a benefit which depends on the number of children in the family (SCB1, SCB2, and SCB3). The benefit is reduced in two stages. Net family income greater than SCBTD1 and less than SCBTD2 is reduced at a rate SCBRR1 which depends on the number of children in the family. The benefit is further reduced at a rate of SCBRR2 for income over SCBTD2.

The Saskatchewan Employment Supplement is a monthly program. In the SPSD/M, the program is modeled in a yearly fashion. The maximum benefit is derived by multiplying a family's employment income in excess of SESCO (up to a maximum of SESMXIP) by a rate (SESR) which depends on the number of children in the family. The benefit is reduced for any family net income in excess of SESTD by a SESRR rate. The supplement started in mid-1998 and hence a phase-in rate SESPI was applied.

The estimate resulting from the SPSD/M may differ from the administrative totals. In modeling the program, employment income is assumed to be evenly distributed during the year. No maintenance income (e.g. child or spousal support) is added to employment income. The program is administered monthly with eligibility being determined depending on each month's income.

The Saskatchewan Sales Tax Credit announced in their 2000 Budget is now modelled. The Saskatchewan Sales Tax Credit is activated when SSTCFLAG is set to 1.

The Saskatchewan Sales Tax Credit was introduced in 2000 and became effective April 1, 2000 to offset the effect of sales taxes on lower income earners. SSTCPI represents the phase in rate for the program. The Saskatchewan Sales Tax Credit (imsstc) will consist of an adult component and a child component. This credit will be fully refundable and will be assigned to the spouse with the highest income.

The adult component of the Saskatchewan Sales Tax Credit will rise at a rate of SSTCBASPIR of individual net income up to a maximum (SSTCBAS). It will be reduced at a rate of SSTCRR as family net income increases above SSTCBASTD. An individual will also be eligible for SSTCSP in additional benefits for a dependent spouse or equivalent. This amount will be reduced at a rate of SSTCRR as family net income rises over SSTCSPTD.

The child component of the Saskatchewan Sales Tax Credit will provide an additional

SSTCKID per child. For two-parent families, the maximum child component will be SSTCKID + SSTCKID. For single parent families, the first child will be eligible for the adult benefit of SSTCSP and the maximum child component will be SSTCKID. The child component of the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC1KIDTD for families with one qualifying child. For families with more than one qualifying child, the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC2KIDTD.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| SAMTOPT | Sask. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| SAMTPCTF | Sask. amt rate as pct of additional fed tax due to minimum tax |
| SAMTPCTM | Sask. amt rate as pct of federal minimum tax amount |
| SAMTTX | Sask. amt rate as tax on adjusted income |
| SAXM | Sask. Age Amount |
| SAXPI | Sask. Age Amount phase in rate for 1994 and beyond |
| SAXRR | Sask. Age Amount credit reduction rate |
| SAXTD | Sask. Age Amount net income turndown |
| SBXM | Sask. Basic Personal Exemption/amount |
| SCB1 | Sask Child Benefit max for 1st child |
| SCB2 | Sask Child Benefit max for 2nd child |
| SCB3 | Sask Child Benefit max for 3rd and additional child |
| SCBFLG | Sask Child Benefit activation flag |
| SCBRR1 | Sask Child Benefit 1st reduction rate [number of kids] |
| SCBRR2 | Sask Child Benefit 2nd reduction rate [number of kids] |
| SCBTD1 | Sask Child Benefit 1st turndown |
| SCBTD2 | Sask Child Benefit 2nd turndown |
| SCGTC | Sask. Caregiver Tax Credit |
| SCGTCFLG | Sask. Caregiver Tax Credit activation flag |
| SCGTCTC | Sask. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| SCGTCTD | Sask. Caregiver Tax Credit Turn Down Income |
| SCGTCTK | Sask. Caregiver tax credit take-up rate by income level [employment income,rate] |
| SCHATL1 | Sask. Charitable Donations amount level 1 |
| SCHATR1 | Sask. Charitable Donations tax credit rate 1 |
| SCHATR2 | Sask. Charitable Donations tax credit rate 2 |
| SCNTC | Sask. non-refundable child tax credit amt per child |
| SDSF | Saskatchewan provincial deficit surtax fraction |
| SDSRA | Saskatchewan deficit surtax reduction rate |
| SDTCR | Sask. dividend tax credit rate |

| | |
|-----------------------------|---|
| SEDXPM | Sask. Education Amount per month |
| SEMXM | Sask. equivalent to married amount |
| SEMXT | Sask. equivalent to married turndown level |
| SESCI | Sask Employment Supplement cut in level |
| SESMIN | Sask Employment Supplement minimum benefit |
| SESMXIP | Sask Employment Supplement maximum benefit income point |
| SESPI | Sask Employment Supplement phase-in |
| SESR | Sask Employment Supplement benefit rate [number of kids] |
| SESRR | Sask Employment Supplement reduction rate |
| SESTD | Sask Employment Supplement turndown level |
| SESTK | Sask. Employment Supplement take up by number of kids |
| SESYPI | Sask Employment Supplementary benefit for under 13 phase-in |
| SESYR | Sask Employment Supplementary benefit for under 13 rate |
| [number of kids] | |
| SESYRR | Sask Employment Supplementary benefit for under 13 |
| reduction rate | |
| SFTAX | Saskatchewan provincial flat surtax rate on net income |
| SHEATFAM | Saskatchewan Home Heating Assistance Rebate for families |
| SHEATFLG | Saskatchewan Home Heating Assistance Rebate activation flag |
| SHEATSNG | Saskatchewan Home Heating Assistance Rebate for singles |
| SLVCMAX | Maximum Sask. labour-sponsored funds tax credit allowed |
| SLVCRT | Percent of Sask. labour-sponsored funds cost allowed as |
| credit | |
| SMAXDX | Sask. Maximum Disability deduction/amount |
| SMAXET | Sask. maximum on transfer of education and tuition amount |
| SMXM | Sask. married amount |
| SMXMT | Sask. married amount turndown level |
| SPNTR | Sask. provincial non-refundable tax credit rate |
| SPTC | Saskatchewan political contribution table [total |
| donations,donation allowed] | |
| SPTCBEN | Maximum Saskatchewan political tax credit allowed |
| SPTF | Saskatchewan provincial tax fraction |
| SPTX | Sask. tax table [taxable income,basic provincial tax] |
| SSCI | Saskatchewan surtax cut-in |
| SSF | Saskatchewan provincial high income surtax fraction |
| SSSTC | Sask. senior supplement tax credit |
| SSTC1KIDTD | Sask. sales tax credit child amount turndown if only 1 |
| child | |
| SSTC2KIDTD | Sask. sales tax credit child amount turndown if more than 1 |
| child | |
| SSTCBAS | Sask. sales tax credit base amount |
| SSTCBASPIR | Sask. sales tax credit base amount phase in rate |
| SSTCBASTD | Sask. sales tax credit base amount turndown |
| SSTCFLAG | Sask. sales tax credit activation flag |
| SSTCKID | Sask. sales tax credit child amount |
| SSTCPI | Sask. sales tax credit phase in |
| SSTCRR | Sask. sales tax credit reduction rate |
| SSTCSP | Sask. sales tax credit spousal amount |
| SSTCSPTD | Sask. sales tax credit spousal amount turndown |
| SSTR | Saskatchewan spousal & married equivalent tax reduction |
| STRBA | Saskatchewan tax reduction base amount |
| STRBR | Saskatchewan basic provincial tax reduction |
| STRCL | Saskatchewan child tax reduction limit |
| STRPC | Saskatchewan tax reduction per child |
| STRRR | Saskatchewan tax reduction reduction rate |
| STRSC | Saskatchewan tax reduction for senior citizens |
| STXFLG | Sask. tax on taxable income activation flag |

SYPNDL Sask. Pension Income Deduction Amount

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| imuic | UIC contributions |

| | |
|----------|---|
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| impptc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impттxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imscb | Saskatchewan Child Benefit |
| imsctxc | Saskatchewan Non-refundable child tax credit |
| imses | Saskatchewan Employment Supplement |
| imssstxc | Saskatchewan senior supplement tax credit |
| imsstc | Saskatchewan refundable sales tax credit |
| imtxp | Provincial income tax payable |

ui Compute UI benefits

SUMMARY

Unemployment Insurance (UI) and Employment Insurance (EI) benefits are calculated by a set of functions which mimic application of UI/EI regulations to individual employment and

claim histories. These histories are summaries of administrative data from a 1% sample of persons with some UI/EI claim activity . Benefits are first calculated on a claim basis. Adjustments are then made to allow for claims overlapping more than one calendar year. Finally, taxable benefits received by individuals within a calendar year are determined.

Program Description

Unemployment/Employment insurance is an income support program financed jointly by employees, employers and the federal government. It is intended to provide income maintenance during temporary interruptions in employment. As such, it is not a universal program. Among those excluded from coverage are persons who do not participate in the labour force, the self-employed (other than fishermen) and persons who have exhausted benefit entitlements.

SPSM Implementation

The SPSM implementation of the UI/EI program has distinct steps representing application of program regulations to a given claim. The function `ui` operates as a controller which calls the sub-functions which apply UI/EI regulations to each claim and each UI/EI claimant within a household and returns the benefits received by individuals for the calendar year. Claimants may have one or two claims overlapping the survey calendar year. Payments within the calendar year are determined assuming benefits are paid on consecutive weeks.

For SPSM purposes, the unemployment regions are urban size classes within each province. These are not the regions defined for administration of the UI/EI program. The use of proxy unemployment regions is required to ensure data confidentiality.

For purposes of determining entitlements, the claim histories include the initial claim type `ucbtyp` (i.e., Maternity, Sickness, Retirement, Fishing or Regular) and a type change flag (i.e., indicating that a Sickness claim, for example, was changed to a Regular claim within the Initial Phase). SPSM deems the type change to have taken place immediately after the claim is established and does not attempt to subdivide the Initial Phase into Special and Regular periods. Since type change takes place, the special benefits totals (e.g., Sickness benefits) can not be determined by eliminating the type (e.g., by setting eligibility requirements high) and calculating the reduction in benefits. A second claim type (`ucmtyp`) is also imputed. If there was more than one type of benefit received within a claim, `ucmtyp` represents the claim type which had the majority of weeks. By turning on `UIEIMTYPFLG`, `ucmtyp` is modelled instead of `ucbtyp`.

The UI/EI algorithm has no behavioral response capacity, so that, for example, no new claims can be created. However, there have been more people with claims imputed in the base year than was necessary. The means that the number of persons with claims can be modified using the `UITARGET` and `UIEITKP` parameters. Similarly, the duration of modeled claims does not exceed observed durations, except when the following parameters are used: `UIREGWKFCT`, `UITRNWKFCT`, `UIOTHWKFCT`, `UIEXTMATWKS`. Unless these parameters are modified, the assumption is that individuals would not increase their duration on claim, if their entitlements were increased. However, no restriction is placed on

durations within each phase. Consequently, the elimination of a phase need not reduce the overall duration of a claim.

There are several sub-functions contained in the *ui* function. The first called is *uicl*m which calculates benefits for a single claim. *uicl*m does this by first calling three sub-functions which test for eligibility requirements based on claim type, repeat claim status, and regional unemployment rates (*uielent*, *uielrep*, *uielrge*). *uicl*m next calls three sub-functions which determine the weeks of entitlement in the Initial, Labour Force Extended and Regional Extended Phases (*uiwkbas*, *uiwklfe* and *uiwkrge*). The *ui* function then calls *uitrnc*l*m* which calculates training and other benefits (excluding regular, fishing, sickness, maternity, and parental which are calculated in *uicl*m). If a second claim is required *uicl*m and *uitrnc*l*m* are called again. Each function and sub-function are briefly described below.

ui

The *ui* function serves to pass information about each individual with a UI/EI claim in a household to *uicl*m. If an individual has more than one claim, modeled weeks of benefits in the qualifying period are computed for the first claim and passed to *uicl*m when the second claim is processed. UI/EI benefits for a calendar year are returned.

***uicl*m**

The sub-function *uicl*m processes distinct claims from the information passed to it by *ui*. In the event of a repeat claim, *ui* passes information about modeled claim activity in the qualifying period. Modeled changes to UI/EI regulations may produce important differences in first claim activity, thereby effectively changing the status of the second claim.

The *uicl*m function operates at a claim rather than an individual level. It calls *uielent*, *uielrep* and *uielrge* to establish eligibility. It then changes the type of eligible claims, where appropriate.

Once a claim is established, *uicl*m calls *uiwkbas*, *uiwklfe* and *uiwkrge* to determine the weeks of entitlement in each of the Initial, Labour Force Extended and Regional Extended Phases, respectively. The claim is represented by four pointers which identify:

Pointer #1 - 1st week of benefits (following waiting period)

Pointer #2 - 1st week of Labour Force Extended benefits

Pointer #3 - 1st week of Regional Extended benefits

Pointer #4 - week after end of Regional Extended Benefits.

Weeks are identified by integers with the week of January 1 being zero. The differences between succeeding pointers will initially equal the entitlement on the appropriate phase. *uicl*m then calls a utility function *uisqz* which ensures that interval between #1 and #4 does not exceed the original claim (minus any training or other weeks) or the maximum allowable duration of a claim. A subsequent call to *uisqz* produces a second set of (windowed) pointers that do not include any weeks outside the calendar year.

The *uicl*m function then calculates the weekly benefits. Benefits are the product of phase weeks times the weekly benefit rate for each phase summed over phases. However, benefit

rates may be increased or decreased by the following modelled programs: minimum divisor rule (see UIEIDIVFLG), the intensity rule (see UIEIFIFLG), an enhanced rate should there be dependents (see UIENSTRO), and the family supplement (see UIEIFSFLG).

uielent

The uielent sub-function applies eligibility tests based on the minimum weeks or hours of insurable employment in the qualifying period required for each initial claim type. These are basic tests which may be superseded by special tests applied to repeaters, new entrants/re-entrants, and other regular claimants. The function sets a flag indicating eligibility status.

uielrep

The uielrep function performs special eligibility tests that apply to repeaters only. The required weeks of insurable employment depend on the regional unemployment rate and on weeks of benefits in the qualifying period. The function performs a two dimensional table lookup to determine whether eligibility is established. The function sets a flag indicating eligibility status.

uielrge

Claims that are initiated as regular claims are subject to variable entrance requirements that depend on the regional unemployment rate. The function uielrge performs the table lookup necessary for these tests. The function sets a flag indicating eligibility status.

uiwkbas

The function uiwkbas determines entitlements in the Initial Phase. For special benefit types (i.e., claims that remain maternity, fishing, sickness or parental), this is the total claim entitlement and is determined by a table lookup. For regular claims, entitlements, up to a maximum number of weeks, are determined in proportion to weeks or hours of insurable employment in the qualifying period up to a maximum number of weeks.

uiwklfe

The function uiwklfe determines entitlements in the Labour Force Extended Phase. As in the Initial Phase, entitlements are determined in proportion to weeks, above a minimum, of insurable employment in the qualifying period.

uiwkrge

The function uiwkrge determines entitlements in the Regional Force Extended Phase. Entitlements are determined by the regional unemployment rate.

uitrnclm

The function uitrnclm is called by the ui function after the uiclm function. Therefore, regular, sickness, maternity, fishing, and parental benefits have already been assigned. The uitrnclm function assigns first other types of benefits, then training benefits. Other types of

benefits will include everything not included in regular, sickness, maternity, parental, fishing or training. The list of other benefits included will vary depending on the year of the program. But they may include such items as job creation benefits, work sharing benefits, and self-employed assistance.

Other benefits are calculated using the imputed weeks of other benefits (ucothwk) and a weekly benefit rate (ucothbr). These can be adjusted using UIOTHWKFCT and UIOTHBNFCT. Training benefits are calculated in a similar manner using uctrnwk, uctrnbr, UITRNWKFCT, and UITRNBNFCT. There are no eligibility tests for these types of benefits. New pointers, ubp5 and ubp6 are created to signify the end of these benefit phases.

Adjusting UI/EI

Some parameters were added to the model in order to mimic some historical changes to the UI/EI program which the model cannot do without changes to the database. The UITARGET and UIEITKP parameters allow the users to increase or decrease the number of UI/EI recipients. The following parameters: UIREGWKFCT, UITRNWKFCT, UIOTHWKFCT, UIEXTMATWKS allow the users to increase the number of weeks of benefits over and above the weeks claimed on the database. UITRNBNFCT and UIOTHWKFCT allow the benefit rate for training and other benefits to be increased.

1 - Qualifying for benefits is now based on hours of work instead of weeks of work

Since the SPSD does not contain total hours of work, these are derived using the weeks of work prior to claim (ucwwork) multiplied by a new variable: the average weekly hours of work (ucwchr) which was imputed from the Survey of Labour and Income Dynamics. For more information, see UIREGHRMIN, UIMATHRMIN, UISICHRMIN,.

As for fishing benefits, qualification is based on earnings in the past 31 weeks. These are derived using weeks of work prior to claim (ucwwork) and average weekly earnings (ucern). It is assumed that the weeks ucwwork occurred immediately prior to the start of the claim. See UIFSHERMIN.

2 -The Family Income Supplement was added

When UIEIFSFLG is set to 1, the Family supplement is calculated. The total amount of the family supplement paid on a claim is ubclmfs. The total amount of family supplement paid on a claim in the calendar year is ubcalfs.

The Family Supplement was introduced as part of the Employment Insurance system reform introduced in 1995. It increases the basic benefit of families with low income. It replaces the older program which gave an enhanced rate for individuals with low income (in the SPSD/M this older program was controlled by UIENSRATE, UIDEPOPT, UIENSRTCO).

There are two methods of calculating the Family Supplement. When UIEIFSOPT is set to 1, then family supplement is directly tied into the Canada Child Tax Benefit (imfcben). Families which are eligible for the Child Tax Benefit receive the weekly amount of the benefit in addition to their regular Employment Insurance. It is reduced at a rate (UIEIFSRR) over incomes greater than UIEIFSRL.

Some simplifications were made in order to implement this program in the SPSM. The calculation of the Canada Child Tax Benefit is done after the calculation of EI in the model since it requires net income. But it requires the previous year's net income which is estimated as PYINC times the current year's net income.

When the Family Supplement is activated, the tax/transfer driver (drv) is run through twice per eligible household. The first time, no one will get a family supplement since the child tax benefit is equal to zero. The value of the benefit is saved (in cceopt) and drv is called again. This time, the previously saved value for the child tax benefit is used to calculate the family supplement. The family supplement will be slightly inconsistent with the child tax benefit since the latter will be recalculated and may be slightly smaller than the one used for deriving the family supplement since family net income will increase due to the family supplement.

Another simplification in deriving the family supplement derives from the fact that the SPSM assumes that the Child Tax Benefit is given in one lump sum amount in July. Therefore in the case of the Family supplement, the rules governing the Child Tax Benefit may be a year off if the benefit is received in the first half of the year.

When UIEIFSOPT is set to 2, the family supplement is calculated independently of the child tax benefit. First the number of children under the age of 7 is calculated (imuiydep). By going through the drv twice, the family's net income (prior to the addition of the family supplement) is available and the previous year's income is derived by multiplying it by PYINC. The family supplement is then derived by looking up the base value (UIEIFS1 for families with 1 child, UIEIFS2 for families with 2 children, and UIEIFS3 for families with 3 or more children). A supplement for each child over and above the third is added (UIEIFSTOPUP) as is a supplement for each child under the age of 7 (UIEIFSYNG).

The Family supplement rules changed on July 1999. Since the methodology under UIEIFSOPT = 1 would be off by a year, it was decided to treat all of 1999 under the methodology introduced in July 1999 (UIEIFSOPT = 2).

Under both options, EI weekly benefits including the family supplement cannot exceed a proportion (UIEIMFSP) of the claimant's weekly earnings (ubern). Nor can EI benefits, including the family supplement exceed the base rate (UIEIRATE) times the maximum weekly earnings (UIERNMAX).

Also, under both options, when the UIEIFIFLG is turned on, people who receive the family supplement are exempted from the intensity rule.

3 - The Intensity Rule

For persons receiving regular or fishing EI benefits and who did not receive the Family Income Supplement, the intensity rule was applied. The benefit rate (UIEIRATE) depends on the number of weeks of EI collected in the past. See UIEIFIFLG, UIEIRATE, UIEIYRS, ubeiwbp, ucy1, ucy2, ucy3, ucy4, ucy5 for more details.

4 -The Minimum Divisor

In order to obtain their maximum benefits, EI claimants must work two weeks more than the minimum entrance requirements. The minimum divisor rule is controlled by UIEIDIVFLG and UIEIDIV.

5 -Minor Changes

There was a minor change in the method used to derive training weeks and training benefits.

The method of using the UI/EI regular benefit weeks adjustment factor UIREGWKFACT was adjusted.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| PYINC | Deflator to calculate previous year income |
| UIBASFLAG | Basic phase calculation flag (UI and EI) |
| UIBASOPT | UI reform option [1=normal, 2=Apr'89] (UI and EI) |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIDEPOPT | UI dependency option [1=normal, 2=Feb'94] (UI only) |
| UIEFFFLAG | Observed effective weekly benefit rate flag (UI and EI) |
| UIEIDIV | EI minimum divisor [uer][divisor] (EI only) |
| UIEIDIVFLG | EI minimum divisor flag (EI only) |
| UIEIFIFLG | EI intensity rule exemption for family supplement receivers (EI only) |
| UIEIFS1 | Max fam supplement 1 child (EI only) |
| UIEIFS2 | Max fam supplement 2 children (EI only) |
| UIEIFS3 | Max fam supplement 3+ children (EI only) |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIFSOPT | UI EI calculate family supplement option (EI only) |
| UIEIFSRL | UI EI family supplement reduction level (EI only) |
| UIEIFSRR | UI EI family supplement reduction rate (EI only) |
| UIEIFSTOPUP | Max fam supplement top up for more than 3 kids (EI only) |
| UIEIFSYNG | Max fam supplement top up for young children (EI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIMTYPFLG | Flag to model main benefit type (UI and EI) |
| UIEINEREFLG | Flag to check for hours for new entrants and re-entrants (EI only) |

| | |
|----------------------------|---|
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIRATE | Benefit rate under EI reform [Past Wks ben][Rate] (EI only) |
| UIEITKP | UI EI takeup rate [index] : index based on prov, sex, age, |
| weeks | |
| UIEIYRS | Number of years of previous EI benefits calculated (EI |
| only) | |
| UIENSRATE | Enhanced rate for basic phase (UI only) |
| UIENSRTCO | Enhanced rate cutoff (UI only) |
| UIENTFLAG | Basic entrance requirements flag (UI and EI) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIEWK | Entitlement (weeks) [wkwrk, uer] (UI and EI) |
| UIEXTMATWKS | Additional weeks for maternity - behavioural response (UI |
| and EI) | |
| UIFLAG | UI/EI Activation flag (UI and EI) |
| UIFSHERMIN | Min. earnings to qualify for fish. benefits [unempl. rate] |
| (EI only) | |
| UIFSHMINWK | Minimum weeks to qualify for fishing benefits (UI only) |
| UILFEFLAG | Labour force extended phase calculation flag (UI only) |
| UILFEMIN | Weeks worked in qualifying period [UILFEWKS index] (UI |
| only) | |
| UILFERATE | Benefit rate for labor force extended phase (UI only) |
| UILFEWKS | Weeks LFE entitlement [UILFEMIN](UI only) |
| UIMATHRMIN | Minimum hours to qualify for maternity benefits (EI only) |
| UIMATMINWK | Minimum weeks to qualify for maternity benefits (UI only) |
| UIMAXBASEWKS | Maximum number of weeks - regular (UI and EI) |
| UIMAXDUR | Maximum duration of a UI claim (UI and EI) |
| UIMAXFSHWKS | Maximum number of weeks - fishing (UI and EI) |
| UIMAXMATWKS | Maximum number of weeks - maternity (UI and EI) |
| UIMAXPARWKS | Maximum number of weeks - parental (UI and EI) |
| UIMAXSICWKS | Maximum number of weeks - sickness (UI and EI) |
| UINEREHRMIN | Minimum hours to qualify for new entrant or re-entrant (EI |
| only) | |
| UIOTHBNFCT | UI other benefits per week adjustment factor (EI and EI) |
| UIOTHWKFCT | UI other benefits weeks adjustment factor (UI and EI) |
| UIREGHRMIN | Min. hours to qualify for reg. benefits [unempl. rate] (EI |
| only) | |
| UIREGMINWK | Minimum weeks to qualify for regular benefits (UI only) |
| UIREGWKFCT | UI regular benefit weeks adjustment factor (UI and EI) |
| UIREPPREV | Weeks of insurable employment [weeks] (UI only) |
| UIREPUER | Regional unemployment rate [rates] (UI only) |
| UIREPWWKD | Repeater eligibility requirements [weeks x rates] (UI only) |
| UIRGEFLAG | Regional extended phase calculation flag (UI only) |
| UIRGEMIN | Unemployment rate for Regional Extended entitlement |
| [UIRGEWKS index] (UI only) | |
| UIRGERATE | Benefit rate for regional extended phase (UI only) |
| UIRGEWKS | Weeks Regional Extended entitlement [UIRGEMIN] (UI only) |
| UIRGNFLAG | Regional requirements flag (UI only) |
| UIRGNMIN | Regional unemployment rate (UI only) |
| UIRGNWKS | Weeks required for eligibility (UI only) |
| UIRPTFLAG | Repeater requirements flag (UI only) |
| UISICHRMIN | Minimum hours to qualify for sickness benefits (EI only) |
| UISICMINWK | Minimum weeks to qualify for sickness benefits (UI only) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| UITRBNFCT | UI training benefit per week adjustment factor (EI and EI) |
| UITRNWKFCT | UI training benefit weeks adjustment factor (UI and EI) |
| UIWAITWKS | Minimum waiting period all claims (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hdurb | Size of urban area |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| hhnfn | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinOTH | Other money income (non-taxable) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditOTH | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idnfn | Person's nuclear family [pointer] |
| idnincO | No income flag (SPSD variables) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| iduirank | Predicted ranked likelihood of getting UI |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imuidpfg | UI claimants has dependents flag |
| nfin | First person in nuclear family [pointer] |
| nfinch | First child in nuclear family [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnpers | Number of persons in nuclear family |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucgotpa | Received paternity benefits |
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucyl | Weeks on UI in first year before claim |

| | |
|------|---|
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

OUTPUT VARIABLES:

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imuibr | UI benefit recovery |
| imuidpfg | UI claimants has dependents flag |
| imuiydep | Number of dependents under 7 for family supplement (EI only) |
| ubcalfs | Family supplement paid in calendar year |
| ubcalpd | Benefits paid in calendar year |
| ubcalwk | Weeks on claim in calendar year |
| ubclmfs | Family supplement paid on claim |
| ubclmpd | Benefits paid on claim |
| ubclmwk | Weeks on claim |
| ubeiwbp | Weeks of past EI benefits |
| ubern | Modelled insurable weekly earnings |
| ubp1 | Week # of first payment |
| ubp1c | Week # of first payment (windowed) |
| ubp2 | Week # of start of second phase |
| ubp2c | Week # of start of second phase (windowed) |
| ubp3 | Week # of start of third phase |
| ubp3c | Week # of start of third phase (windowed) |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ubp5 | Week # of last other type of ui/ei payment |
| ubp5c | Week # of last other type of ui/ei payment (windowed) |
| ubp6 | Week # of last training payment |
| ubp6c | Week # of last training payment (windowed) |

vardef Define structure member as an SPSM variable

SUMMARY

The vardef function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.



SPSD/M 

Algorithm Guide

This guide is designed primarily to provide *SPSD/M* users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black box and glass box users.

September 21, 2001



Canada

Introduction

The Algorithm Guide provides SPSD/M users with a description of the specific personal tax and cash transfer programs which are simulated and the specific way in which this is done. An attempt is also made to guide and caution the user, where necessary, as to the interpretation of the results. Also included in this guide are descriptions of processing and utility algorithms which have a significant effect on the results. The guide is intended for both black box and glass box users.

The guide is organized into three main sections. After the first section (this Introduction), there is a section describing the algorithms organized into logical groupings. This is followed by an alphabetically-arranged encyclopaedic section that lists all algorithms in the SPSM.

These modules are referred to as functions. Function names are printed in lower case (e.g. `txinet`, `txcalc`). Sub-functions are defined within the function that calls them and are also shown in lower case (e.g. `uicl`, `gissub`). Both regular and local variables are shown as usual in lowercase (immicons). These local variables may not be used for reporting purposes unless modifications are made in glass box mode.

These functions tend to have a one-to-one correspondence with actual social and tax programs. In some cases however, two functions are required for one social program (Eg. the child care expense deduction is calculated in one function and allocated to a particular family member in another), or many programs may be simulated in one function (e.g. federal and provincial family allowances are both calculated by one routine).

Subject Reference

1 Algorithm by Program

1.1 Introduction

This guide is designed primarily to provide SPSPD/M users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black-box and glass-box users.

1.2 Pre-simulation Functions

The functions in this group are executed prior to the simulation of taxes and transfers. The database is first adjusted to the users specifications, by `adj`. This adjusted database will form the basis of all base/variant combinations executed in a single program run. Parameter edit checks and the calculation of derived parameters are performed next in `mpc`. This is done based on `.apr` parameters and rules embodied in the function. Finally, calls to the tax/transfer algorithms are made for each requested base and/or variant simulation as controlled by the `drv` function.

1.2.1 Adjust Database

Three functions perform certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database.

| | |
|-----------------------|--|
| <code>fmspopen</code> | Routines to read SPSPD file (.spd) |
| <code>fmxopen</code> | Routines for reading FAMEX (.fxv) file |
| <code>adj</code> | Perform SPSPD database adjustment |

1.2.2 Calculate Derived Parameters

The `mpc` function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters.

| | |
|------------------|---|
| <code>mpc</code> | Calculate derived model parameters and do edits |
|------------------|---|

1.2.3 Tax/Transfer Calculator

Two functions are responsible for invoking the algorithms which calculate all taxes and transfers.

| | |
|-------------------|------------------------------|
| <code>call</code> | Call tax/transfer calculator |
| <code>drv</code> | Tax/transfer calculator |

1.3 Government Cash Transfers

1.3.1 Unemployment Insurance Benefits

Unemployment Insurance benefits are calculated by a set of functions which mimic application of UI regulations to individual employment and claim histories. These functions are contained within the ui function

ui Compute UI benefits

1.3.2 Family Allowances

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

famod Compute family allowance

1.3.3 Federal Child Tax Benefit/Credit

This function is used to calculate either the federal Child Tax Credit program or the federal child tax benefit. Both programs are intended to provide benefits to help low and middle income families meet the costs of raising children under the age of 18.

txctc Compute child tax credit

ccept zero CCE for young kids if optimal

1.3.4 Federal Sales Tax Credits

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse.

txfstc Compute federal sales tax credit

1.3.5 Elderly Programs

1.3.5.1 Old Age Security

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. The SPSM calculates OAS based on the age of the individual and, for immigrants, the years since immigration. The clawback of OAS is performed in the txitax function.

oas Compute OAS for elderly

1.3.5.2 Guaranteed Income Supplement/Spouses Allowance

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable

txinet Compute net income

1.4.2 Calculate Taxable Income

The process of computing taxable income is divided into two separate routines. Exemptions, deductions and tax credits which are not dependent upon information from other members of the family (e.g., the Basic Personal Exemption or Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

txitax Compute taxable income and individual credits

txhstr Compute family-related deductions or credits

1.4.3 Child Care Expense Allowance

The txceea function calculates the value of the child care expense deduction. The calculation may be optionally converted to a tax credit basis rather than a deduction.

txceea Compute child care expense allowance

1.4.4 Calculate Federal Tax

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Basic Federal Tax (including credit transfers)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement

txcalc Calculate federal income tax

1.5 Calculate Provincial Taxes

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax to a parallel of the federal system in Quebec. Most provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

1.5.1 All Provinces except Quebec

| | |
|--------|---|
| txprov | Compute provincial taxes |
| txnfld | Compute provincial taxes for Newfoundland |
| txpei | Compute provincial taxes for P.E.I. |
| txns | Compute provincial taxes for Nova Scotia |
| txnb | Compute provincial taxes for New Brunswick |
| txont | Compute provincial taxes for Ontario |
| txman | Compute provincial taxes for Manitoba |
| txsask | Compute provincial taxes for Saskatchewan |
| txalta | Compute provincial taxes for Alberta |
| txbc | Compute provincial taxes for British Columbia |

1.5.2 Quebec

| | |
|---------|--|
| txque | Compute provincial taxes for Quebec |
| txqinet | Compute net income (Quebec) |
| txqccea | Compute child care expense allowance (Quebec) |
| txqitax | Compute taxable income and individual credits (Quebec) |
| txqhstr | Compute family-related deductions or credits (Quebec) |
| txqcalc | Calculate income tax (Quebec) |

1.6 Calculate and Assign Commodity Taxes

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures at the spending unit level of analysis in the following function..

| | |
|---------|--|
| ctmod | Compute commodity taxes for individuals and households |
| txhhexp | Compute and pro-rate household taxes, rent, etc. |

1.7 Aggregation Routines

Two aggregation functions are used to calculate several reporting variables as aggregates of other modeled variables. The functions calculate all dollar denominated reporting variables up to the level of consumable income. In addition taxable filer status is determined.

| | |
|-------|----------------------------------|
| memo1 | Compute memo items for reporting |
| memo2 | Compute consumable income, etc. |

1.8 Glass Box Stub Routines

There are two empty functions in both the standard and alternate drivers (drv) that are available to

allow completely new tax or benefit programs to be developed by glass box users.

| | |
|-----|--|
| dem | Compute new taxable demogrants |
| gai | Compute new refundable credits or guarantees |

1.9 Auxiliary Functions

There are a number of auxiliary functions which are used by the functions containing the tax/transfer algorithms. These functions perform routine tasks required in simulating the tax/transfer system such as table look-ups and benefit reduction functions. The description of these functions is of use to anyone attempting to fully understand or modify the C-language source code for the tax/transfer algorithms.

| | |
|----------|--|
| classu | Compute user-defined reporting variables |
| isneg | Is argument negative ? |
| isnneg | Is argument non-negative? |
| isnzro | Is argument non-zero? |
| iszero | Is argument zero? |
| lkup1 | Table look-up with interpolation/extrapolation |
| lkup2 | Table look-up without interpolation |
| maxn | Find the maximum of two numbers |
| minn | Find the minimum of two numbers |
| nneg | Change negative numbers to zero |
| pmaddent | Define and add a parameter |
| randrnd | Randomly round a floating point number to an integer |
| round | Round to nearest integer |
| strn | Retrieve string by string number |
| taxbak1 | One level tax-back function |
| taxbak2 | Two level tax-back function |
| vardef | Define structure member as an SPSM variable |

Alphabetic Reference

adj

Perform SPSD database adjustment

SUMMARY

The `adj` function performs certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database. The function may currently be used to adjust the amount of RRSP contributions claimed. A brief description of the database adjustment in general is also included.

SPSM Implementation

The SPSD is based on surveys and administrative data collected for the 1988 calendar year. Adjustment of this data may be required for several reasons. The user may wish to use the incomes to represent the incomes in a more recent year such as 1994. As such the user would supply estimates of growth rates for income by source and expenditures from 1988 to 1994. The user may also wish to make adjustments for simulation purposes in the 1988 year. For example, known under-reporting of alcohol expenditures may be treated by scaling each household's alcohol expenses or a deduction item could be scaled down to zero to represent a restriction of a certain tax measure. Finally, the user may wish to adjust the weights of individuals and households to reflect alternate demographic assumptions.

The scaling of money items is performed in two functions inaccessible to the glass box user. Prior to the calculation of any taxes or transfers each dollar denominated database variable is multiplied by a single corresponding database adjustment parameter. There are two key exceptions to this. Employment income, comprising about 70% of total income is given more rigorous treatment due to its relative importance in the overall tax/transfer system. Employment income may be adjusted by industry specific growth rates. CPP/QPP income may be adjusted by differential rates according to age groups which allows for the phasing in of that program. Users should refer to the *Parameter Guide* in this manual for further details on specific adjustment parameters.

The `adj` function is a means for glass box users to affect the adjustment of the database in ways not currently possible. The user may add their own adjustment routines to augment or even offset current means of adjustment. For example if the user wished to grow employment income by age and sex they would set the existing employment parameter to one and enter a new algorithm in this function. One such specific database adjustment provision is currently available in black box mode and is used in the analysis of RRSP contributions.

This adjustment (which will change the value of the `idrrsp` variable) is designed to allow the user to simulate the increase in RRSP contribution limits in a rough fashion. It allows the user to increase the RRSP contributions of individuals who are near to the current

contribution limits. The facility is activated by setting the RRSPIFLAG parameter to 1. Two cases are distinguished, those who are not covered by a employer-contributed pension plan, and those who are.

If individuals had RRSP contributions but had no RPP contributions, and their RRSP contributions fell between RRSPSMIN and RRSPSMAX inclusive, their RRSP contributions will be increased by RRSPSINC.

If individuals had RPP contributions, then, for those individuals whose total pension contributions (RRSP plus RPP) fell between RRSPPEMIN and RRSPPEMAX, their RRSP contributions will be increased by RRSPEINC.

Relation to Other SPSM Routines

The `adj` function is called before `drv` and as such is only executed once for every program run. This means that database adjustments will apply to both the base and variant scenarios. The function is called after the other database adjustment routines.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-----------|---|
| DNINCFLAG | Disable no income flag for calculation |
| PROVMAP | Provincial remapping [prov] |
| RRSPEINC | Increment to rrsp if conditions & rpp>0 |
| RRSPPEMAX | Maximum (rpp+rrsp) for increment if rpp>0 |
| RRSPPEMIN | Minimum (rpp+rrsp) for increment if rpp>0 |
| RRSPIFLAG | RRSP increment activation flag |
| RRSPSINC | Increment to rrsp if conditions & rpp=0 |
| RRSPSMAX | Maximum (rrsp) for increment if rpp=0 |
| RRSPSMIN | Minimum (rrsp) for increment if rpp=0 |

INPUT VARIABLES:

| | |
|-------|---|
| hhnin | Number of individuals in household |
| idrpp | Registered pension plan contributions (207) |

OUTPUT VARIABLES:

| | |
|---------|---------------------------------|
| hdprov | Province |
| idninco | No income flag (SPSD variables) |
| idrrsp | RRSP calculated amount (208) |

SUMMARY

Stub function for use by glass box users who wish to modify database variables either before and/or after tax/transfer calculation. This function calls the standard driver -- drv.c.

SUMMARY

The ccept function controls multiple calls to the tax transfer calculator drv.

Program Description

There are three instances in which the entire calculation of the tax/transfer system for household is necessary. The ccept function controls such recalculations. Each case is discussed under separate headings below:

Pre-calculation of the child tax benefit.

The calculation of Employment Insurance depends in part upon an individual's Child Tax Benefit entitlement. However, Employment Insurance is calculated prior to the Child Tax Benefit. ccept is used to calculate a preliminary value for the child tax benefit which can then be used in the calculation of Employment Insurance. The final value for a family's child tax benefit may differ from the preliminary estimate used for this calculation of Employment Insurance.

Optimization of the Child Tax Credit/Child Tax Benefit

Beginning in 1988 the rules for calculating the child tax credit/child tax benefit and the child care expense credit were altered to ensure that middle income families could not receive the full benefits from both programs. In practice this is done by reducing maximum child tax credit benefits by 25% of claimed child care expenses. The resulting situation is that below a certain income level it is advantageous not to claim any child care expenses incurred. The ccept function can locate this level and thus maximize the combined benefits from the child care expense credit and the child tax credit/child tax benefit.

SPSM Implementation

ccept performs the re-calculations and optimizations in a specific sequence. The pre-calculation of the federal Child Tax Benefit for purposes of correctly calculating Employment Insurance is performed first. Next the optimization of the child care expense deduction and the federal Child Tax Benefit is performed. The SPSM implementation of each

type of optimization are described separately below:

Pre-calculation of the child tax benefit.

The first time drv is called Employment Insurance is calculated with a zero value for the federal Child Tax Benefit. This will result in no EI family supplement benefits being assigned. The first time ccept is called by drv, it first determines if a family is eligible for both EI and the Child Tax Benefit. If so, that household has its entire tax/transfer entitlements/liabilities re-calculated using the value for the federal child tax benefit calculated in the first pass.

Note that there is a circularity between the two programs in that the federal Child Tax Benefit is based, in part, on Unemployment Insurance benefits to the extent that they are included in the definition of net income which is used to clawback the child benefits.

Optimization of the Child Tax Credit/Child Tax Benefit

The default calculation first performed in txceca makes use of any child care expenses associated with the children in the family. In the ccept function cases subject to optimization are first identified as families having children aged 0-6 with associated child care expenses.

The complexities of the tax reform situation in Canada make it difficult to know how to optimize many of this type of case. Consequently, once these families have been identified, the entire tax/transfer system is recalculated, setting child care expenses for young children to zero. The value of consumable income for both runs is then compared. If the family benefits from this change, the scenario with no child care expenses is kept. Otherwise, the previous scenario is restored by again re-running the entire tax transfer system.

The algorithm is controlled by the parameter CCEZOPT, which is described in the [Parameter Guide](#).

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UITARGET | UI/EI target for the number of cases (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| hdageeld | Age of eldest in household |
| hdnkids | Number of children in household |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idninc | No income flag (SPSD variables) |
| iduirank | Predicted ranked likelihood of getting UI |
| imcce | Child care expenses claimed on behalf of child |
| immicons | Consumable income |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|---------|--|
| imcceni | Consumable income with CCE not zeroed |
| imccez | Is CCE zeroed? |
| imccezi | Consumable income with CCE zeroed |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |

classu Compute user-defined reporting variables

SUMMARY

The classu function is a stub routine which allows the glass-box user to compute and assign values to new or re-defined variables. Variables first must be defined appropriately in vsdu.c and vsu.h. Since this function is normally called by both the standard and alternate model drivers, assignments made in classu will be effective in both cases.

Users should note that classu should only be used when the user is unable to create the desired classification with the User Defined Variable Facility. Please see the [*User's Guide*](#) for more information on this alternative facility.

Note that classu is called at the end of drv so that variables defined in classu are not available for use in other tax/transfer algorithms. See the [*Programmer's Guide*](#) for more information.

ctmod Compute commodity taxes for individuals and households

SUMMARY

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to

observed family expenditures at the spending unit level of analysis. The resulting federal government taxes span 48 consumer expenditure (CE) categories while provincial government taxes have both CE category and provincial dimensions. Commodity taxes are also estimated for other levels of analysis such as economic families and individuals.

Program Description

The federal government has a variety of taxes which are levied on goods used in production and for final demand consumption. Some of the major federal tax types are: custom import duties, alcohol and tobacco excise taxes and excise duties, manufacturers sales tax, gasoline excise tax, air transportation tax, and energy use taxes. The provincial governments also levy taxes but with more of an emphasis on consumer goods. Major taxes include liquor commission mark-ups, gasoline taxes, tobacco taxes, and retail sales taxes.

An important characteristic of this tax system is the cascading effect. Tax cascading occurs when a tax rate is applied to the value of a commodity inclusive of another tax type. For example, when an individual makes a long distance call a federal telecommunications tax of 10% is applied to the price of the call. Provincial governments then levy their retail sales tax rates to the value of the call inclusive of the federal tax.

SPSM Implementation

Input/Output Estimation of Tax Rates

Tax costs associated with domestic production are passed to the domestic consumers is the fundamental I/O modeling assumption. For example, alcohol producers require raw materials such as grains, water, energy source etc. If these inputs are produced themselves in other industries, then their selling price may include a manufacturer's tax component. Through Input/Output (I/O) techniques we are able to associate the implicit tax share of the production process to the correct final demand good.

The macroeconomic I/O system is used to construct effective tax rates by tax type, final demand good, and by province. This enables the calculation of the tax burden implicit in each household's reported final demand expenditures.

The federal tax rates have been grouped into six tax types: custom import duties; excise duties; manufacturer's sales tax; excise taxes; other energy taxes; and federal sales tax. The federal sales tax type that has been included for user simulations is set to zero by default. The array of provincial tax rates has also been reduced to six tax types: profits on liquor commissions; liquor gallonage tax; gasoline tax; amusement tax; tobacco tax; retail sales tax.

The above rates are defined as the ratio of a particular tax to the expenditure net of all commodity taxes for a given good in a given province. Therefore, an additional input parameter rate is applied to the FAMEX observations to net out the commodity taxes implicit in the base year.

For a more complete description of the I/O methodology, calculation procedures, tax type composition, etc. see *Commodity Tax Model User's Guide*.

Notes Regarding Expenditure Adjustments

Prior to the execution of the ctmod function, two modifications of the FAMEX data have been performed by the SPSM.

The first is made necessary because of the way SNA and FAMEX treat the expenditures on motor vehicles as net expenditures. If the trade-in exceeds the value of the purchase, or a household sells a vehicle outright, then the expenditure category will contain a negative value. In this case the SPSM treats the net expenditure as an income item (net sale of durables) and it is incorporated into the income calculation. The expenditure category is then set to zero. This procedure is conducted in the two consumer expenditure categories where net sales can occur: New & used automobiles; Recreation, sporting goods, and camping equipment. This modification is not accessible to the user.

The second data modification involves correcting for under-coverage of some FAMEX expenditure components. For example, sales of alcohol and tobacco are monitored very carefully by government agencies and their data indicate roughly twice as much consumption of these two goods as reported on the FAMEX. Two other FAMEX categories report substantially lower consumption than other information sources would indicate. They are semi-durables and expenditures for restaurants & hotels. The GFFMX parameter in the .APR file enables the adjustment of raw FAMEX values to the levels of other sources. We provide users with factors to inflate expenditures to known 1984 levels.

Estimation of commodity taxes

The ctmod function initially calls the ctfx sub-function to calculate the taxes based on the expenditure patterns of FAMEX spending units. The ctmod function then computes the taxes for other levels of analysis such as individuals or economic families.

The FAMEX expenditure categories must be stripped of their original tax component before the commodity tax calculation can be performed. This is accomplished in the ctfx sub-function by applying the I/O computed CTTXRM parameter (database adjustment parameter) to the expenditure observations.

The effective commodity tax rates are then multiplied by the net expenditures to produce commodity tax levels for each spending unit. If the CTDFLAG is set to 0 then total federal level taxes by commodity and provincial level taxes by commodity and province are calculated. If CTDFLAG is set to 1 then the six detailed federal taxes and seven provincial taxes are generated. Provincial taxes applied are defined in the following input parameters:

- CTPAMU Provincial amusement tax
- CTPGAS Provincial gasoline tax
- CTPICT Provincial commodity taxes on industry
- CTPLGL Provincial liquor gallonage tax
- CTPPLQ Provincial profits on liquor commissions
- CTPRST Provincial retail sales tax
- CTPTOB Provincial tobacco tax

The model ensures that both options will produce identical results in the aggregate.

Commodity taxes are then allocated to individuals in the FAMEX spending unit via personal income shares in the ctmof function. The income of the household's head is derived by adding three variables from the FAMEX income concept not surveyed elsewhere to his/her SPSD income concept variables. These variables are: savings; other money receipts; and net sales of durables. The shares reflect the income distribution after this modification.

The CTOPT parameter controls which income concept is used in the simulation. If the parameter is set to 1 then the FAMEX income concept is used. This measure of income is not linked to other SPSD variables in any way. Therefore, if the user wishes to examine the implications to commodity tax outflows based upon changes in SPSD income variables (i.e. OAS, GIS, income tax changes) then this option should never be specified. Its use should be restricted to pure FAMEX analyses.

If CTOPT is set to 2 then the SPSD income concept is used. This income measure has been corrected for an income bias inherent in Survey of Consumer Finance (SCF) data using Department of Revenue Green Book tax data. This income adjustment is described in detail in the *Database Creation Guide*. The result is a substantial increase in household income for observations in the extreme upper tail.

The FAMEX data suffers from the same under-coverage as the SCF so the reported spending unit expenditure can be out of synch with the Green Book adjusted income. For example, the largest total expenditure observation is around \$150,000 while a large tax adjusted household income exceeds \$5,000,000.

Setting the CTOPT parameter to 2 scales the commodity tax calculated conditioned on FAMEX spending unit income by the ratio of the SPSD "shared" income concept to an equivalent FAMEX "shared" income concept. In this way tax outlays bear closer relation to the SPSD income levels. However, this leads to some outlay distortions for the extremely wealthy which are described in the Interpretation Section.

Interpretation

There are some other discrepancies between the system of national accounts (SNA) definition of consumer expenditure and that of FAMEX. Generally, SNA includes the entire personal sector whose components are households, self-employed professionals, and universities. FAMEX tracks only households and, therefore, tax levels by commodity are generally lower. For a detailed description of these differences see the *Commodity Tax Model User's Guide*

In the aggregate, differences between income SPSM income concept (CTOPT=2) and the FAMEX income concept (CTOPT=1) are almost negligible. Using 1984 base case parameters the FAMEX option produced a \$20.997 billion tax burden on Canadian families while the scaled option generated \$21.048 billion. These compare favorably with the SNA estimate of \$22.5 billion. However, the differences for the highest income households in great. The top three households show differences of over \$200,000. This implies some caution when interpreting commodity tax values for high income observations.

Relation to Other SPSM Routines

The ctmod function calls the ctfx sub-function in order to calculate spending unit commodity taxes. The ctmod function itself is called by the drv function. The ctmod function makes use of parameters derived in the mpc function. The mpc function also ensures that the ctmod function is not executed if the FAMEX data vector is not being read (i.e. if FXVFLAG=0). The calculation of commodity taxes is highly dependent on the parameters applied to the database expenditure items during the database adjustment phase of the simulator.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTDFLAG | Commodity tax detailed calculation flag |
| CTFCID | Federal custom import duties [com] |
| CTFEXD | Federal excise duties [com] |
| CTFEXT | Federal excise taxes [com] |
| CTFGST | Federal GST [com] |
| CTFLAG | Commodity tax activation flag |
| CTFMFG | Federal manufacturer's sales [com] |
| CTFOEN | Federal other energy taxes [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTLPROP | Local property taxes |
| CTNES | Expenditures NES |
| CTOPT | Commodity tax calculation method [1=FAMEX,2=SPSM] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| CTPTOT | Provincial total retail tax equivalent |
| CTSAVE | All positive savings |

INPUT VARIABLES:

| | |
|----------|--|
| ctnexp | Household expenditure net of taxes |
| ctothmon | Household money from other sources |
| cttxfc | Federal commodity taxes (total) |
| cttxpc | Provincial commodity taxes (total) |
| fxfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |

| | |
|----------|------------------------------------|
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hhnin | Number of individuals in household |
| idhhrh | Relationship to head of household |
| immdisp | Disposable income |

OUTPUT VARIABLES:

| | |
|----------|--|
| ctfcid | Federal custom import duties |
| ctfexd | Federal excise duties |
| ctfext | Federal excise taxes |
| ctfgst | Federal GST |
| ctfmfg | Federal manufacturer's sales tax |
| ctfoen | Federal other energy taxes |
| ctishrh | Shared income concept (FAMEX) |
| ctlprop | Local property taxes on owned dwellings |
| ctnes | Household expenditure not elsewhere specified |
| ctnexp | Household expenditure net of taxes |
| ctnexp_ | Household expenditure net of taxes [array] |
| ctnsna | Household expenditure net of taxes -SNA adjusted |
| ctnsna_ | Household expenditure net of taxes [array] -SNA adjusted |
| ctothmon | Household money from other sources |
| ctpamu | Provincial amusement tax |
| ctpgas | Provincial gasoline tax |
| ctplgl | Provincial liquor gallonage taxes |
| ctpplq | Provincial profits on liquor commissions |
| ctprov | Province for COMTAX calculations |
| ctprst | Provincial retail sales tax |
| ctptob | Provincial tobacco tax |
| ctsave | Household savings |
| ctseqhv | FAMEX record sequence number |
| cttxfc | Federal commodity taxes (total) |
| cttxfc_ | Federal commodity taxes [array] |
| cttxpc | Provincial commodity taxes (total) |
| cttxpc_ | Provincial commodity taxes [array] |
| imishri | Shared income concept (FAMEX & SPSD) |
| imninc | No income flag |
| imtxfc | Federal commodity taxes |
| imtxpc | Provincial commodity taxes |

dem Compute new taxable demogrants

SUMMARY

This is a stub function for use by glass box users who wish to incorporate a new program which interacts with the tax system (i.e. taxable benefits).

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|--------------------------|
| imiotg | Other taxable demogrants |
|--------|--------------------------|

| | |
|------------|-------------------------|
| drv | Tax/transfer calculator |
|------------|-------------------------|

SUMMARY

The calculation of taxes and cash transfers for any base or variant run is controlled by a function whose only task is to call all other individual tax/transfer algorithm functions. The sequence of calls is critical to the simulation due to the informational requirements of the tax/transfer functions. For example net income must be known before gis can be calculated. The following list gives the functions called by drv in the order in which they are called.

| Function | Description |
|----------|---|
| ui | Compute UI benefits |
| famod | Compute family allowance |
| oas | Compute OAS for elderly |
| dem | Stub routine for new pre-tax system programs |
| txinet | Compute net income (including payroll taxes) |
| gis | Compute GIS/SPA for elderly |
| senben | Compute senior benefit |
| gist | Compute Provincial GIS top-ups for elderly(GAINS-A, SIP, etc) |
| samod | Compute social assistance or guarantees |
| txitax | Compute taxable income |
| txhstr | Apply tax transfers between head and spouse |
| txcalc | Calculate federal income tax |
| txctc | Compute child tax credit |
| txprov | Compute provincial taxes and credits |
| txfstc | Compute federal sales tax credit |
| gai | Stub routine for new post-tax system programs |
| memo1 | Compute memo items for reporting |
| ctmod | Compute commodity taxes |
| memo2 | Compute consumable income, etc. |

ccept
Classu

Zero CCE for young children if optimal
Stub routine to compute user defined reporting variables

The calling order of the component functions of drv reflects the logical precedence between them.

- The first functions, ui, famod and oas, simulate programs whose benefits are determined by factors other than income and as such are called first.
- dem is a stub routine for glass box applications that require calculations to occur before entering the tax system routines.
- txinet calculates net income prior to certain transfers.
- gis calculates transfers to the elderly.
- senben calculates senior benefits.
- gist, txctc, and txfstc calculate income tested transfer programs.
- samod calculates social assistance or guaranteed income transfers.
- Federal and provincial taxes are calculated next in the next six functions with the tx prefix (txitax, txhstr, txcalc, txprov, txctc, and txfstc).
- gai is another stub routine that is intended for use by glass box users who wish to simulate options requiring information on all personal income taxes and cash transfers. For example users may use this function to simulate an income supplementation program.
- The memol and memo2 functions create aggregate variables for reporting.
- In the ctmod function, sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures.
- ccept optimizes income by maximizing the child care expense credit and the child tax credit.
- classu is a stub routine which allows the glass box user to compute and assign values to new or re-defined variables.

The functions called by drv call other functions and sub-functions in order to complete their calculations. The following page contains a complete list of the names of functions and sub-functions along with a short description in the order in which they are called by drv. Please refer to the specific function in this guide for a more detailed description. Sub-functions (in italic) can be found listed under the function which calls them. Thus for a complete understanding of the calculation of net income one would have to consult both the txinet and txceca functions.

As mentioned earlier, function names are printed in lower case, bold, courier font (E.g. txinet, txcalc) and correspond to a single C language source code file (E.g. txinet.c, txcalc.c). Sub-functions are defined within the function (file) that calls them and are shown in lower case, courier font, italic (e.g. uisqz, gissub). All multiple calls to the same sub-function have been shown here. All functions directly called by drv begin in the first column below, other function calls are indented.

In ccept all the functions are called a second time by drv to find if a family benefit of setting CCE to zero, if it is the case the result is kept, otherwise drv call again all the functions to reset the original values.

| | | |
|----|----------------------|---------------------|
| ui | | Compute UI benefits |
| | <i>uicl</i> <i>m</i> | Simulate a UI claim |

| | | |
|--------|-----------------|---|
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| | <i>uicl</i> | Simulate a UI claim |
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| famod | | Compute family allowance |
| oas | | Compute OAS for elderly |
| dem | | Stub routine for new pre-tax system programs |
| txinet | | Compute net income |
| | <i>txccea</i> | Compute child care expense allowance |
| gis | | Compute GIS/SPA for elderly |
| | <i>gissub</i> | Compute income used to tax back GIS/SPA |
| senben | | Compute senior benefit |
| | <i>sbsub</i> | Compute income used to tax back Seniors Benefit |
| gist | | Compute Provincial GIS top-ups for elderly |
| | <i>txhhexp</i> | Compute and pro-rate household taxes, rent, etc. |
| samod | | Compute social assistance or guarantees |
| txitax | | Compute taxable income |
| txhstr | | Apply tax transfers between head and spouse |
| txcalc | | Calculate federal income tax |
| txprov | | Compute provincial taxes |
| | <i>txnfld</i> | Compute Newfoundland provincial taxes |
| | <i>txpei</i> | Compute PEI provincial taxes |
| | <i>txns</i> | Compute Nova Scotia provincial taxes |
| | <i>txnb</i> | Compute New Brunswick provincial taxes |
| | <i>txque</i> | Compute Quebec provincial taxes |

| | | | |
|--------|--------------|--------------|--|
| | | txqinet | Compute net income (Quebec) |
| | | txqccea | Compute child care expense allowance (Quebec) |
| | | txqitax | Compute taxable income (Quebec) |
| | | txqhstr | Apply tax transfers between head and spouse (Quebec) |
| | | txqcalc | Calculate Income Tax (Quebec) |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txont | | Compute Ontario provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txman | | Compute Manitoba provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txsask | | Compute Saskatchewan provincial taxes |
| | txalta | | Compute Alberta provincial taxes |
| | txbc | | Compute BC provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| txctc | | | Compute child tax credit |
| txfstc | | | Compute federal sales tax credit |
| gai | | | Stub routine for new post-tax system programs |
| memo1 | | | Compute memo items for reporting |
| ctmod | | | Compute commodity taxes |
| | <i>ctfx</i> | | Compute commodity taxes for FAMEX spending unit |
| | | <i>ctfxd</i> | Compute commodity taxes for FAMEX spending unit (detailed) |
| | | <i>ctfxs</i> | Compute commodity taxes for FAMEX spending unit (simple) |
| memo2 | | | Compute consumable income, etc. |
| cceopt | <i>pass2</i> | | Zero CCE for young kids if optimal recalculate UI with child benefits in place |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| classu | | | Compute User Defined Reporting Variables |

SUMMARY

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

Following 1997 reform, starting in 1998 in the model, the Quebec family allowance, the Quebec new born allocation and the Quebec availability allowance are now calculated only if QFATCOPT is set to 1, otherwise the Quebec Family Allowance Tax Credit is calculated in txqcalc.

Program Description

The federal Family Allowances program was designed to provide taxable benefits to help meet the costs of raising children under the age of 18 who are resident in Canada and are maintained by their parent(s) or guardian. At least one parent or guardian must be either a Canadian citizen or a permanent resident, visitor or holder of a Minister's Permit under the Immigration Act and have been legally admitted into Canada. The parent(s) or guardian must make application for benefits and their income must be subject to Canadian income tax. Benefits cease to be payable with regard to self-supporting children (i.e. children who begin to earn a taxable income).

Family allowance benefits are generally paid at a uniform rate across Canada. However, provinces may, within certain limits, vary the amount of Family Allowances that the federal government pays to their residents according to the age and/or number of children in a family. Alberta and Quebec are the only provinces that vary the rate. Alberta varies payment based on the age of the child while Quebec varies payment based on the number of children in the family and then adds a supplement based on the age of the child.

The province of Quebec maintains a separate but linked program under the Quebec Family Allowances Act which provides for benefits to the parent or guardian of an unmarried child under the age of 18 who is not a ward of the province. The applicant must have resided in Quebec for at least one month or be paying Quebec income tax. In 1984 benefits payable were not subject to Quebec income tax, however benefits paid with respect to children aged 16 and 17 were subject to federal tax. Persons in receipt of federal family allowances automatically receive the provincial benefits without application. This program also has a supplement for handicapped children; however, this is not modeled in the SPSM.

The Quebec Newborn Allowance was implemented in 1988 and is modeled in famod from that year. Benefits are paid per child and rise from \$500.00 for each of the first two children to \$3000.00 for each subsequent child.

An option permit the user to randomly increase the rank of first and second child in order to

reflect the rank distribution of child observed by the RRQ. The program end in October 1997 and is replaced by a Child tax allocation not modeled yet.

SPSM Implementation

The famod function calculates federal and provincial family allowances based on the age of children and number of children in a family. Residency requirements are deemed to have been met in all cases as is the requirement of non self-sufficiency. The function always allocates family allowances as income of the mother unless one is not present in the nuclear family. This temporary allocation is subsequently assigned to the spouse having the higher net income in txinet and txqinet. The function outputs values for federal(imffa) and provincial(impfa) family allowances as well as the value of taxable family allowances(imtfa) for use in other functions. The function loops through each nuclear family in a household.

The function first calculates federal and provincial family allowances for residents of Quebec. Counts of numbers of children by age group are calculated and used to index into two look-up tables for federal and provincial programs as well as to scale the federal age supplement. The values are then aggregated into two local variables, taxable family allowances and federal family allowances. Taxable family allowances are equal to the sum of federal benefits for each child (as determined by that child's rank in the family) plus the federal supplement for each child aged 12-17 plus the portion of Quebec family allowances paid with respect to children aged 16 and 17.

The calculation of Quebec allowances in famod includes the Quebec availability allowance from 1988 forward. It is paid as a supplement to the Quebec family allowances and is represented by the variable imqaafa. Quebec allowances also include the calculation of the Quebec Newborn Allowance, represented by the variable imqnbfa. This benefit is calculated on the following schedule for 1988:

| Child Number | Birth | Age 1 | Age 2 | Total |
|---------------------|--------------|--------------|--------------|--------------|
| 1 | 500 | 0 | | 500 |
| 2 | 500 | 0 | | 500 |
| 3+ | 375/Quarter | 375/Quarter | | 3,000 |

Interpretation

Results obtained from the SPSM with respect to family allowance benefits differ from Health and Welfare Canada administrative data. Overall the SPSM reports 96.7% of the 1984 calendar year average health and welfare total dollars and 97.3% of children for whom benefits are received.

The SPSM has few children in part due to the non-coverage of Yukon, N.W.T., and native reservations, all of which have younger than average populations and larger than average family sizes (approximately 1.5% of children). A second source of underestimation is the special allowances for foster children and children in welfare agencies. The SPSM does not include these children or their benefits which account for .7% of total family allowances. Further, the SPSM does not take into account payments made outside Canada, although the effect of these on the total is insignificant (less than .1%).

The family allowance program requires parents of 'self-supporting' children to notify Health and Welfare Canada and have the benefits with respect to these children suspended. There are about 52,000 of such children aged 16 and 17 on the SPSD with respect to whom benefits are allocated. It is unknown how many of the parents of these children actually report their situation to Health and Welfare Canada. Lastly, no residency check is imposed on the parents and this will have an insignificant effect. It is assumed that the number of children turning age 18 during the calendar year is balanced by the number of new births. That is, full year family allowance benefits paid with respect to children born during 1984 will be overestimates to the same degree that an underestimate arises for benefits not given to 18 year olds who were 17 during calendar 1984.

Relation to Other SPSM Routines

The famod function is called by drv. The function outputs two variables that are used in txinet for deciding which parent will claim the family allowances for tax purposes: taxable family allowances(nftfa) and number of family allowance children(nfnfach).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AFAC1 | Alberta FA benefit per child aged 0 - 6 |
| AFAC2 | Alberta FA benefit per child aged 7 - 11 |
| AFAC3 | Alberta FA benefit per child aged 12- 15 |
| AFAC4 | Alberta FA benefit per child aged 16- 17 |
| FAFLAG | Family allowance flag |
| PFACFLAG | Use provincial configuration flag |
| QAAFA | Quebec availability allowance (supplement) [parity,\$] |
| QAAFAFLAG | Availability Allowance: Supplement to Quebec FA |
| QFAIFLAG | Quebec inclusion of federal family allowance in income flag |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFFSL | Federal family allowance: Quebec Configuration[parity,\$] |
| QFPSL | Quebec provincial family allowance [parity,\$] |
| QFS | Federal supplement per child 12-17 in Quebec configuration |
| QNBFA | Quebec newborn family allowance [parity,age] |
| QNBFAFLAG | Quebec newborn family allowance flag |
| QNBPOFLAG | Quebec newborn family allowance phase out flag |
| QNBPOPYR | Quebec newborn family allowance phase-out year proportion |
| QNBPOYR | Quebec newborn family allowance phase out year |
| QNRFLAG | Quebec newborn family random increase of child rank |
| STDFA | Standard federal family allowance per child |
| TARGETYEAR | Year of analysis |
| INPUT VARIABLES: | |
| hdprov | Province |
| hhnnf | Number of nuclear families in household |

| | |
|----------|---|
| idage | Age |
| idrand | Random numbers [array] |
| idsex | Sex |
| nfinch | First child in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|---------|---|
| imffa | Federal portion of family allowances |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| impfa | Provincial family allowance |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqnbfa | Quebec newborn Allowance |
| imqtfa | Quebec taxable family allowances |
| imtfa | Taxable family allowances |
| nfineld | Eldest person in nuclear family [pointer] |

fmfxopen Routines for reading FAMEX (.fxv) file

SUMMARY

The purpose of this maintenance function is to load the FAMEX variables and to grow them by the corresponding database adjustment parameter.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|---------------|--|
| CTCFALC | FAMEX reporting error adjustment: Alcohol [prov] |
| CTCFGAS | FAMEX reporting error adjustment: Gasoline [prov] |
| CTCFTOB | FAMEX reporting error adjustment: Tobacco [prov] |
| CTTXRM | Base year commodity tax removal factor [com x prov] |
| GFCQP | Adjustment Factor: CPP/QPP contributions |
| GFFABD | Adjustment Factor: Account balancing difference |
| GFFMX | Adjustment Factor: consumer expenditure categories |
| [commodity] | |
| GFFOMR | Adjustment Factor: Other money receipts |
| GFGVPEN | Adjustment Factor: Government pension plan contributions |
| GFINTAX | Adjustment Factor: Income taxes |
| GFIPAC | Adjustment Factor: Life insurance premiums and annuity |
| contributions | |
| GFNCAL | Adjustment Factor: Net change in assets and liabilities |
| GFNES | Adjustment Factor: Not elsewhere stated |

| | |
|------------|---|
| GFPRTAX | Adjustment Factor: Property tax |
| GFPVPEN | Adjustment Factor: Private pension plan contributions |
| GFRECOM | Adjustment Factor: Real estate commissions |
| GFRFEES | Adjustment Factor: Registration and license fees |
| GFRRSPT | Adjustment Factor: Total RRSP contributions (FAMEX) |
| GFTPTAX | Adjustment Factor: Transfer of property taxes |
| GFUIC | Adjustment Factor: UI contributions |
| KEEPNEGEXP | Retain negative expenditures in FAMEX |
| DBVERSION | Version of the database (x100) |
| INPFV | Name of FAMEX vector file (in) [string] |
| INSPD | Name of SPSD file (in) [string] |

INPUT VARIABLES:

| | |
|----------|--|
| fhbfver | SPSD/M binary format version (x100) |
| fhdbver | SPSD/M database/year version (x100) |
| fhfiltyp | File type (extension) [string] |
| fhnum | Number of numbers in the file |
| frclhvh | Cloning factor for FAMEX exp. vector |
| frcpp | Cpp - qpp contributions |
| frfabd | Account balancing difference |
| frfomr | Other money receipts |
| frgvp | Gvt pension plan contributions |
| frintax | Income taxes |
| frio | Expenditure on the 40 I/O categories [array] |
| fripac | Life ins prems and annuity contributions |
| frncal | Net change in assets and liabilities |
| frnes | Not elsewhere stated |
| frprtax | Property tax |
| frpvpen | Private pension plan contributions |
| frrecom | Real estate commissions |
| frifees | Registration and license fees |
| frrgvlot | Ratio of spending on government lotteries |
| frrrspt | Total RRSP contributions (FAMEX) |
| frtptax | Transfer of Property taxes |
| fruc | UI contributions |
| hdprov | Province |

OUTPUT VARIABLES:

| | |
|----------|---|
| fhhash | Hashed code of header information |
| fxclhvh | FAMEX cloning factor |
| fxcpp | Cpp - qpp contributions |
| xfabd | Account balancing difference |
| xfomr | Other money receipts |
| fxgvp | Gvt pension plan contributions |
| fxintax | Income taxes |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxncal | Net change in assets and liabilities |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |
| fxrecom | Real estate commissions |
| fxrifees | Registration and license fees |
| fxrgvlot | Ratio of spending on government lotteries |
| fxrrspt | Total RRSP contributions (FAMEX) |

| | |
|----------|---|
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| fxuic | UI contributions |
| hdfrstfx | First household in FAMEX group flag |
| hdlastfx | Last household in FAMEX group flag |
| hdwgtfx | Sum of household weight for FAMEX group |

fmspopen Routines to read SPSD file (.spd)

SUMMARY

The purpose of this maintenance function is to load the SPSD variables and to grow them by the corresponding database adjustment parameter. In addition the method of conversion for converted variables is applied. The logic for differential growth of CPP is also applied in this function. The actual code in this function is proprietary and is not released with the SPSD/M product.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|-----------|--|
| GFADDDDED | Growth Factor: Additional deductions from net income (256) |
| GFALEXP | Growth Factor: Other allowable employment expenses (229) |
| GFCAPGEX | Growth Factor: Capital gains exemptions (254) |
| GFCARRY | Growth Factor: Carrying charges (221) |
| GFC CET | Growth Factor: Child care expenses associated with child |
| GFC CETT | Growth Factor: Child care expenses (Limit A, Form T778) |
| GFCGLESS | Growth Factor: TCG Less Cap Gains Ded on Cap Prop Gifts |
| GFCCHARIT | Growth Factor: Charitable donations (340) |
| GFCLOSS | Growth Factor: Allowable other years capital loss (253) |
| GFCPP65 | Growth Factor: CPP for age 65 |
| GFCPP66 | Growth Factor: CPP for age 66 |
| GFCPP67 | Growth Factor: CPP for age 67 |
| GFCPP68 | Growth Factor: CPP for age 68 |
| GFCPP69 | Growth Factor: CPP for age 69 |
| GFCPP70 | Growth Factor: CPP for age 70 |
| GFCPP71 | Growth Factor: CPP for age 71 |
| GFCPP72 | Growth Factor: CPP for age 72 |
| GFCPP73 | Growth Factor: CPP for age 73 |
| GFCPP74 | Growth Factor: CPP for age 74 |
| GFCPP75 | Growth Factor: CPP for age 75 |
| GFCPPG75 | Growth Factor: CPP for age > 75 |
| GFCPPL65 | Growth Factor: CPP for age < 65 |

GFDALIMO Growth Factor: Alimony paid (220)
 GFDISOTH Growth Factor: Disability amount for dependants (318)
 GFDISSLF Growth Factor: Disability amount for self (316)
 GFDUES Growth Factor: Union and professional dues (212)
 GFEMPLO Growth Factor: Employee home relocation loan dedn (248)
 GFEXPLOR Growth Factor: Exploration and development expenses (224)
 GFFDSFT Growth Factor: Foreign tax credit applied to surtax (511)
 GFFORAVG Growth Factor: Forward averaging amount withdrawal (237)
 GFFORINC Growth Factor: Net foreign income (508)
 GFFORTX Growth Factor: Foreign tax paid (507)
 GFGIFTS Growth Factor: Gifts to Canada/provinces/culture (342)
 GFGSTREB Growth Factor: GST rebate (457)
 GFHOMSTU Growth Factor: College residence/resident homeowner
 assistance (558)
 GFIALIMO Growth Factor: Alimony Income
 GFICAPG Growth Factor: Capital gains (actual) (127 * 1.5)
 GFIDIV Growth Factor: Dividend income (actual) (120 / 1.5)
 GFIEMP Growth Factor: Employment income [province,sex]
 GFIIINT Growth Factor: Interest income (121)
 GFIILOSS Growth Factor: Business investment losses (217)
 GFINOINV Growth Factor: Other government income (non-taxable)
 GFINOTH Growth Factor: Other money income (non-taxable)
 GFIOINV Growth Factor: Other investment income with net rental
 GFIPENS Growth Factor: Pension income (115)
 GFISA Growth Factor: Social assistance income
 GFISEFM Growth Factor: Self-employed income - farming
 GFISENF Growth Factor: Self-employed income - non-farming
 GFITC Growth Factor: Federal investment tax credits (412)
 GFITOGV Growth Factor: Other government income (taxable)
 GFITOTH Growth Factor: Other non-government income (taxable)
 GFITRRSP Growth Factor: Taxable RRSP withdrawals
 GFIVETP Growth Factor: Veterans Pensions
 GFIIWORKC Growth Factor: Worker's compensation
 GFLABTXG Growth Factor: Labour funds tax credit (414)
 GFMEDGRO Growth Factor: Medical expenses, gross (330)
 GFMINCAR Growth Factor: Minimum tax carryover (504)
 GFMOVEXP Growth Factor: Imputed moving expenses (219)
 GFMSCHPD Growth Factor: Manitoba school taxes paid
 GFNCLOS Growth Factor: Allowable other years non-capital loss (252)
 GFNORTH Growth Factor: Northern deductions (255)
 GFOTHDED Growth Factor: Other deductions from total income (232)
 GFOTHPE Growth Factor: Other dependant exemptions (305)
 GFPARTLO Growth Factor: Limited partnership losses (251)
 GFPOLCON Growth Factor: Federal political contributions (409)
 GFPROPTX Growth Factor: Net property taxes paid (556)
 GFPRVFTC Growth Factor: Provincial foreign tax credit (Form T2036)
 GFPRVPOL Growth Factor: Provincial political contributions (565)
 GFRENTPD Growth Factor: Total rental payments (555)
 GFRPP Growth Factor: Registered pension plan contributions (207)
 GFRRSP Growth Factor: RRSP contributions (208)
 GFSAPRED Growth Factor: Predicted benefits from Social Assistance
 GFSCFCQP Growth Factor: SCF CPP
 GFSCFCTC Growth Factor: Child tax credit
 GFSCFFTC Growth Factor: Federal tax credit
 GFSCFINT Growth Factor: SCF interest income
 GFSCFOAS Growth Factor: Old age security
 GFSCFPTC Growth Factor: SCF provincial tax credits

GFSCFSA Growth Factor: SCF social assistance
 GFSCFUIB Growth Factor: Unemployment insurance benefits
 GFSTKDED Growth Factor: Stock option deduction (249)
 GFTUITN Growth Factor: Tuition fees (320)
 GFUIPRED Growth Factor: Predicted benefits from UI
 IEMPADJ Adjustment Factor: Employment income [employment income
 breaks,province]
 IEMPBRK Adjustment Factor: Income breaks for income
 adjustment[employment income breaks]
 IMPCQPOPT Imputation method, CQP [1=none 2=rank]
 IMPINTOPT Imputation method, Interest [1=none 2=imputed]
 IMPSAOPT Imputation method, SA [1=none 2=rank]
 IMPUIBOPT Imputation method, UI [1=none 2=rank]
 PURR Ratio current:base unemployment rate [prov]
 UIBASEYRMAX Maximum insurable earnings for base year
 UITARGYRMAX Maximum insurable earnings for target year
 FXVFLAG Read FAMEX expenditure vector file
 INSPSD Name of SPSD file (in) [string]
 WGTFLAG Read weight file

INPUT VARIABLES:

fhbfver SPSD/M binary format version (x100)
 fhdbver SPSD/M database/year version (x100)
 fhfiltyp File type (extension) [string]
 fhnhh Number of households in the file
 hrclohh Number of SCF clones
 hrevmv Expenditure vector matching variable
 hrprov Province
 hrtenur Tenure
 hrurb Size of urban area
 idage Age
 idccqp Converted CPP/CQP benefit
 idcintim Converted interest income (imputed)
 idcsa Converted social assistance
 idsex Sex
 irage Age
 irccqp Converted CPP/CQP
 ircfpub SCF CF publication flag
 ircfrh Relation to census family head
 ircfseq Census family sub-sequence number
 ircintim Converted interest income (imputed)
 ircluflg Common law union flag
 ircsa Converted social assistance
 ircuib Converted UI benefit
 iredlev Educational level
 irefpub SCF EF publication flag
 irefrh Relation to economic family head
 irefseq Economic family sub-sequence number
 irestat Educational status
 irhhrh Relation to household head
 irieflag Institutionalized elderly flag
 irimmi Years since immigrant arrival
 irind Industry
 irinseq Individual sub-sequence number
 irlfst Labour force status
 irlyfp Full or part-time last year
 irlystr Stretches of unemployment last year

| | |
|------------|-------------------------------------|
| irlyun | Weeks unemployed last year |
| irlyww | Weeks worked last year |
| irmarst | Marital status |
| irnonlf | Main activity for non-lf persons |
| irocc | Occupation |
| irrklyun | Raking foundation: weeks worked |
| irrklyww | Raking foundation: weeks unemployed |
| irscfflg | SCF high-income preservation flag |
| irschtp | School type |
| irsex | Sex |
| irsynthi | Synthetic high income person |
| m0val | Money item value |
| m1val | Money item value |
| m2val | Money item value |
| m3val | Money item value |
| urbtyp | Claim type |
| urdivwk | New EI Variable |
| ureff | Base year effective weekly benefit |
| urern | Base year insurable weekly earnings |
| urexhas | Exhaustee flag |
| urgotpa | |
| urhrwk | New EI Variable |
| urmtyp | Claim type |
| urnere | New EI Variable |
| urothbr | New EI Variable |
| urothwk | New EI Variable |
| urrpeat | Repeat claim flag |
| urstart | Week claim established |
| urtpcng | Type change flag |
| urtrnbr | Training benefit weekly rate |
| urtrnwk | Weeks of training benefits |
| uruer | Local unemployment rate (x10) |
| urweeks | Claim weeks of benefits |
| urwork | Weeks of work prior to claim |
| ury1 | |
| ury2 | |
| ury3 | |
| ury4 | |
| ury5 | |
| wrwgt | Household weight (float) |
| CANCELFLAG | Cancellation request flag |
| DBVERSION | Version of the database (x100) |
| WGTTOT | Sum of weights on tax file |

OUTPUT VARIABLES:

| | |
|---------|---|
| fhash | Hashed code of header information |
| hdclohh | Number of SCF clones |
| hdevmv | Expenditure Vector Matching Variable |
| hdnpers | Number of persons in household |
| hdprov | Province |
| hdseqhh | Household sequence number |
| hdtenur | Tenure |
| hdurb | Size of urban area |
| hdwgthh | Household weight |
| hhnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idalexp | Other allowable employment expenses (229) |
| idcapgex | Capital gains exemptions (254) |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idccqp | Converted CPP/CQP benefit |
| idcfpub | SCF CF publication flag |
| idcfrh | Relationship to census family head |
| idcfseq | Census family sub-sequence number |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idcintim | Converted interest income (imputed) |
| idcross | Allowable other years capital loss (253) |
| idcluflg | Common-Law union flag |
| idcsa | Converted social assistance |
| idcuib | Converted UI benefit |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idedlev | Educational level |
| ideducm | Eligible months of education allowance |
| idefpub | SCF EF publication flag |
| idefrh | Relationship to economic family head |
| idefseq | Economic family sub-sequence number |
| idemplo | Employee home relocation loan dedn (248) |
| idestat | Educational status |
| idexplor | Exploration and development expenses (224) |
| idext | Extra numbers [array] |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idgstreb | GST rebate (457) |
| idhhrh | Relationship to head of household |
| idhomstu | College res/resdnt homeowner assist (558) |
| idialimo | Alimony income received |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idimmi | Years since immigration |
| idind | Industry |
| idinogv | Other government income (non-taxable) |
| idinoth | Other money income (non-taxable) |
| idinseq | Individual sub-sequence number |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisa | Social assistance income |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| iditogv | Other government income (taxable) |

| | |
|-----------|--|
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idivetp | Veterans pensions and allowances |
| idiworkc | Workers compensation benefits |
| idlabtxg | Gross Labour funds bought (413) |
| idlfst | Labour force status |
| idlyfp | Last year full/Part time |
| idlystr | Last year stretches unemployed |
| idlyun | Weeks unemployed |
| idlyww | Weeks worked |
| idmarst | Marital status |
| idmedgro | Medical expenses, gross (330) |
| idmincar | Minimum tax carryover (504) |
| idmovexp | Imputed moving expenses (219) |
| idmschpd | Manitoba school taxes paid |
| idnage | Age |
| idnclos | Allowable other years non-capital loss (252) |
| idninco | No income flag (SPSD variables) |
| idnonlf | Major non-LF activity |
| idnorth | Northern deductions (255) |
| idocc | Occupation |
| idothded | Other deductions from total income (232) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idproptx | Net property taxes paid (556) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrentpd | Total rental payments (555) |
| idrkllyun | Raking foundation: weeks unemployed |
| idrkllyww | Raking foundation: weeks worked |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| idscfcqp | CPP/QPP income (SCF) |
| idscfctc | Child tax credit |
| idscfflg | SCF high-income preservation flag |
| idscfftc | Federal tax credit |
| idscfint | Interest income (SCF) |
| idscfoas | Old age security |
| idscfptc | Provincial tax credits as reported on SCF |
| idscfsa | Social assistance income (SCF) |
| idscfuib | Unemployment insurance benefits |
| idschtp | School type |
| idsex | Sex |
| idstkded | Stock option deduction (249) |
| idsynthi | Synthetic high income person |
| idtuitn | Tuition fees (320) |
| iduipred | Predicted amount of UI received |
| iduirank | Predicted ranked likelihood of getting UI |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucexhas | Exhaustee flag |
| ucgotpa | Received paternity benefits |

| | |
|---------|--|
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucuero | Local unemployment rate (x10)-original value |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucy1 | Weeks on UI in first year before claim |
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

gai Compute new refundable credits or guarantees

SUMMARY

This is a stub function for use by glass-box users who wish to incorporate a new program that does not affect current programs in the tax system (i.e. a new refundable tax credit). It is called by drv after all taxes have been calculated.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|------------------------|
| imiosa | Other SA or guarantees |
|--------|------------------------|

SUMMARY

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested. The SPSM gis function is based on the age of the individual and the years since immigration as well as family net income and family type. The function can calculate GIS, SPA, Extended SPA, and Widowed SPA benefits. The functions contain one sub-function, gissub, which calculates the income on which GIS/SPA benefits are tested.

The GIS/SPA benefits are zeroed out if the Seniors Benefit is turned on. When activated, the Seniors Benefit takes precedence over OAS/GIS. Persons age 60 or over in May 1996 may elect to receive OAS/GIS rather than the seniors benefits if their benefits are higher.

Program Description

The Guaranteed Income Supplement is a monthly, non-taxable, income tested benefit paid to residents of Canada who are in receipt of a basic Old Age Security pension. Recipients must re-apply annually. The Guaranteed Income Supplement is not payable outside of Canada for periods of longer than six months. Income testing is based on net income as defined for income tax purposes with the exception of Old Age Security benefits. In the case of a married couple, including common-law, the combined income of the pensioner and his or her spouse is taken into account. Where the individual or couple have an income above a specified amount, the Guaranteed Income Supplement is reduced at a rate of either \$1 for every \$2 of income, or \$1 for every \$4 of income, dependent upon the individuals' marital status and the benefit status of their spouses (if present).

The Guaranteed Income Supplement was established in 1966 to provide monthly benefits to OAS pensioners born on or before December 31, 1910, whose income is below a specified amount. For 1967, the monthly benefit was \$40 and set at 40 percent of the OAS pension thereafter. The Guaranteed Income Supplement has been changed on various occasions, the most important of which were as follows: 1970, which extended GIS to all OAS beneficiaries who met the income criterion; 1972, provided for annual indexation of GIS based on the CPI; 1973, changed indexation to quarterly from annual; 1977, provided the payment of GIS to partial OAS recipients; 1984, provided an increase in maximum GIS benefits to recipients of partial OAS pensions in the amount of the difference between full and partial OAS benefits.

The Spouse's Allowance is a monthly benefit designed to recognize the difficult circumstances faced by those couples living on the pension of only one spouse, and by many widowed persons. The Allowance is payable to the 60 to 64 year old spouse of an Old Age Security pensioner as well as to any low-income widow or widower age 60 to 64, providing the potential recipient has been a resident of Canada for at least 10 years after reaching age 18. This benefit is income-tested based upon the combined income of both the beneficiary

and his/her spouse and must be re-applied for annually. Benefits are not considered as income for income tax purposes and are not payable outside Canada for periods of more than six months.

The Spouse's Allowance came into effect October 1, 1975 and provided for the payment of benefits to persons aged 60 to 64 inclusive who are married to and living with an OAS pensioner. The amount was set at a sum equal to the monthly OAS pension plus the maximum monthly GIS at the married rate. Significant changes to the Spouse's Allowance were made in 1977 with the provision for partial Spouse's Allowance using the same criterion as for OAS; 1979, the extension of the Spouse's Allowance to include surviving spouses of deceased Old Age Security pensioners; 1985, with the provision for Spouse's Allowance to be paid to all widows/widowers age 60 to 64 regardless of deceased spouse's prior pension status.

The GIS, and SPA programs have been designed with the overall income of elderly Canadians in mind and ensure that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. Because the programs are interrelated, a better understanding is facilitated by discussing them together across the five different family types listed below and discussed in turn. These categories define the basic structure of the SPSM implementation of these programs. In these descriptions pensioner is understood to mean a recipient of either full or partial OAS benefits.

| GIS/SPA Type | Family Status |
|---|---|
| 1. Single Pensioner: | Unattached Individual, OAS Pensioner |
| 2. Widowed Pensioner: | Unattached Individual, Age 60-64, Widowed |
| 3. Married 2 Pensioner: | Married Couple, Both OAS pensioners |
| 4. Married pensioner with SPA spouse: | Married Couple, OAS Pensioner with SPA recipient |
| 5. Married pensioner with non-pensioner spouse: | Married couple, 1 OAS pensioner, spouse ineligible for OAS or SPA |

Single Pensioner

If an individual is receiving a full Old Age Security Pension he or she may be eligible for the federal Guaranteed Income Supplement (GIS). GIS is an income tested benefit payable to OAS beneficiaries with little or no income beyond to the basic OAS benefit. In the case where a beneficiary of a full OAS pension has no additional income or income of up to a maximum of \$24 per year, his/her GIS benefit will be the maximum. For every two dollars of income in excess of \$24 annually, the GIS benefit is reduced by one dollar until the benefit is reduced to zero.

In the case where the beneficiary is eligible for only partial OAS benefits, but has little or no other income (again, to a maximum of \$24 per year), supplementary GIS is available. Supplementary GIS makes up the difference between the partial OAS benefit that the beneficiary is receiving and full OAS benefits. Thus, a beneficiary with 20 years of residence in Canada would receive 30/40 of a full OAS pension and supplementary GIS benefits up to an amount equivalent to 10/40 of a full OAS pension. This ensures that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. In addition to the partial OAS pension and the supplementary GIS benefits, an individual may also receive the regular GIS benefit. Both the regular and the supplementary GIS benefits are income tested and reduced at a rate of one dollar for every two dollars of income in excess of \$24 per year.

Widowed pensioner

The Spouse's Allowance is an income-tested benefit payable to individuals who are between 60 and 65 years of age and are spouses of Old Age Security beneficiaries. In order to qualify for this benefit, the applicant must meet the same residence requirements set out for the basic Old Age Security Pension. The guarantee for the benefit is equivalent to the sum of the full basic Old Age Security Pension plus the Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of the beneficiary's monthly income or the couple's combined monthly income until the OAS-equivalent is reduced to zero. At that point the GIS portion reduces at the rate of \$1 for every \$4 of combined income until benefits are reduced to zero.

If an individual receiving Spouse's Allowance becomes a widow or widower, they are then eligible for an Extended Spouse's Allowance until they reach the age of 65 at which time they will become eligible for a basic Old Age Security Pension and the Guaranteed Income Supplement. The amount of the Extended Spouse's Allowance is somewhat higher than the regular Spouse's Allowance to account for the fact that the beneficiary is now in a single income family.

In addition to the regular and Extended Spouse's Allowances, benefits exist for widows and widowers between 60 and 65 years of age whose spouse died prior to becoming a pensioner. The Widowed Spouse's Allowance pays benefits at the same rate as the Extended Spouse's Allowance. Both the Extended and Widowed Spouse's Allowances are reduced by \$3 for every \$4 of monthly income until the OAS-equivalent portion is reduced to zero and then by \$1 for every additional \$2 of monthly income until the GIS-equivalent portion is reduced to

zero.

The Spouse's Allowance is not considered as income for income tax purposes but may, however, affect taxes indirectly via the spousal exemption amount.

Married Couple, Both Pensioners

GIS eligibility for couples is first based upon receipt of OAS. If the applicant is not eligible for OAS, then he or she is not eligible for GIS. Once eligibility for GIS has been established, then the rate of recovery or rate at which GIS is reduced because of additional income, must be established. For two pensioner couples, where both are OAS beneficiaries, GIS is reduced by one dollar for every four dollars of the couple's combined monthly income in excess of \$48 per year. In 1984, the maximum regular GIS payable to a married beneficiary was less than that payable to a single beneficiary. As in the case of a single beneficiary receiving only partial OAS benefits, a supplementary GIS benefit is available which makes up the difference between partial and full OAS benefits.

Married Pensioner with SPA Spouse

GIS is payable to the pensioner at the same rate as is paid to an individual in married couple where both spouses are pensioners. The amount of SPA benefit is equivalent to the combination of the full basic Old Age Security Pension and Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of combined monthly income (75%) until the OAS-equivalent is reduced to zero. At that point both the remaining portion of the Spouse's Allowance, and the pensioner's Guaranteed Income Supplement are each reduced by \$1 for every additional \$4 (50%) of the couple's combined monthly income.

The benefits payable to a pensioner with a given income could vary depending on whether the couple had applied for SPA; the benefit being higher for single pensioner couples. To ensure benefits are equal in these cases the SPA couple's benefits begin to be reduced at the effective rate of 25%, \$1 for each \$4 of family income after the crossover point. This is done by holding the pensioner's benefits fixed from the crossover point until the SPA benefits are reduced to zero; then the pensioners benefits continue to be reduced at the same married rate (see following figure).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

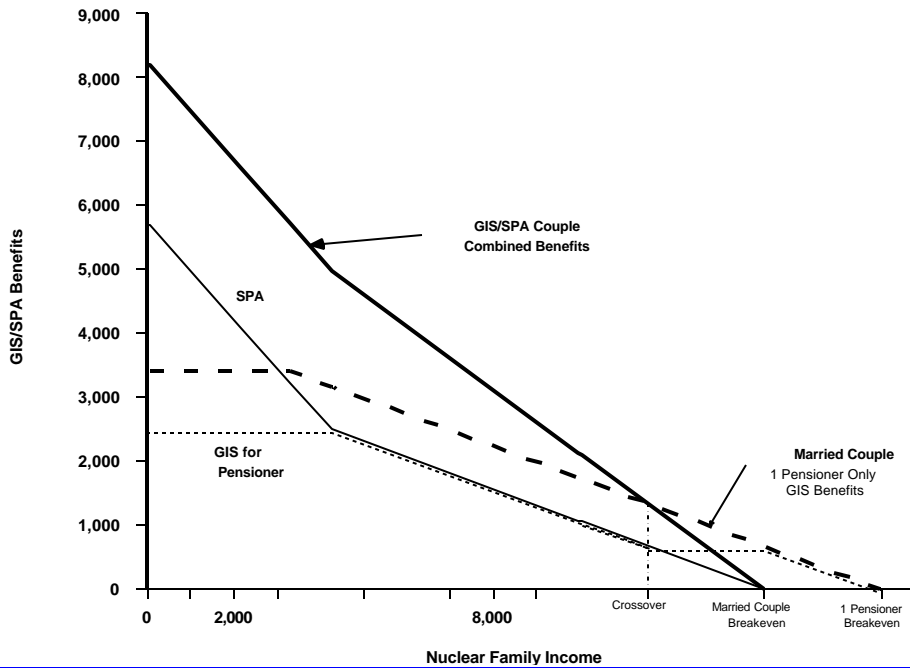


Figure 2 GIS/SPA Benefits for Married Pensioner with Non-Pensioner Spouse

Married Pensioner with Non-Pensioner Spouse

In the case of a pensioner whose spouse is under 60 years of age or is a recent immigrant, and therefore not eligible for OAS, GIS or SPA, the pensioner receives GIS at the higher single rate and benefits are reduced \$1 for every \$4 of the couple's combined monthly income with the first reduction being made only when their combined monthly income exceeds an amount equivalent to basic OAS plus \$4 per month. (see figure above)

SPSM Implementation

The gis function determines benefits based on the age of the individual, the years since immigration as reported at the time of the SCF survey in April 1985, combined family income, and family type. The function makes use of the imoasres, imoaspar variables created in the oas function to determine residential eligibility.

The function initially performs some screenings and pointer assignments for efficiency, and then makes a call to the gissub function to determine the previous years income, which will be used when calculating GIS/SPA benefits. This sub-function adds together all the components of total income listed below and multiplies them by a deflator PYINC to estimate the value of the previous year's income.

| | |
|----------------------|--|
| Net Income = PYINC * | Deflator To Simulate Previous Years Income |
| imicapgt | Taxable Capital Gains |
| + imidivt | Dividends Received |
| + idiint | Investment Income |

| | |
|-----------|--------------------------------------|
| + idiemp | Employment Income |
| + idisenf | Non-Farm Self Employment Income |
| + idisefm | Farm Self Employment Income |
| + idioinv | Other Investment Income |
| + iditoh | Other Income |
| + idicqp | CPP/QPP Benefits |
| + idipens | Private Pension Income |
| + iditogv | Other Taxable Government Transfers |
| + imiuib | Unemployment Insurance Benefits |
| - imalexp | Other allowable Employment Expenses |
| - imcqpc | CPP/QPP Contributions |
| - imuic | Unemployment Insurance Contributions |

Benefits are then calculated in each of the five groups discussed above. Every individual is assigned a value for the variables imoldtyp and ingistyp which define the type of pensioner couple and are used in the gist function.

The GIS supplement for the OAS shortfall for immigrants is calculated conditional on the setting of GISOASFLAG in all cases except the SPA recipient in a married couple. This should be set to one in years 1984 and later. No adjustment is made to account for the first quarter in 1984 for which no shortfall adjustment was made.

Take-up rates for GIS and SPA benefits are optionally applied depending on the value of the GISTURFLAG parameter. The rates are applied to individuals and to one spouse of a married couple. The algorithm assumes that the take-up rate look-up table margins are all dollar denominated GIS or SPA benefit levels.

Relation to Other SPSM Routines

GIS and SPA depends on the input parameters for basic GIS/SPA benefits and various variables calculated in the oas function. The function also makes use of parameters derived in the mpc function. The mpc function also ensures that GIS is not calculated without OAS being calculated first. The calculation of OAS and other modeled variables occurs prior to and effects the calculation of GIS and related GIS 'top-up' programs in the gist function. The gist function is called after txprov (calculation of provincial income taxes) by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|-------|-----------------------------------|
| BESPA | Basic GIS portion of extended SPA |
| BGISM | Basic GIS - married |

| | |
|----------------|---|
| BGISS | Basic GIS - single |
| BOAS | Basic OAS |
| ESPAT | Extended SPA take-up rate by benefit level [benefit,rate] |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISCT | GIS take-up rate: pensioner couple by benefit level |
| [benefit,rate] | |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISOASFLAG | 1984 GIS top-up to OAS residence shortfall flag |
| GISOT | GIS take-up rate: one pensioner couple by benefit level |
| [benefit,rate] | |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| GISRRS | Basic GIS reduction rate: single pensioners |
| GISST | GIS take-up rate: single pensioner by benefit level |
| [benefit,rate] | |
| GISTURFLAG | GIS take-up flag: apply 5 take-up tables |
| PYINC | Deflator to calculate previous year income |
| SPAOSRR | OAS portion of SPA taxback rate |
| SPARL | SPA reduction point: one married/ widowed |
| SPAT | SPA take-up rate by benefit level [benefit,rate] |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |

INPUT VARIABLES:

| | |
|----------|--|
| hhnfnf | Number of nuclear families in household |
| idage | Age |
| idicqp | CPP/QPP income (114) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmarst | Marital status |
| idrand | Random numbers [array] |
| imalexp | Allowable employment expenses |
| imcqpcc | CPP/QPP contributions |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imioas | OAS benefits |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |
| imuic | UIC contributions |
| nfageeld | Age of eldest in nuclear family |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imigis | GIS benefits |

| | |
|----------|--------------------------------|
| imispa | Spouse's allowance |
| imninc | No income flag |
| imoldtyp | Type of GIS/SPA nuclear family |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |

gist Compute Provincial GIS top-ups for elderly

SUMMARY

The gist function calculates benefits for eight provincial GIS supplementation programs in eight provinces; Newfoundland, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. The function requires that both OAS and GIS be calculated first. All provincial senior's programs within SPSM are in this function. Please note that the provincial programs here are not exhaustive, but all major benefits are covered.

Program Description

Eight provinces provide cash benefits to pensioners in receipt of federal OAS, GIS, and in some cases, SPA benefits. The eight programs differ in terms of the level of benefits payable, eligibility requirements, etc. Each program listed below is modeled and documented independently.

| | |
|------------------|--|
| Newfoundland | Low-income Seniors Benefit |
| Nova Scotia | Special Social Assistance |
| New Brunswick | Low-income Seniors Benefit |
| Ontario | Guaranteed Annual Income System (GAINS-A) |
| Ontario | Sales Tax Grant Program |
| Ontario | Property Tax Grant Program |
| Manitoba | Supplement for Pensioners (55+) |
| Saskatchewan | Income Plan (SIP) |
| Alberta | Assured Income Plan AAIP |
| Alberta | Alberta Seniors Benefit |
| Alberta | Widow's Pension |
| British Columbia | GAIN for Seniors Supplement (Guaranteed Available Income for Need) |

Newfoundland Low-Income Seniors Benefit

A benefit is given to seniors (aged 65 and over) with annual family income less than NFSBTD. The maximum benefit NFSBBAS is reduced by NFSBRR for each dollar of family income over NFSBTD.

Nova Scotia Special Social Assistance

Up to 1991, all residents of the province of Nova Scotia who are in receipt of GIS in March

of a given year were eligible for Special Social Assistance. Application for benefits had to be made each year. SPA recipients were not eligible. One lump-sum payment was made yearly in one of four amounts scaled to the proportional GIS of the recipient as follows:

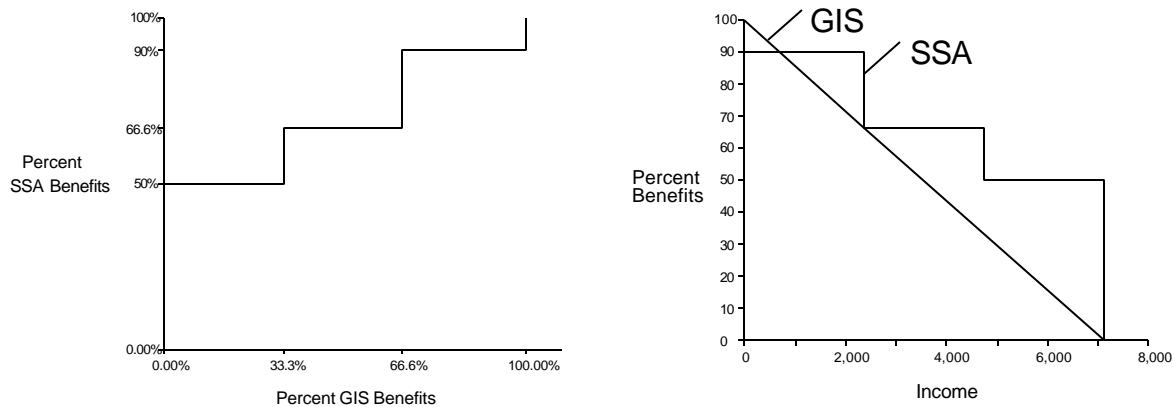


Figure 3. Nova Scotia Special Social Assistance

So, for example, a pensioner receiving maximum GIS benefits would have received maximum SSA benefits and a pensioner receiving 80% of maximum GIS benefits would have received 90% of maximum SSA benefits.

New Brunswick Low-Income Seniors Benefit

A benefit is given to seniors who receive GIS. If both spouses received GIS, the benefit is given to the spouse with the lower net income.

Ontario Guaranteed Annual Income System (GAINS-A)

GAINS-A provides a monthly benefit to Ontario residents in receipt of GIS who meet certain income and residence requirements. A person must have lived in Ontario for the year prior to applying for GAINS-A or for at least 20 years after turning 18 years of age. GIS recipients need not apply since their eligibility is reviewed automatically. SPA recipients are not eligible. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

Ontario Sales Tax Grant Program

The sales tax grant has been a flat \$50 per person over age 65 from 1984 to 1989. The maximum value of the sales tax grant is stored in the ONTSTG parameter. The variable `impstg` is used to store individual sales tax grants calculated by the model.

Ontario Property Tax Grant Program

The property tax grant is payable to seniors who are head of their household. The amount of the grant varies by tenure and actual costs. For years 1984 to 1989 renters receive 20% of their rental costs up to a maximum of \$500. Homeowners receive the maximum benefit. The fraction of rental costs allowed is contained in the ONTFPTG parameter while the

maximum benefit is stored in the parameter ONTPPTG. Calculated benefits are stored in the variable impptg.

Calculated benefits for both the sales tax grants and the property tax grants are also added to the variable imigist.

Manitoba Supplement for Pensioners (MSP, 55+)

The MSP provides quarterly benefits to Manitoba residents who are in receipt of certain levels of GIS and SPA benefits, including extended and widowed SPA recipients. MSP also provides benefits to persons aged 55 and over who are not in receipt of OAS benefits but whose income falls in a specified range and is derived at least 50% from pension sources. Eligibility is renewed automatically for GIS and SPA recipients, but non-GIS/SPA pensioners 55 years of age and over must apply.

In the case of GIS/SPA recipients there are two levels of benefits, single and married. An SPA recipient is treated as a single pensioner. Benefits are reduced at the same rate as GIS based on family income. Non GIS/SPA pensioners are treated in exactly the same manner except for couples benefits are reduced based on individual annual income.

Saskatchewan Income Plan

SIP provides monthly benefits to Saskatchewan residents in receipt of GIS and whose incomes don't exceed specified levels. SPA recipients are not eligible for SIP benefits. There are two levels of benefits, single and married. There are three different reduction rates. Unattached Individuals and Married Couples where both are GIS pensioners SIP benefits are reduced by \$1 for each \$1 reduction in GIS. For a pensioner whose spouse is not eligible for OAS/GIS/SPA the benefit is reduced by \$3 for each \$1 reduction in GIS benefits. The pensioner spouse of an SPA recipient has their benefit reduced by \$1 for each \$3 reduction in their spouse's SPA. There are monthly minimum benefits at both single and married levels.

Alberta Assured Income Plan

AAIP benefits are payable monthly to all Alberta residents who are in receipt of GIS benefits or who became eligible for the extended SPA prior to May 1983. Regular SPA recipients are ineligible. Since May 1983 all extended SPA recipients are referred to the Alberta Widow's pension. Application is not required. There is one individual benefit which is reduced by 50¢ for each \$1 reduction in GIS benefits to a minimum of \$10 monthly.

Alberta Seniors Benefit

Starting in 1994, the AAIP was replaced by the Alberta Seniors Benefit. When ALTASOPT is set to 2, the Alberta Seniors Benefit is calculated. Seniors are split into six categories:

- single seniors who rent their home,
- single seniors who own their home,
- seniors married to non-seniors who rent their home,
- seniors married to non-seniors who own their home,
- two senior couples who rent their home,

and two senior couples who own their home

When ASBSSOPT is set to 2, seniors married to non-seniors are treated in the same manner as two senior couples. Benefits and reduction rates vary by these categories (ASBBASIC, ASBRENT, ASBSS, ASBNSS, ASBRR). Maximum benefits are phased out using non-deductible income which is defined as last year's total income (imitot) minus OAS benefits (imioas), registered pension plan contributions (idrpp), RRSP contributions (idrrsp), and ASBEMP times idiemp.

For persons who do not qualify for OAS because of residency requirements, a proportion of the total benefit is assigned depending on marital status and household tenure (ASBNOAS). For these persons, BOAS is deducted from their non-deductible income. When ASBSSOPT is set to 1, a two senior couple in which one of the seniors does not meet the OAS eligibility requirement is treated as 1 senior couple.

Alberta Widowed Pension

The Alberta Widow's pension provides monthly benefits to widows and widowers aged 55 to 64 years who reside in Alberta. Yearly Application must be made. Maximum benefits are reduced by \$1 for each \$1 of previous year's non-exempt annual income. Extended SPA recipients may apply however their SPA benefits are included in their income when calculating entitlement.

British Columbia GAIN for Seniors Supplement

GAIN provides a monthly benefit to British Columbia residents in receipt of GIS or SPA who meet certain income and residence requirements. GIS/SPA recipients need not apply since their eligibility is reviewed automatically. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

SPSM Implementation

The user is invited to read the source code in order to examine the implementation of these programs. A subsequent update will include a written description of the implementation of these programs.

Interpretation

In general the problems of coverage, including take-up, discussed in the interpretation of OAS and GIS are also present here. Specifically there are no tests made for residential eligibility applied on Ontario GAINS-A. Currently double counting occurs for the benefits for Manitoba residents under the age of 65. This is because the calculated income is reported in one variable (imigist) and reported income from the survey is reported in another (imisa). There are plans to fix the problem; however, the dollar amounts are small in any case.

Relation to Other SPSM Routines

Provincial GIS supplement programs depend on various program specific input parameters as

well as variables calculated in the oas and gis functions. The mpc function ensures that provincial GIS supplements are not calculated without GIS being calculated first. The calculation of OAS and GIS occurs prior to and effects the calculation GIS 'top-up' programs in the gist function. The gist function is called after gis by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALTAMIN | Alberta GIS supplement minimum annual benefit |
| ALTASC | Alberta GIS supplement maximum annual benefit |
| ALTASOPT | Alberta seniors option [1=GIST,2=new seniors benefit 1994] |
| ALTAWP | Alberta widow's pension maximum annual benefit |
| ASBBASIC | Alberta seniors benefit annual basic benefit |
| ASBEMP | Alberta seniors benefit employment inclusion rate |
| ASBNOAS | Alberta seniors benefit reduction if no OAS [senior type] |
| ASBNSS | Alberta seniors benefit non-senior spouse supplement |
| ASBRENT | Alberta seniors benefit renter supplement |
| ASBRR | Alberta seniors benefit reduction rate [senior type] |
| ASBSS | Alberta seniors benefit senior spouse supplement |
| ASBSSOPT | Alberta seniors benefit 1 senior couple option [1=model separately,2=model as senior couples] |
| BCC | British Columbia GIS supplement: married pensioners |
| BCS | British Columbia GIS supplement: single pensioners |
| BOAS | Basic OAS |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISTFLAG | Provincial GIS top-up flag |
| MANC | Manitoba GIS supplement: married pensioners |
| MANCNPF | Manitoba GIS supplement reduction point: married |
| MANS | Manitoba GIS supplement: single pensioners |
| MANSNPF | Manitoba GIS supplement reduction point: single |
| NBSB | New Brunswick Low-Income Seniors' Benefit |
| NBSBSPA | N.B. Low-Income Seniors' Benefit - SPA eligibility |
| NFSBBAS | NFLD Low-Income Seniors' Benefit base amount |
| NFSBRR | NFLD Low-Income Seniors' Benefit reduction rate |
| NFSBTD | NFLD Low-Income Seniors' Benefit turndown |
| NS13 | Nova Scotia GIS supplement for 1/3 GIS |
| NS23 | Nova Scotia GIS supplement for 2/3 GIS |
| NSLT13 | Nova Scotia GIS supplement for less than 1/3 GIS |
| NSMAX | Nova Scotia maximum GIS supplement level |
| ONTC | Ontario GIS supplement: married pensioners |
| ONTFPTG | Ontario property tax grant (fraction of rent) |
| ONTPTG | Ontario property tax grant for seniors |
| ONTS | Ontario GIS supplement: single pensioners |
| ONTSTG | Ontario sales tax grant for seniors |
| PYINC | Deflator to calculate previous year income |
| SASKC | Saskatchewan GIS supplement: married pensioners |
| SASKMINC | Saskatchewan GIS supplement minimum benefits: married |

| | |
|------------|--|
| SASKMINS | Saskatchewan GIS supplement minimum benefits: single |
| SASKRR1 | Saskatchewan GIS supplement reduction rate: regular |
| SASKRR2 | Saskatchewan GIS supplement reduction rate: 1 GIS |
| SASKRR3 | Saskatchewan GIS supplement reduction rate: SPA |
| SASKS | Saskatchewan GIS supplement: single pensioners |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|--|
| hdageeld | Age of eldest in household |
| hdprov | Province |
| hdtenur | Tenure |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawls |
| idmarst | Marital status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imalexp | Allowable employment expenses |
| imcqqpc | CPP/QPP contributions |
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imicapgt | Capital gains (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoasres | Partial OAS fraction |
| imrentpd | Imputed rent paid |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|---------|---|
| imiasb | Alberta seniors benefit |
| imigist | GIS provincial top-up |
| imninc | No income flag |
| impptg | Provincial property tax grant for seniors |
| impstg | Provincial sales tax grant for seniors |

isneg Is argument negative ?

SUMMARY

```
int isneg(var);
```

```
NUMBER var
```

The `isneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a negative value. If the argument is zero or positive, a value of zero is returned. Note that, unlike a function, the `isneg` macro cannot take an expression as an argument. The expression `isneg(var)` is functionally equivalent to an expression of the form `(var < 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnneg Is argument non-negative?

SUMMARY

```
int isnneg(var);
```

```
NUMBER var;
```

The `isnneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-negative value. If the argument is negative, a value of zero is returned. Note that, unlike a function, the `isnneg` macro cannot take an expression as an argument. The expression `isnneg(var)` is functionally equivalent to an expression of the form `(var > 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnzero Is argument non-zero?

SUMMARY

```
int isnzero(var);
```

```
NUMBER var;
```

The `isnzero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-zero value. If the argument is zero, a value of zero is returned. Note that, unlike a function, the `isnzero` macro cannot take an expression as an argument.

The expression `iszero(var)` is functionally equivalent to an expression of the form `(var != 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

iszero Is argument zero?

SUMMARY

```
int iszero(var);
```

```
NUMBER var;
```

The `iszero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains the value zero. If the argument is non-zero, a value of zero is returned. Note that, unlike a function, the `iszero` macro cannot take an expression as an argument. The expression `iszero(var)` is functionally equivalent to an expression of the form `(var == 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

lkup1 Table look-up with interpolation/extrapolation

SUMMARY

```
NUMBER lkup1(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The `lkup1` function is used to perform table look-ups with interpolation. Expressed another way, `lkup1` evaluates continuous piecewise linear functions.

The first argument (`tbl`) is the address of an SPSM look-up table, which is an $n \times 3$ array of floating point numbers. The first two columns of `tbl` contain the (X,Y) pairs that define the piece-wise linear function. The third column of `tbl` contains the slope of the segment that starts at the (X,Y) pair. SPSM look-up tables are defined in parameter input files, and come in two varieties, as perceived by the user. One variety allows the user to specify the (X,Y) pairs, and computes the slopes automatically. The other variety allows the user to specify all the X values, the first Y value, and the slopes, and computes the remaining Y values automatically. In both cases the internal representation of the lookup table is identical and is the same as that expected by the `lkup1` function.

The second argument of `lkup1` is an integer giving the number of rows in `tbl`. Generally this value is another member of the same parameter structure in which the `tbl` is defined.

The third argument of lkup1 is the X value whose corresponding Y value is to be determined. lkup1 returns the corresponding Y value.

lkup2 Table look-up without interpolation

SUMMARY

```
NUMBER lkup2(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The lkup2 function is used to perform table look-ups without interpolation. Expressed another way, lkup2 evaluates step functions.

The first argument (tbl) is the address of an SPSM look-up table, which is an n x 3 array of floating point numbers. The first two columns of tbl contain the (X,Y) pairs that define the left-most point of each step in the step function. The third column of tbl contains the slope of the segment that starts at the (X,Y) pair, but the lkup2 function only makes use of the (X,Y) pairs in the look-up table. The slopes, though always present in look-up tables, are not used.

The second argument of lkup2 is an integer giving the number of rows in tbl. Generally this value is another member of the same parameter structure in which the tbl is defined.

The third argument of lkup2 is the X value whose corresponding Y value is to be determined. lkup2 returns the corresponding Y value.

maxn Find the maximum of two numbers

SUMMARY

```
NUMBER maxn(x, y);
```

```
NUMBER x;  
NUMBER y;
```

The maxn function returns the value of the larger of its two input arguments.

memo1 Compute memo items for reporting

SUMMARY

The memo1 function is used to calculate several reporting variables as aggregates of other

modeled variables. The function calculates all dollar denominated reporting variables up to the level of disposable income. In addition taxable filer status is determined.

SPSM Implementation

The `memo1` function operates at the individual level of analysis and skips individuals with no income. The algorithm first assigns filer status as relevant/non-relevant and taxable/non-taxable based on taxes paid and credits received. The function then calculates several reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|---|
| <code>imiemp =</code> | <code>idiemp;</code> |
| <code>imiself =</code> | <code>idisenf + idisefm;</code> |
| <code>imfoth =</code> | <code>iditogv + idinogv;</code> |
| <code>impoth =</code> | <code>ZERO;</code> |
| <code>imicqp =</code> | <code>idicqp;</code> |
| <code>immemp =</code> | <code>idiemp + idisenf + idisefm;</code> |
| <code>imminv =</code> | <code>idiint + ididiv + idicapg + idioinv;</code> |
| <code>immoth =</code> | <code>idipens + iditoth + idinoth;</code> |
| <code>immmkt =</code> | <code>immemp + imminv + immoth;</code> |
| <code>imftran =</code> | <code>imffa + imioas + imiotg + imigis + imispa + imctc + imfcben + imicqp + imfoth + imiuib + imfstc + imqtar + imfsa + imiosa + imfortc;</code> |
| <code>imctcben =</code> | <code>imctc + imfcben;</code> |
| <code>imfothtr =</code> | <code>imfoth + imfortc;</code> |
| <code>imfnewpg =</code> | <code>imiotg + imiosa;</code> |
| <code>imigispa =</code> | <code>imigis + imispa;</code> |
| <code>impfp =</code> | <code>impfa + imqaafa + imqnbfa + imiafetc + imnbcben + imibcfb + imoccea + imqfatc + imscb + imses + imnscb + imibceib;</code> |
| <code>imptran =</code> | <code>impfp + imigist + imptc + impfa + importc + iminsda;</code> |
| <code>immtran =</code> | <code>imptran + imftran;</code> |
| <code>immtot =</code> | <code>immmkt + immtran;</code> |
| <code>imftax =</code> | <code>imuic + imcqppc + imrepay + imtxf;</code> |
| <code>imptax =</code> | <code>imtxp;</code> |
| <code>immtax =</code> | <code>imftax + imptax;</code> |
| <code>immdisp =</code> | <code>immtot - immtax;</code> |
| <code>immicons =</code> | <code>immdisp; (initial assignment, may be re-assigned in memo2)</code> |

Relation to Other SPSM Routines

The `memo1` function is called by `drv` immediately after the income tax and cash transfer algorithms have executed. It is called just before the execution of the commodity tax model (`ctmod`) which makes use of some of the aggregated output variables. The `memo2` function follows `ctmod` to add information to the reporting variables calculated in the `memo1` function.

CROSS REFERENCE

| Function | Description |
|-----------------------|---|
| INPUT VARIABLES: | |
| <code>hhnin</code> | Number of individuals in household |
| <code>idialimo</code> | Alimony income received |
| <code>idicapg</code> | Capital gains (actual) |
| <code>idicqp</code> | CPP/QPP income (114) |
| <code>ididiv</code> | Dividend income (actual) |
| <code>idiemp</code> | Wages & salaries |
| <code>idiint</code> | Interest income (121) |
| <code>idinogv</code> | Other government income (non-taxable) |
| <code>idinoth</code> | Other money income (non-taxable) |
| <code>idioinv</code> | Other investment income with net rental |
| <code>idipens</code> | Pension income (115) |
| <code>idisefm</code> | Self-employed income - farming |
| <code>idisenf</code> | Self-employed income - non-farming |
| <code>iditogv</code> | Other government income (taxable) |
| <code>iditoth</code> | Other non-government income (taxable) |
| <code>idivetp</code> | Veterans pensions and allowances |
| <code>idiworkc</code> | Workers compensation benefits |
| <code>imbft</code> | Basic federal tax |
| <code>imcqqpc</code> | CPP/QPP contributions |
| <code>imctc</code> | Child tax credit |
| <code>imfcben</code> | Total Federal Child Benefits |
| <code>imffa</code> | Federal portion of family allowances |
| <code>imfortc</code> | Federal other refundable tax credits |
| <code>imfsa</code> | Federal social assistance |
| <code>imfstc</code> | Federal sales tax credit |
| <code>imheatrl</code> | Federal relief for heating expenses |
| <code>imiafetc</code> | Alberta Family Employment Tax Credit Benefits |
| <code>imibceib</code> | B.C. Earned Income Benefit |
| <code>imibcfb</code> | B.C. Family Bonus |
| <code>imigis</code> | GIS benefits |
| <code>imigist</code> | GIS provincial top-up |
| <code>iminet</code> | Net income |
| <code>iminsda</code> | NS Direct Assistance Program |
| <code>imioas</code> | OAS benefits |
| <code>imiosa</code> | Other SA or guarantees |
| <code>imiotg</code> | Other taxable demogrants |
| <code>imispa</code> | Spouse's allowance |

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imnbcben | Total NB child tax Benefits |
| imnccb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnscb | Nova Scotia Child Benefit |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| impfa | Provincial family allowance |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| importc | Other refundable provincial tax credits |
| impsa | Provincial social assistance |
| imptc | Refundable provincial tax credits |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqnbfa | Quebec newborn Allowance |
| imqtar | Quebec tax abatement (refundable) |
| imrepay | Social Benefits Repayments |
| imscb | Saskatchewan Child Benefit |
| imses | Saskatchewan Employment Supplement |
| imtxf | Federal income tax payable |
| imtxp | Provincial income tax payable |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|---|
| imctcben | Federal child tax credit and child benefits |
| imfiler | Taxable filer status |
| imfnewpg | Federal new programs |
| imfoth | Federal other government income |
| imfothtr | Federal other trans income and ref. credits |
| imftax | Federal taxes |
| imftran | Federal transfer income |
| imicqp | CPP/QPP payable |
| imiemp | Wages and salaries |
| imigispa | GIS and spouse's allowance |
| imiself | Total self-employment income |
| immdisp | Disposable income |
| immemp | All employment income |
| immicons | Consumable income |
| imminv | Investment income |
| immmkt | Market income |
| immoth | Other income |
| immtax | All taxes |
| immtot | Total income |
| immtran | All transfer income |
| impalltc | All refundable provincial tax credits |
| impfp | Provincial family programs |
| impoth | Provincial other government income |
| imptax | Provincial taxes |
| imptran | Provincial transfer income |

SUMMARY

The `memo2` function is used to calculate several reporting variables as aggregates of other modeled variables. The function calculates all dollar denominated reporting variables up to the level of consumable income.

SPSM Implementation

The `memo2` function operates at the individual level of analysis and skips individuals with no income. Aspects of the function are not executed if the commodity tax model has not been run (`CTMOD=0`). The function first adjusts several reporting variables calculated in `memo1` as follows.

| Reporting Variable | Formula |
|-------------------------|--|
| <code>imftax =</code> | <code>imftax + imtxfc</code> |
| <code>imptax =</code> | <code>imptax + imtxpc</code> |
| <code>immtax =</code> | <code>immtax + imtxfc + imtxpc</code> |
| <code>immicons =</code> | <code>immdisp - imtxfc - imtxpc</code> |

The function next calculates additional reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|--------------------------------------|
| <code>imnettr =</code> | <code>immtran - immtax</code> |
| <code>imothrep =</code> | <code>imrepay - imuibr</code> |
| <code>imqta =</code> | <code>imqtaa + imqtar</code> |
| <code>imfedbal =</code> | <code>imftax - imftran</code> |
| <code>imprvbal =</code> | <code>imptax - imptran</code> |
| <code>impovinc =</code> | <code>immtot - imctc - imfstc</code> |

Relation to Other SPSM Routines

The `memo2` function is called by `drv` immediately after the commodity tax algorithms (`ctmod`) have executed. The function adds information to the reporting variables calculated in the `memo1` function.

Please refer to the [Variable Guide](#) for detailed descriptions of the variables listed above.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

CTFLAG Commodity tax activation flag

INPUT VARIABLES:

hhnin Number of individuals in household
imftran Federal transfer income
immdisp Disposable income
immtot Total income
immtran All transfer income
imninc No income flag
imptran Provincial transfer income
imqtaa Quebec tax abatement (applied)
imqtar Quebec tax abatement (refundable)
imrepay Social Benefits Repayments
imtxfc Federal commodity taxes
imtxpc Provincial commodity taxes
imuibr UI benefit recovery

OUTPUT VARIABLES:

efin First person in economic family [pointer]
idef Person's economic family [pointer]
imfedbal Federal taxes less transfers
imftax Federal taxes
immicons Consumable income
immtax All taxes
imnettr Net transfers to person
imothrep Other federal repayments
impovinc Income for low income measurement
imprvbal Provincial taxes less transfers
imptax Provincial taxes
imqta Quebec tax abatement (total)

minn Find the minimum of two numbers

SUMMARY

NUMBER minn(x,y);

NUMBER x;

NUMBER y;

The minn function returns the value of the smaller of its two input arguments.

mpc Calculate derived model parameters and do edits

SUMMARY

The mpc function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters. The function currently calculates derived parameters for

use in the commodity tax (`ctmod`) function, the Guaranteed Income Supplement (`gis`) function, and the head/spouse transfer (`txhstr`) function. Performing the calculations in `mpe` increases the efficiency of the program by avoiding multiple calculations for every household. Edit checks are performed for aspects of the commodity tax model and the old age income system. Please refer to the appropriate section in the [Algorithm Guide](#) for details of the specific social and tax programs.

SPSM Implementation

Calculation of Derived Parameters

Two derived parameters for use in the `ctmod` are calculated: a total federal government effective commodity tax rate (CTFTOT) and a total provincial government effective rate (CTPTOT). The federal rate is calculated by adding together the six detailed federal rates produced by the Input/Output model: CTFCID, CTFEXT, CTFMFG, CTFEXT, CTFOEN, and CTFGST. The aggregate provincial rate is calculated in the identical fashion, summing up the 6 provincial rates: CTPRST, CTPLGL, CTPPLQ, CTPTOB, CTPGAS, and CTPAMU.

These parameters are used to ensure equivalent results between the detailed and non-detailed commodity tax model options. When the detailed option is turned off (i.e. the CTDFLAG parameter is set to zero), commodity tax revenues are produced by multiplying the two aggregate rates by the total expenditure of each household. This requires a fraction of the operations for each household when compared to the detailed method.

A single derived parameter, UIBRA, is calculated for use in the `txitax` function. This parameter contains the individual's UIC repayment base amount and is derived from two further parameters: UIBAF, the UI benefit recovery base amount factor, and UIERNMAX, the dollar value of maximum insurable earnings. Please refer to section in this manual for further information on the `txitax` function.

Three derived parameters are calculated for use in the `gis` function. The income breakeven points for GIS/SPA couples and married 1 pensioner couples are calculated here as GISBE1 and GISBE2 respectively. The breakeven points represent the level of family income at which combined GIS/SPA benefits are reduced to zero based on combined family income. They in turn are used to calculate an income crossover point (SPAXO) for the two types of pensioner couples (see following Chart).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

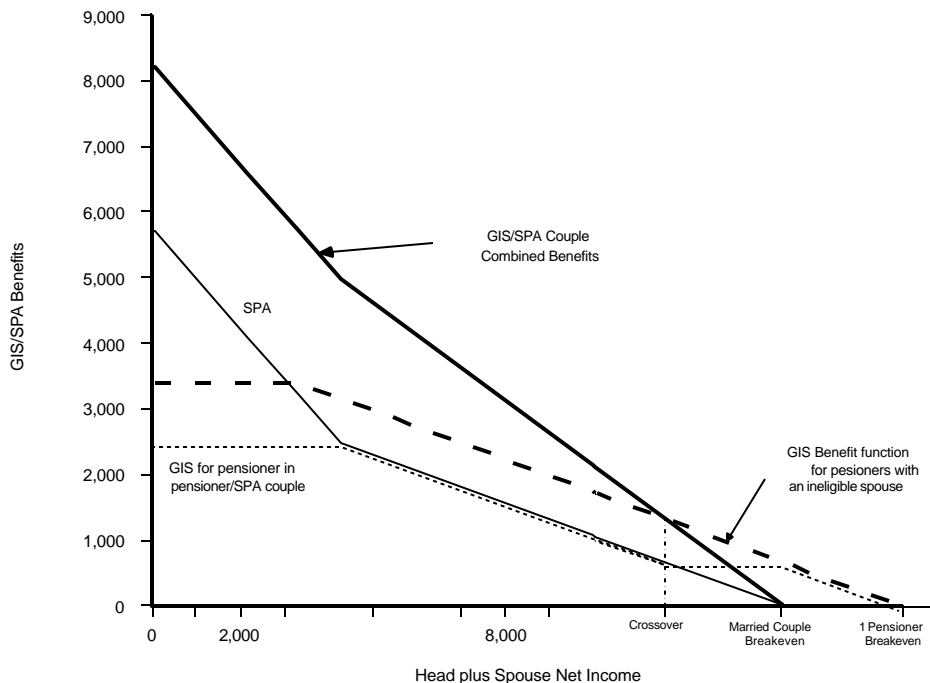


Figure 1 GIS/SPA Benefits for One OAS Pensioner Couples

GISBE1 represents the level of family income at which the GIS benefits of a pensioner married to a non pensioner have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "1 Pensioner Breakeven". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{GISBE1} = \text{BGISS} / \text{GISRRM} + \text{BOAS} + \text{GISRLS}$$

GISBE2 represents the level of family income at which the combined GIS and SPA benefits of a pensioner married to a SPA recipient have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "Married Couple Breakeven".

$$\text{GISBE2} = (\text{BGISM} * 2) / (\text{GISRRM} * 2) + \text{BOAS} / \text{SPA OASRR} + \text{GISRLM}$$

SPAXO represents the level of family income at which the dollar benefits for GIS to a single pensioner married to a non-pensioner spouse exactly equal the combined GIS/SPA dollar benefits payable to a GIS/SPA married couple. On the figure above this is the point on the X axis labelled "Crossover". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{SPAXO} = 2 * \text{GISBE2} - \text{GISBE1}$$

Please refer to the Guaranteed Income Supplement Section of this guide for further details on the use of these derived parameters.

For all of the parameters described above users may refer to the [Parameter Guide](#) for further information.

Edit Checks

Three parameter edit checks are currently implemented in the `mpc` function.

- A check is made to ensure that the tax credit rate parameter `FNTCR` is non-zero. If zero, an error message is issued but processing continues.
- A similar check is made to ensure that the tax credit rate is non-zero. Error handling is also the same as above.
- If the `CTFLAG` parameter is set to 1 (thereby specifying that commodity taxes will be calculated) and the `FXVFLAG` parameter is set to 0 (indicating no FAMEX expenditure data is to be read) then an error message will result and `CTFLAG` will be reset to 0 and no commodity taxes will be calculated.
- If the OAS algorithm is switched off (`OASFLAG=0`) and the GIS algorithm is switched on (`GISFLAG=1`) GIS benefits will be incorrectly calculated as they depend on variables calculated in the `oas` function. If this condition is met an error message will result and `GISFLAG` will be set to 0 and consequently no GIS benefits will be calculated.
- If the GIS algorithm is switched off (`GISFLAG=0`) and the provincial GIS supplement algorithm is switched on (`GISTFLAG=1`) provincial GIS supplement benefits will be incorrectly calculated as they depend on variables calculated in the `gis` function. If this condition is met an error message will result and `GISTFLAG` will be set to 0 and consequently no provincial GIS supplement benefits will be calculated.

Relation to Other SPSM Routines

The `mpc` function is called before `drv` and as such is only executed once for every program run. The function currently calculates parameters and performs edits which can effect a number of functions directly; the `ctmod` function, the `gis` function, the `gist` function, the `txitax` function, and the head/spouse transfer `txhstr` function.

CROSS REFERENCE

| Function | Description |
|----------------------|------------------------------------|
| INPUT PARAMETERS: | |
| <code>FXVFLAG</code> | Read FAMEX expenditure vector file |
| <code>BGISM</code> | Basic GIS - married |
| <code>BGISS</code> | Basic GIS - single |
| <code>BOAS</code> | Basic OAS |
| <code>CTFCID</code> | Federal custom import duties [com] |
| <code>CTFEXD</code> | Federal excise duties [com] |
| <code>CTFEXT</code> | Federal excise taxes [com] |
| <code>CTFGST</code> | Federal GST [com] |
| <code>CTFMFG</code> | Federal manufacturer's sales [com] |

| | |
|-----------|---|
| CTFOEN | Federal other energy taxes [com] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| OASFLAG | Old age security flag |
| QNTCR | Quebec nominal tax credit rate |
| SPAOSRR | OAS portion of SPA taxback rate |
| UIBAF | UI benefit recovery base amount factor (UI and EI) |
| UIBAFNR | UI EI benefit recovery base amount factor for non-repeaters |
| (EI only) | |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIERNMAX | Maximum insurable earnings (UI and EI) |

OUTPUT PARAMETERS:

| | |
|----------|--|
| CTFLAG | Commodity tax activation flag |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| GISBE1 | Breakeven for GIS one pensioner couple |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISTFLAG | Provincial GIS top-up flag |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |

nneg Change negative numbers to zero

SUMMARY

NUMBER nneg(arg);

NUMBER arg;

The nneg function returns either zero or the value of arg, whichever is larger. In other words, nneg changes negative values to zero, leaving positive values unchanged.

SUMMARY

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. Benefits are either full or partial depending on a person's history of residency in Canada. The program is not income tested. The SPSM oas function is based on the age of the individual and, for immigrants, the years since immigration as reported at the time of the SCF survey in April 1985.

The Seniors Benefit program was added to the model based on the description provided with the 1996 Federal Budget. The Seniors Benefit will replace the OAS/GIS benefits in 2001. It will be a tax-free; income tested benefit which will be determined on the basis of the incomes from both spouses. The maximum benefits will be \$120 more than the maximum OAS/GIS for 2001. These rates are fully indexed for inflation.

People aged 60 or over on December 31, 1995 will be able to choose to move to the Seniors Benefit or keep the existing OAS/GIS payments. The SPA program remains in place but is enriched by \$120.

Program Description

As amended in 1957 and 1965 the OAS program provides full benefits to persons born in Canada or those having immigrated to Canada more than 10 years before their 65th birthday with no provisions for partial benefits. In June 1977 the program was modified to provide partial benefits to immigrants having resided in Canada for between 10 to 39 years at the time of their 65th birthday. These individuals are eligible for benefits in proportion to the number of years in Canada at age 65 divided by 40. Note that years of eligibility do not increase after the year of the beneficiary's 65th birthday. Thus an immigrant of twenty years at his/her 65th birthday would be eligible for 20/40 or 50% of full OAS benefits. Persons having immigrated to Canada less than ten years prior to their 65th birthday were ineligible for OAS until 1987. In that year the OAS program was modified to allow for immigrants from certain countries having reciprocal arrangements with Canada to use years of residency in the country of emigration to count towards meeting the minimum 10 years residency requirement. However, in these cases it is only the years of residence in Canada which are used to determine the rate of partial benefits.

SPSM Implementation

The oas function determines benefits based on the age of the individual and the years since immigration as reported at the time of the SCF survey in April 1985. Because OAS provides an individually determined benefit the simulation operates at the level of a household assigning benefits to all eligible individuals. The model first adjusts years since immigration in two ways:

1. It determines the years since immigration at the time of the potential beneficiary's 65th

birthday. This is done by subtracting the difference between the individual's age and 65 years from the reported years since immigration. [immi = immi - (idage-65)]

2. It adjusts the immigration status of persons who were eligible for Full OAS under the original program specifications but would qualify for only partial benefits since 1977. This is done by setting the years since immigration to 40 for persons having 10 or more years since immigration at the time of their 65th birthday if that birthday was in 1977 or earlier. [immi =40 if(immi >=10 and TARGETYEAR- idage <= 12)]

Notice that the years since immigration for any given individual after adjustment number 1 will remain the same regardless of the year for which the simulation is being run. For example an immigrant of 38 years, age 73, would have an adjusted years since immigration of 30 years, (immi = (38-(73-65)=30). Because of adjustment 2 above that individual would receive full OAS benefits in simulations run for 1984 but would receive 75% partial benefits in simulations run for 1988. In other words, a pensioner who is 73 years old in 1984 would have been 65 years old in 1976; the year before partial benefits were introduced. However a 73 year old in 1988 would have been age 65 in 1980; after partial benefits were introduced.

The model next determines if full eligibility requirements have been met for benefits and if so the full year equivalent of maximum OAS benefits are assigned (see BOAS in the *Parameter Guide*). Next, persons ineligible for OAS are screened out. Lastly, the model assigns partial benefits to persons with an adjusted years since immigration of between 10 and 39 years.

With the new Senior Benefit program, first, the seniors benefit (senben.c) is calculated. Then ccept calls drv again, and the benefit is zeroed out and OAS/GIS is calculated instead. For persons who lost under this change, drv is called a third time with the seniors benefit package.

Interpretation

The results of the model are not directly comparable with and thus will not match administrative OAS expenditure figures. The discrepancy arises due to administrative irregularities as well as survey data deficiencies.

There are five major sources of underestimation by the oas function. The benefits of persons having received benefits during 1984, yet who had died before the date of the survey, will not be accounted for in the SPSD/M. The survey coverage excludes native Canadians on reservations as well as persons living in the Yukon and North West Territories; thus the OAS benefits of these persons are excluded from SPSM totals. Published figures include payments to persons not residing in Canada as well as retroactive lump-sum payments for late applicants. A further provision not accounted for in this algorithm is the use of years of residence in another country to meet minimum residency requirements. This will not affect the model results if run in years before 1988. The effect is small in any case.

Due to the discrepancy between reported age on the SCF and actual age in 1984 overestimation of aggregate OAS benefits for persons aged 65 and 66 arises. For example 25% of those reporting their age as 65 in March of 1985, and thus receiving full OAS

Benefits in SPSM, would actually have been born between January and March 1985 (assuming births are distributed approximately evenly by month). As such they would have actually received no OAS. Furthermore, the other 75% of the 65 year olds and 17% of 66 year olds would have actually received OAS for only part of 1984. Currently, the SPSM makes no stochastic adjustments for such cases.

Relation to Other SPSM Routines

OAS depends on the input parameters for basic OAS benefits and years since immigration. The calculation of OAS and other modeled variables occurs prior to and affects the calculation of net income and related GIS and GIS 'top-up' programs. The modeled benefits are reported in net income, elderly income, disposable income, transfer income, total income, consumable income. The oas function is called before txinet (calculation of individual net income) by drv.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|------------|-----------------------|
| BOAS | Basic OAS |
| OASFLAG | Old age security flag |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| hdageeld | Age of eldest in household |
| hdseqhh | Household sequence number |
| hhnin | Number of individuals in household |
| idage | Age |
| idimmi | Years since immigration |

OUTPUT VARIABLES:

| | |
|----------|----------------------------|
| imioas | OAS benefits |
| imninc | No income flag |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |

| | |
|-----------------|----------------------------|
| pmaddent | Define and add a parameter |
|-----------------|----------------------------|

SUMMARY

The pmaddent function is used to define a new parameter to the SPSM parameter manipulation facilities. Please see the [Programmer's Guide](#) for more information.

randrnd Randomly round a floating point number to an integer

SUMMARY

The `randrnd()` function can be used to round fractional quantities to integer values in such a way that the sum of the values will remain (virtually) unchanged. Conventional rounding techniques do not have this property. For example, say that we have a set of 1000 numbers, each of which has the value 0.1. The sum of this set of numbers is 100.0. If we round each member of this set to the nearest integer, the sum of values would become 0.0. If we rounded randomly up or down, the sum would be 500. Neither of these rounding processes preserve the original sum. What we wish to do is to round 100 of the values up to 1.0 and 900 of the numbers down to 0.0. The `randrnd()` function simplifies this process.

The first argument to `randrnd()` is the value which is to be integerized, while the second is a uniformly distributed random number between 0.0 and 1.0 used to perform the rounding. The second argument is normally one of the built-in random number streams created by the SPSM Random Number Facility (see the [Users' Guide](#) for more details on this facility). The result of `randrnd()` is an unbiased, randomly rounded integerized value. In the following example, the variable `intval` has the value 2.0 for 30% of the time and 3.0 for 70% of the time.

```
intval = randrnd(2.7, idrand0);
```

The `randrnd()` function can be used to simplify operations such as the production of alternate weight files. For a specific example, see the description of the `bldwgt.exe` utility found in the *SPSM Tools Users Manual*.

The `vardef` function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.

round Round to nearest integer

SUMMARY

```
NUMBER round(arg);
```

```
NUMBER arg;
```

The `round` function converts its argument to the nearest whole number.

SUMMARY

Social assistance payments are not currently calculated by the SPSM. Data requirements are too great for a detailed micro-simulation. For example, the database contains no information on the holding or recent sale of liquid or fixed assets. This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here. It is also intended as a function in which algorithms for social assistance or other guarantees can be developed by glass box users.

Program Description

There are a number of federal, provincial and municipal programs which provide some form of social assistance payments to various target groups. The SPSM simulates six GIS supplementation programs (see the description of the gist function) which are classified with the other social assistance programs by the SCF. In fact the SCF records benefits received from over 30 provincial and municipal social assistance programs under one title of which six are simulated by the SPSM. This algorithm is designed to ensure no double counting of provincial GIS supplement program benefits occurs between simulated social assistance (imisa) and the provincial GIS supplement programs (imigist).

SPSM Implementation

If the function is deactivated with SAFLAG, no social assistance benefits are reported for any individual. If the function is turned on the database values of reported Social Assistance payments is used as the reported value of social assistance for all persons under the age of 65. For persons aged 65 and over there are three possible means of calculating social assistance which are controlled by the SAELDOPT parameter. These options are as follows.

- Social assistance is set to zero for all persons aged 65 and over.
- For individuals over age 64 who received simulated Provincial GIS supplementation benefits Social Assistance benefits are set to zero. If no Provincial GIS supplement is assigned to an individual over age 64, the simulated social assistance reported by the SPSM is the same as the reported value on the database.
- For all individuals over the age of 64 the value of simulated social assistance is set to the positive difference between reported and simulated social assistance.

In addition to performing the calculations for Social Assistance, samod computes the splitting of payments between the Federal and Provincial governments. This splitting corresponds to the federal/provincial cost sharing agreements in the Canada Assistance Plan.

The payment splitting is controlled by the parameter SAFS which is the federal proportional share of SA benefits. This parameter is available to be changed in black box mode and will determine the value of the variable imfsa which represents the value of the federal share. The provincial share of SA benefits is calculated as the difference between total SA benefits and the calculated federal amount and is represented by the variable impsa.

Relation to Other SPSM Routines

The samod function is called by drv after the calculation of provincial GIS supplements in gist.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|--|
| SAELDOPT | SA for elderly calculation method [1=~SA,2=GIST->~SA,3=diff] |
| SAFLAG | Social assistance flag |
| SAFS | Federal share of social assistance [prov] |
| SAPFLAG | Social assistance predicted value flag |
| SATARGET | Social assistance target for predicted SA |
| SFAOUT | Proportion of social assistance to eliminate |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hhncf | Number of census families in household |
| idage | Age |
| idisa | Social assistance income |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| imigist | GIS provincial top-up |

OUTPUT VARIABLES:

| | |
|--------|--|
| imfsa | Federal social assistance |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |
| impsa | Provincial social assistance |

SUMMARY

The strn function is used by the SPSM to print prompts and error messages in a language-independent way. The argument to the function identifies which string is to be retrieved. strn retrieves the string from a language-specific database of strings into an internally-maintained buffer and returns a pointer to the retrieved string. This function is not intended to be used by the SPSM user, and is documented here for reference purposes only.

taxbk1

One level tax-back function

SUMMARY

```
NUMBER taxbk1(inc, exmpt, lvl1, rr1);

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level of benefit                       */
NUMBER rr1;          /* reduction rate for tax-back           */
```

The taxbk1 function is used to reduce a benefit at a fixed rate based on income in excess of a specified exemption level. If the benefit (*lvl1) is reduced to zero, taxbk1 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the income in excess of the break-even income for the benefit.

taxbk2

Two level tax-back function

SUMMARY

```
NUMBER taxbk2(inc, exmpt, lvl1, rr1, lvl2, rr2)

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back     */
NUMBER *lvl1;        /* level (#1) of benefit                */
NUMBER rr1;          /* reduction rate (#1) for tax-back     */
NUMBER *lvl2;        /* level (#2) of benefit                */
NUMBER rr2;          /* reduction rate (#2) for tax-back     */
```

The taxbk2 function is used to reduce a two-tiered benefit at a fixed rates based on income in excess of a specified exemption level. The first tier benefit (*lvl1) is first reduced at rate rr1 based on income (inc) in excess of the specified threshold (exmpt). If the first tier benefit is reduced to zero, the second tier of benefit (*lvl2) is reduced at rate rr2 based on remaining income. If the second tier benefit (*lvl2) is reduced to zero, taxbk2 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the

income in excess of the break-even income for the benefit.

SUMMARY

Program Description

Calculation of the Alberta taxes.

When ATXFLG is off, Basic Alberta Tax (imbpt) is a proportion (APTF) of Basic Federal Tax (imbft). A tax reduction is calculated as a basic amount (ATRBC) minus a proportion (ATRF) of Basic Alberta Tax (imbpt). Alberta Tax Payable (imtxp) is calculated as Basic Alberta Tax (imbpt) minus the tax reductions.

The 2000 budget stated that Alberta would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (ATXFLG), a provincial tax table (APTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (APNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (ABXM) |
| impatxc | Age amount tax credit | (AAXM, AAXRR, AAXTD, AAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (AMXM, AMXMT, AEMXM, AEMXMT) |
| impcgtc | Caregiver tax credit | (ACGTC, ACGTCFLG, ACGTCTC, ACGTCTD, ACGTCTK) |
| impchrtc | Charitable donations | (ACHATL1, ACHATR1, ACHATR2) |
| impcppte | CPP/QPP contribution | |
| impdistc | Disability tax credit | (AMAXDX) |
| impdtxc | Dividend tax credit | (ADTCR) |
| impedtxc | Education tax credit | (AEDXPM, AMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (AYPNDL) |
| imptutxc | Tuition Tax credit | (AMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using AAMTOPT.

Calculation of the Alberta Family Employment Tax Credit.

When the parameter AFETCFLAG is set to 1, the value of imiafetc variable is calculated as a percentage (AFETCBR) of nuclear family employment income above a threshold (AFETCCI) to a maximum dollar level which is calculated as AFETCBPC times the number of eligible children (nfnkids) up to a maximum number of children of AFETCNC. The maximum benefit is reduced by a percentage (AFETCRR) of nuclear family net income in excess of the threshold AFETCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AAMTOPT | Alta alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| AAMTPCTF | Alta amt rate as pct of additional fed tax due to minimum tax |
| AAMTPCTM | Alta amt rate as pct of federal minimum tax amount |
| AAMTTX | Alta amt rate as tax on adjusted income |
| AAXM | Alta Age Amount |
| AAXPI | Alta Age Amount phase in rate for 1994 and beyond |
| AAXRR | Alta Age Amount credit reduction rate |
| AAXTD | Alta Age Amount net income turndown |
| ABXM | Alta Basic Personal Exemption/amount |
| ACGTC | Alta Caregiver Tax Credit |
| ACGTCFLG | Alta Caregiver Tax Credit activation flag |
| ACGTCTC | Alta Caregiver tax credit take-up rate by age of elderly [age,rate] |
| ACGTCTD | Alta Caregiver Tax Credit Turn Down Income |
| ACGTCTK | Alta Caregiver tax credit take-up rate by income level [employment income,rate] |
| ACHATL1 | Alta Charitable Donations amount level 1 |
| ACHATR1 | Alta Charitable Donations tax credit rate 1 |
| ACHATR2 | Alta Charitable Donations tax credit rate 2 |
| ADTCR | Alta dividend tax credit rate |
| AEDXPM | Alta Education Amount per month |
| AEMXM | Alta equivalent to married amount |
| AEMXMT | Alta equivalent to married turndown level |
| AFETCBPC | Alberta Family Employment Tax Credit Benefit Per Child |
| AFETCBR | Alberta Family Employment Tax Credit Benefit Rate |
| AFETCCI | Alberta Family Employment Tax Credit Benefit Cut-in Level |
| AFETCFLG | Alberta Family Employment Tax Credit Activation Flag |
| AFETCNC | Alberta Family Employment Tax Credit Maximum Number of Children |
| AFETCRR | Alberta Family Employment Tax Credit Reduction Rate |
| AFETCTD | Alberta Family Employment Tax Credit Turndown Level |
| AFTAX | Alberta flat surtax rate on taxable income |
| AHEATFLG | Alberta Energy Tax Refund activation flag |
| AHEATREB | Alberta Energy Tax Refund amount |

| | |
|---------|--|
| AMAXDX | Alta Maximum Disability deduction/amount |
| AMAXET | Alta maximum on transfer of education and tuition amount |
| AMXM | Alta married amount |
| AMXMT | Alta married amount turndown level |
| APNTCR | Alta provincial non-refundable tax credit rate |
| APTC | Alberta political contribution table [total donations, donation allowed] |
| APTCBEN | Maximum Alberta political tax credit allowed |
| APTF | Alberta provincial tax fraction |
| APTX | Alta tax table [taxable income, basic provincial tax] |
| ASCI | Alberta surtax cut-in |
| ASF | Alberta surtax fraction |
| ATRBC | Alberta tax reduction basic claim |
| ATRF | Alberta tax reduction fraction |
| ATXFLG | Alta tax on taxable income activation flag |
| AYPNDL | Alta Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |

| | |
|-----------|--|
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| imiafetc | Alberta Family Employment Tax Credit Benefits |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txbc Compute provincial taxes for British Columbia

SUMMARY

When CTXFLG is turned off, the Basic British Columbia Tax (imbpt) is a proportion (CPTF)

of Basic Federal Tax (imbft). British Columbia Tax Payable (imtxp) is the Basic Tax plus the BC Surtax plus the BC Health Care Maintenance Surtax.

The BC Surtax is a proportion (CSF) of Basic BC Tax (imbpt) exceeding the surtax level (CSCI).

The 2000 budget announced that British Columbia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (CTXFLG), a provincial tax table (CPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (CPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (CBXM) |
| impatxc | Age amount tax credit | (CAXM, CAXRR, CAXTD, CAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (CMXM, CMXMT, CEMXM, CEMXMT) |
| impcgtc | Caregiver tax credit | (CCGTC, CCGTCFLG, CCGTCTC, CCGTCTD, CCGTCTK) |
| impchrtc | Charitable donations | (CCHATL1, CCHATR1, CCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (CMAXDX) |
| impdtxc | Dividend tax credit | (CDTCR) |
| impedtxc | Education tax credit | (CEDXPM, CMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (CYPNDL) |
| imptutxc | Tuition Tax credit | (CMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using CAMTOPT.

The British Columbia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The BC provincial credit is modelled as CLVCRT times the gross amount up to CLVCMAX. The credit cannot be more than provincial taxes (imtxp).

B.C. Family Bonus

Total benefits received under the British Columbia Family Bonus program commencing in July 1996.

When the parameter BCFBFLAG is set to one the value of this variable is calculated as BCFBBAS times the number of children in the nuclear family (nfnkids) reduced by a proportion of head plus spouse net income (iminet + imisa) above the turndown of BCFBTD. This proportion for families with one child is BCFBRRS and for multiple child families is BCFBRR. The value calculated in this manner is multiplied times the parameter BCFBPI.

B.C. Family Bonus benefits (imibcfb) are assigned to the mother if present, or if not to the head of the nuclear family.

The calculation of the B.C. Family Bonus was changed to include the level of the National Child Supplement beginning in 1998. The flag BCFBIFS was added to turn on or off the inclusion of the National Child Supplement in the calculation of the B.C. Family Bonus.

The British Columbia Earned Income Benefit which was also introduced in 1998, was added to the code. When BCEIBFLG is assigned a value of 1, the calculation of the British Columbia Earned Income Benefit is activated, depending on the presence of children in the family. For families with lower incomes, the benefit starts to be phased in at BCEIBPI, and reaches its maximum at incomes of BCBEMX. The slope of the phase in is therefore calculated as the maximum working income supplement a family can receive divided by (BCBEMX – BCEIBPI).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BCBEIS1 | B.C. Earned Income Benefit for first child |
| BCBEIS2 | B.C. Earned Income Benefit for second child |
| BCBEIS3 | B.C. Earned Income Benefit for each additional child |
| BCBEITD | B.C. Earned Income Benefit Turndown |
| BCBEMX | B.C. Earned Income Benefit Income Reduction |
| BCBERR1 | B.C. EIB reduction rate for families with 1 child |
| BCBERR2 | B.C. EIB reduction rate for families with 2 children |
| BCBERR3 | B.C. EIB reduction rate for families with 3+ children |
| BCEIBFLG | Activate B.C. Earned Income Benefit Program |
| BCEIBPI | B.C. Earned Income Benefit Income Phase In |
| BCFBBAS | B.C. Family Bonus amount per child |
| BCFBFLAG | Activate B.C. Family Bonus Program |
| BCFBIFS | Activate B.C. Family Bonus to include Federal NCS |
| BCFBNCS1 | B.C. Family Bonus National Child Supplement for first child |
| BCFBNCS2 | B.C. Family Bonus National Child Supplement for second child |
| BCFBNCS3 | B.C. Family Bonus National Child Supplement for each additional child |

| | |
|-------------------------------------|---|
| BCFBNCSSRR1 child | B.C. Family Bonus NCS reduction rate for families with 1 child |
| BCFBNCSSRR2 children | B.C. Family Bonus NCS reduction rate for families with 2 children |
| BCFBNCSSRR3 children | B.C. Family Bonus NCS reduction rate for families with 3+ children |
| BCFBNCSTD | B.C. Family Bonus National Child Supplement Turndown |
| BCFBPI | B.C. Family Bonus phase-in |
| BCFBRR | B.C. Family Bonus multiple child reduction rate |
| BCFBRRS | B.C. Family Bonus single child reduction rate |
| BCFBTD | B.C. Family Bonus Turndown |
| CAMTOPT adj inc, 4=% min amt) | B.C. alternative minimum tax option (1=none, 2=% fed, 3=fed) |
| CAMTPCTF tax | B.C. amt rate as pct of additional fed tax due to minimum tax |
| CAMTPCTM | B.C. amt rate as pct of federal minimum tax amount |
| CAMTTX | B.C. amt rate as tax on adjusted income |
| CAXM | B.C. Age Amount |
| CAXPI | B.C. Age Amount phase in rate for 1994 and beyond |
| CAXRR | B.C. Age Amount credit reduction rate |
| CAXTD | B.C. Age Amount net income turndown |
| CBXM | B.C. Basic Personal Exemption/amount |
| CCGTC | B.C. Caregiver Tax Credit |
| CCGTCFLG | B.C. Caregiver Tax Credit activation flag |
| CCGTCTC [age,rate] | B.C. Caregiver tax credit take-up rate by age of elderly |
| CCGTCTD | B.C. Caregiver Tax Credit Turn Down Income |
| CCGTCTK [employment income,rate] | B.C. Caregiver tax credit take-up rate by income level |
| CCHATL1 | B.C. Charitable Donations amount level 1 |
| CCHATR1 | B.C. Charitable Donations tax credit rate 1 |
| CCHATR2 | B.C. Charitable Donations tax credit rate 2 |
| CDTCR | B.C. dividend tax credit rate |
| CEDXPM | B.C. Education Amount per month |
| CEMXM | B.C. equivalent to married amount |
| CEMXMT | B.C. equivalent to married turndown level |
| CHEATFAM | British Columbia Refundable Energy Credit for families |
| CHEATFLG | British Columbia Refundable Energy Credit activation flag |
| CHEATSNG | British Columbia Refundable Energy Credit for singles |
| CLVCMAX | Maximum B.C. labour-sponsored funds tax credit allowed |
| CLVCRT credit | Percent of B.C. labour-sponsored funds cost allowed as credit |
| CMAXDX | B.C. Maximum Disability deduction/amount |
| CMAXET | B.C. maximum on transfer of education and tuition amount |
| CMXM | B.C. married amount |
| CMXMT | B.C. married amount turndown level |
| CPNTRC | B.C. provincial non-refundable tax credit rate |
| CPTCBEN | Maximum B.C. political tax credit allowed |
| CPTCT allowed] | B.C. political contribution table [total donations, donation allowed] |
| CPTF | British Columbia provincial tax fraction |
| CPTX | B.C. tax table [taxable income,basic provincial tax] |
| CRFLAG | British Columbia rental reduction flag |
| CRTRB | British Columbia renter tax reduction basic credit |
| CRTRD dependants | British Columbia renter tax reduction credit for other dependants |

| | |
|----------|---|
| CRTRP | British Columbia renter tax reduction proportion of rent allowed |
| CRTRPN | British Columbia renter tax reduction proportion of net income |
| CRTRS | British Columbia renter tax reduction credit for spouse |
| CRTRT | B.C. renter tax reduction base amount turndown [dependants, amount] |
| CSCI | British Columbia surtax first cut-in level |
| CSCI2 | British Columbia surtax second cut-in level |
| CSDC | British Columbia provincial surtax dependant credit |
| CSF | British Columbia surtax first level rate |
| CSF2 | British Columbia surtax second level rate |
| CSTC | British Columbia stc amount |
| CSTCFLAG | British Columbia sales tax credit flag |
| CSTCR | British Columbia stc reduction rate |
| CSTHINC | British Columbia family head income threshold (stc) |
| CSTKINC | British Columbia kid income threshold top-up (stc) |
| CSTSINC | British Columbia spousal income threshold top-up (stc) |
| CTCINC | CTC family income scaling factor |
| CTXFLG | B.C. tax on taxable income activation flag |
| CYPNDL | B.C. Pension Income Deduction Amount |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |

| | |
|----------|---|
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchclm | Number of dependent children claimed |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imibceib | B.C. Earned Income Benefit |
| imibcfb | B.C. Family Bonus |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |

| | |
|----------|--|
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txcalc Calculate federal income tax

SUMMARY

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Federal Labour Sponsored Venture Capital Tax credit
- Basic Federal Tax (including tax credits transfers from dependants or spouse)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement
- Federal refundable medical expense supplement
- Caregiver Tax Credit

Federal Dividend Tax Credit

If the filer declared dividends from taxable Canadian corporations, he or she is eligible to claim the Dividend Tax Credit which amounts to a fixed proportion of taxable dividends. This credit is non-refundable, i.e., it may be used to reduce Basic Federal Tax, but an unused portion is not refunded.

SPSM Implementation

The Federal Dividend Tax Credit (imfdtxc) is calculated as a proportion (FDTCR) of Net Taxable Dividends (imidivt). The amount is added to Total Non-transferable Tax Credits (imtaxcr) which is applied to reduce Basic Federal Tax (imbft).

Federal Dividend Tax Credit

The Labour-sponsored venture capital funds tax credit is modeled from the imputed gross amount purchased (idlbtxg). The credit (imlbtxc) is equal to FLVCRT times the gross

amount (idlabt_{xg}) up to a maximum (FLVCMAX). The rate is provincially based.

Basic Federal Tax

Basic Federal Tax is defined as Federal Tax Payable on Taxable Income minus certain tax credits.

SPSM Implementation

Basic Federal Tax (imbft) is calculated the same way whether or not the tax credits proposed by the White Paper are applied. First, Federal Tax Payable on Taxable Income (imfedtax) is calculated using the interpolating lookup function lkup1 to determine taxes payable on Taxable Income (imitax) from the table FTX.

Dependants are treated separately from the head and spouse since the rules applying to the transfer of deductions from dependant to parent differ from those applying to the transfer of deductions from the spouse.

Transfers from Dependant to Parent

In calculating the dependant's Basic Federal Tax, the following nontransferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Age Tax Credit (imatxc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Federal Dividend Tax Credit (imfdtxc)
- Medical Expense Tax Credit (immedatc)
- Pension Income Tax Credit (impentxc)
- UI Contributions Tax Credit (imuictc)

A dependant may transfer an unused portion of certain tax credits to a supporting parent. Since a limit may be imposed on the amount of the combined Education Tax Credit and Tuition Tax Credit, these are treated separately from the Disability Tax Credit.

If a dependant requires all transferable tax credits to further reduce Basic Federal Tax, i.e., Basic Federal Tax (imbft) exceeds Total Transferable Tax Credits, then the tax credits are subtracted from imbft and no transfer occurs.

If the dependant's Total Transferable Tax Credits (txcrt) exceeds Basic Federal Tax, imbft is reduced to zero and the amount potentially transferable to a supporting parent is calculated as the amount of Disability Tax Credit (imdisatc) not required to reduce Basic Federal Tax plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imttxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

The total amount of tax credits transferable from all dependants is accumulated in the variable ctxcrt which is subsequently used to reduce Basic Federal Tax for the parent with the higher Net Income (iminet).

These algorithms do not allow the partitioning of the dependant's tax credits between both supporting parents and, therefore, in some cases, the total taxes paid by the family may not be minimized.

Transfers From Spouse

In calculating the Basic Federal Tax of the head and spouse, the following non-transferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Tax Credit for Dependant Children (imctxcs)
- Federal Dividend Tax Credit (imfdtxc)
- Married Tax Credit (immartxc)
- Medical Expense Tax Credit (immedatc)
- UI Contributions Tax Credit (imuictc)

An unused portion of certain transferable tax credits may be transferred from the spouse. The transferable tax credits are:

- Age Tax Credit (imatxc)
- Disability Tax Credit (imdisatc)
- Pension Income Tax Credit (impentxc)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)

Since a limit may be imposed on the amount of the combined Education and Tuition Tax Credits, these are treated separately from the others.

If the filer requires all Transferable Tax Credits (txcrt) to reduce Basic Federal Tax (i.e., imbft exceeds txcrt) then the tax credits are subtracted from Basic Federal Tax and no transfer occurs.

If the filer's Transferable Tax Credits (txcrt) exceed Basic Federal Tax, then imbft is reduced to zero and the remainder of the Potentially Transferable Tax Credits (ttxcrt) is calculated as the sum of:

- Disability Tax Credit (imdisatc)
- Age Tax Credit (imatxc)
- Pension Income Tax Credit (impentxc)

which is not required to reduce Basic Federal Tax to zero plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imtxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

Although this value is calculated for both head and spouse, the one with the higher Net Income (iminet) actually receives the transfer. The amount transferred from the spouse is stored in the variable imstxcrt. The amount transferred from all dependants is stored in imctxcrt.

Federal Surtax

In 1985 a Federal Surtax was introduced as an additional tax based on Basic Federal Tax payable.

SPSM Implementation

The model allows for two surtax levels and two surtax rates. The total Federal Surtax (imfsur) is calculated as:

- a proportion (FSURR1) of Basic Federal Tax exceeding Surtax Level 1 (FSURL1), plus
- a proportion (FSURR2) of Basic Federal Tax exceeding Surtax Level 2 (FSURL2), minus
- the amount of the additional Federal Foreign Tax Credit from 1986 forward (represented by variable (idfdsft)).

The result is then added to Federal Taxes (imftax) (minus certain federal tax credits) to derive Federal Taxes Payable (imtxf).

Federal Surtax Reduction

The Federal Surtax reduction (imfsurtr) announced in the 1998 federal budget is calculated. The maximum value that the reduction may reach is FSURTRMX. The reduction is reduced by a proportion (FSURTRRR) of basic federal tax (imbft) which exceeds a certain level (FSURTRRL). This reduction is then subtracted from the federal surtax (imfsur).

Federal Taxes Payable

Federal Taxes Payable (imtxf) is defined as Federal Tax (imftax) plus the Federal Surtax (see above) minus the following tax credits:

- Federal Other Tax Credits
- Federal Political Contribution Tax Credit (imfptc), and

Alternate Minimum Tax

In 1986, a minimum tax on individuals was introduced with the intention of increasing the tax liability of those high income individuals who use the tax incentives provided by the current law to structure their affairs so as to pay little or no tax.

The Alternative Minimum Tax requires the calculation of an adjusted taxable income disallowing certain deductions, a list of which follows, which are added back to taxable income.

- Pension Income Deduction
- Interest and Dividend Income Deduction
- Disability Deduction Transferred from Dependant
- Education Deduction Transferred from Dependant
- Deductions Transferred from Spouse
- Employee Home Relocation Loan Deduction
- Stock Option and Shares Deduction
- Contribution to Deferred Income Plans (RPP and RRSP contributions)
- non-taxable portion of capital gains
- capital cost allowance on MURBS and Canadian Films

The grossed-up portion of taxable dividends and Allowable Business Investment Loss are subtracted from taxable income.

The minimum tax is then calculated as a proportion of this adjusted taxable income exceeding the exemption level.

SPSM Implementation

If the Minimum Tax Rate (AMTTX) is not set to zero, the minimum tax algorithms are executed.

The first step recalculates an adjusted taxable income for minimum tax purposes (imamtinc) by adding the following items to imitax:

- RPP Contributions (idrpp) when AMTRPFLG is set to 1
- RRSP Contributions (idrrsp) when AMTRPFLG is set to 1
- Other Deductions from Total Income (idothded, representing Capital Cost Allowances)
- the non-taxable portion of Capital Gains (idicapg * (AMTINCRT - CAPGIR))
- exploration and development expenses (idexplor)
- employee home relocation loan deduction (idemplo)
- stock option and shares deduction when AMTSTK is set to 1
- limited partnership losses (idpartlo)
- allowable other years non-capital losses (idnclos)

The taxable portion of dividends (imidivt) times AMTDIV, net non-deductible capital losses, the allowable portion of business investment losses (imiloss) times the applicable rates defined as $((AMTINCRT - CAPGIR)/CAPGIR)$ and the basic exemption (AMTEX) are subtracted from this value.

The Basic Minimum Tax (amtbf) is calculated as a proportion (AMTTX) of Adjusted Taxable Income (imamtinc).

The second step in this process adjusts the Basic Minimum Tax (amtbf) to account for allowable tax credits. This requires subtracting the following tax credits from Basic Minimum Tax:

- Basic Tax Credit (imbtc)
- Spouse or Equivalent Tax Credit (immartxc)
- Age Tax Credit (imatxc)
- Tax Credit for Dependant Children (imctxcs)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)
- Medical Expense Tax Credit (immedatc)
- Charitable Donations Tax Credit (imchartc)
- Disability Tax Credit (imdisatc) for self
- Other Dependent Tax Credit (imothpe)
- CPP/QPP Contribution Tax Credit (imcppctc)
- UI Contribution Tax Credit (imuictc)
- Basic Personal Amount Supplement (imbts)
- Caregiver Tax Credit (imcgtc)

If the value of the Basic Minimum Tax (amtbf) exceeds Basic Federal Tax (imbft), Federal Tax Payable (imtxf) is recalculated as Basic Minimum Tax (amtbf) plus any federal surtaxes on amtbf. The federal surtax is calculated in the same manner as on Basic Federal Tax, previously described.

The database does not contain sufficient detail to accurately represent some of the deductions specified in the regulations concerning the calculation of the Minimum Tax. The Disability Deduction and Education Deduction transferred from dependants are not differentiable from those deductions claimed on behalf of the filer. The variable idothded (Other Deduction's from Total Income) includes Capital Cost Allowances on MURBS and Canadian Films but it also contains amounts for moving expenses and alimony payments. It is difficult to estimate the impact of these inaccuracies except to say that they are likely small compared to the large amounts of income and other deductions for the high income persons for whom the Minimum Tax is intended.

Quebec Tax Abatement

The Quebec Tax Abatement is a refundable credit on federal taxes provided to Quebec residents in lieu of direct cost-sharing by the federal government under the federal-provincial fiscal arrangements. It reduces the federal income tax payable by Quebec residents and may provide a refund. The abatement amounts to 16.5% of Basic Federal Tax.

SPSM Implementation

If the filer resides in Quebec, the full Quebec Tax Abatement (qta) is calculated as a proportion (QTAP) of Basic Federal Tax (imbft). This is divided into two portions for

accounting purposes:

- imqtaa is the Quebec Tax Abatement Applied to reduce federal taxes
- imqtar is the Quebec Tax Abatement Refunded

If the Quebec Tax abatement exceeds the Federal Tax payable then a refund is made for the balance of the abatement (imqtar) and the amount of Federal tax payable is reduced by the amount of the abatement. Users may wish to note that this abatement refund was an interesting side effect of the Federal Tax reduction in effect prior to 1986 (see notes in this section).

Federal Refundable Medical Expense Supplement

SPSM Implementation

The refundable medical expense supplement (immedref) was added to imfortc. The program is only available to persons aged 18 and over who have earnings over MEDREMIN and who had allowable medical expenses (immeda). The maximum supplement is calculated as the minimum of MEDRRATE times the allowable medical expenses and MEDRMAX. The benefit is reduced by MEDRRR times the family income over the turndown which is the sum of the basic exemption (BXM), the married exemption (MXM) and the maximum disability amount (MAXDX).

Caregiver Tax Credit

The calculation of the Caregiver Tax Credit (imcgtc) is activated by the flag CGTCFLG. The credit reduces federal taxes and started in 1998. The base level of the credit is CGTC. A take-up rate CGTCTC based on age of the potential parent assigns individuals with idefrh =3 as a parent according to SCF 1994 data. Users have access to a take-up rate CGTCTK based on employment income to select the appropriate number of beneficiaries.

The benefit, imcgtc, is reduced for each dollar of net income, iminet, in excess of CGTCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AMTDIV | Alternative minimum tax: percentage of taxable dividends |
| AMTEX | Alternate minimum tax: exemption level |
| AMTFORTX | Alternative minimum tax: Foreign Income Tax Rate |
| AMTINCRT | Alternative minimum tax: Inclusion Rate |
| AMTNEGTI | Alternative minimum tax: Allow Negative Taxable Income Flag |
| AMTPRVDF | Alternative minimum tax: prov. tax difference |
| definition[prov] | |
| AMTRPFLG | RRSP/RPP included in Alternate minimum tax (1=included) |
| AMTSTK | Alternative minimum tax: Stock Option Proportion |

| | |
|------------|---|
| AMTTX | Alternate minimum tax rate |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CGTC | Caregiver Tax Credit |
| CGTCFLG | Caregiver Tax Credit activation flag |
| CGTCTC | Caregiver tax credit take-up rate by age of elderly [age,rate] |
| CGTCTD | Caregiver Tax Credit Turn Down Income |
| CGTCTK | Caregiver tax credit take-up rate by income level [employment income,rate] |
| FDTCR | Federal dividend tax credit rate |
| FLVCMAX | Maximum labour-sponsored funds tax credit allowed |
| FLVCRT | Percent of labour-sponsored funds cost allowed as credit [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| FPTC | Federal political contribution table [total donations,donation allowed] |
| FPTCBEN | Maximum federal political tax credit allowed |
| FSURL1 | Federal surtax level 1 |
| FSURL2 | Federal surtax level 2 |
| FSURR1 | Federal surtax rate 1 |
| FSURR2 | Federal surtax rate 2 |
| FSURTRMX | Maximum federal surtax reduction |
| FSURTRRL | Federal surtax reduction reduction level |
| FSURTRRR | Federal surtax reduction reduction rate |
| FTX | Federal tax table [taxable income,basic federal tax] |
| GSTREBFLAG | Database variable(gstreb) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MAXET | Maximum on transfer of education and tuition amount |
| MEDREMIN | Minimum earnings for refundable medical expense supplement |
| MEDRMAX | Maximum expenses allowed for medical expense supplement |
| MEDRRATE | Proportion of expenses allowed for medical expense supplement |
| MEDRRR | Reduction rate for the medical expense supplement |
| MXM | Married exemption/amount |
| QTAP | Quebec tax abatement proportion of basic federal tax |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |

| | |
|----------|--|
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgstreb | GST rebate (457) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnclos | Allowable other years non-capital loss (252) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imbtcs | Basic personal tax credit supplement |
| imcapgx | Modelled capital gains deduction (254) |
| imchartc | Charitable donations tax credit |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imctxcs | Dependent children tax credits |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |
| imtutxc | Tuition tax credit |
| imuic | UIC contributions |
| imuictc | UIC contributions tax credit |

OUTPUT VARIABLES:

| | |
|----------|---|
| imamtdf | Difference due to minimum tax |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |

| | |
|----------|---|
| imatxcrt | Total tax credits applied |
| imbft | Basic federal tax |
| imcgtc | Caregiver Tax Credit Level |
| imcgtcp | Dependant caregiver tax credit amount |
| imctxcrt | Tax credits transferred from children |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imfdtxc | Federal dividend tax credit |
| imfedtax | Federal tax before tax credits |
| imfortc | Federal other refundable tax credits |
| imfortxc | Federal foreign tax credit (509) |
| imfptc | Federal Political Contribution Tax Credit |
| imfsur | Federal surtax |
| imfsurtr | Federal surtax reduction |
| imlabtxc | Federal labour-sponsored funds tax credit |
| immedref | Refundable medical expense supplement (452) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imoftca | Other federal tax credits applied (416) |
| imqtaa | Quebec tax abatement (applied) |
| imqtar | Quebec tax abatement (refundable) |
| imstxcrt | Tax credits transferred from spouse |
| imtaxcr | Total tax credits |
| imttxcrt | Total tax credits transferred |
| imtxf | Federal income tax payable |

txccea Compute child care expense allowance

SUMMARY

The txccea function calculates the value of the child care expense deduction.

Description of tax measure

Child care expenses are amounts paid for child care services to allow the parent or "supporting person" to:

- a) earn income from employment or self-employment, (this does not include a period of unemployment) or
- b) take an occupational training course for which the person received an adult training allowance, or
- c) carry on research or similar work for which the person received a grant.
- d) go to school full-time

A filer is eligible to claim child care expenses if:

- a) there is no other supporting person
- b) there is a supporting person with a higher net income (excluding child care expenses) than the filer
- c) there is a supporting person with a net income lower than the filer but
 - i. the filer and supporting person were separated for at least 3 months, or

- ii. the supporting person was in full-time attendance at a designated educational institution, or
- iii. the supporting person was infirm or in prison for at least 2 weeks.

A combination of limitations is applied to the amount claimable:

1. Two-thirds of earned income, and
2. a fixed amount per eligible child up to a fixed maximum is applied if the net income of the filer is less than that of a supporting person (conditions (a) and (b) above).

Under condition (c) above, i.e., the income of the supporting person is lower than that of the filer, the following additional limitation applies:

3. fixed weekly amount per child up to a maximum, multiplied by the number of weeks of separation, attendance at an educational institution, infirmity or imprisonment.

In 1982, the Child Care Expense Deduction was always taken by the mother of the child if she was present. Since then, the deduction or tax credit is normally allocated to the spouse with the lower net income, exclusive of the child care expense deduction, unless that person is separated, in school, infirm or in prison.

SPSM Implementation

The amount of Child Care Expenses Allowed is derived from income tax records during the database creation process (see the *Database Creation Guide*). This value represents the amount allowed according to the base year regulations. Though this amount may be grown or diminished by a fixed factor (GFC CET), the rules described above cannot be easily altered in the current version of SPSM.

The parameter CCEROPT determines which spouse in a two-parent family claims the Child Care Expense Deduction. If CCEROPT is given a value of 1, the deduction is always taken by the mother. With a value of 2, the deduction is taken by the parent with the lower Net Income (iminet).

The condition for a temporarily absent, lower income spouse (condition c. above) is not checked.

On the database, only one spouse of a two-parent family will have been attributed a value for Child Care Expense Deduction Allowed. The assignment of this value is done before we have complete information about the relative net incomes and may therefore be given to an inappropriate person. The model uses the current value of Net Income (iminet) to re-allocate the deduction if necessary.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| CCEAEMPF | CCEA fraction of employment income (Limit `B') |
| CCEALIM | CCEA overall limit |
| CCEAOAGE | CCEA Maximum eligible age for oldest child |
| CCEAOLD | CCEA old child limit |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| CCEAYNG | CCEA young child limit |
| CCEROPT | Child care expense deduction recipient [1=mother,2=lower income] |
| CCESFLAG | CCE full-time student flag |
| CCESOLD | CCEA old child limit for full-time students |
| CCESYNG | CCEA young child limit for full-time students |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| INPUT VARIABLES: | |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| ideducm | Eligible months of education allowance |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idsex | Sex |
| imccez | Is CCE zeroed? |
| imisa | Social assistance (or replacement program) |
| OUTPUT VARIABLES: | |
| imcce | Child care expenses allowed |
| imcce | Child care expenses claimed on behalf of child |
| imdedft | Deductions from total income |
| iminet | Net income |
| imninc | No income flag |

SUMMARY

The federal Child Tax Credit and the Child Tax Benefit provide benefits to help low and middle income families meet the costs of raising children under the age of 18. The txctc function calculates benefits from the federal Child Tax Credit (CTC) program based upon the number of children in a family and the net income of the family. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

The level of benefits varies with the number of children.

Program Description

The federal Child Tax Credit provides benefits to help low and middle income families meet the costs of raising children under the age of 18. It was implemented in 1979 and is administered by Revenue Canada, Taxation, through the income tax system.

Any person who receives Family Allowances is eligible to apply for the Child Tax Credit. The credit is available on behalf of a child for whom Family Allowances were paid for in the month of January following a given taxation year. An eligible person who voluntarily refrains from receiving Family Allowances may still claim the Child Tax Credit. The CTC must be applied for by filing an income tax return regardless of the income of the eligible parent or guardian. A foster parent in receipt of Special Allowances is not eligible for the CTC. Canadian residents living outside Canada, but paying Canadian taxes may apply for the credit.

The amount of the CTC is determined by the number of eligible children and the family's income. Family income is defined as the net income (as defined for income tax purposes) of both parents, whether married or not (provided they are living together), or the net income of a single parent. The net income of any other person who is claiming a personal exemption for a dependent child (whether or not the person lives with the claimant of the CTC) must also be included in family income. For families with taxable incomes the refundable credit to which they are entitled reduces the tax which must be paid; families whose taxes are less than the credit, or who pay no taxes at all receive a non-taxable lump sum payment.

The maximum annual credit is payable if net family annual income is less than a specified level of income called a benefit reduction level or turndown. Families with net incomes above this turndown are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum CTC for eligible parent(s) is zero. In 1993, the CTC was replaced by the Child Tax Benefit. This program is comprised of two parts: the basic Child Tax Benefit, and the Earnings supplement (also called the Working income supplement). The basic child tax benefit consists of \$1,020 per child, plus \$75 for the third child and subsequent children. There is an additional \$213

for each child under 7 with no child care expenses. The benefit is reduced at family incomes over \$25,921 at a 5% rate (or 2.5% if only 1 child).

The Working Income Supplement was a maximum of \$500 per family. It started at earnings of \$3,750, reached the maximum at earnings of \$10,000, and was then reduced, reaching \$0 at family incomes of \$25,921.

In 1997, the Working Income Supplement was enriched. Instead of \$500 per family, the benefit was \$605 for the first child, \$405 for the second child, and \$330 for the third and subsequent children. It was phased in at family earnings of \$3,750, reached a maximum at \$10,000, and was phased out starting at family incomes of \$20,921. The reduction rates were 12.1% for families with 1 child, 20.2% for families with 2 children, and 26.8% for families with 3 or more children.

In 1998, the program was renamed the Canada Child Tax Benefit (CCTB). The basic benefit has the same level and structure of the Child Tax Benefit. The Working Income Supplement was replaced by the CCTB National Child Benefit Supplement. It is no longer dependent on earnings, and therefore is not phased in. Otherwise, it follows the same rules as the 1997 Working Income Supplement.

SPSM Implementation

The `txctc` function calculates the federal Child Tax Credit based on the number of children in a family and the net income of the family. Residency requirements are deemed to have been met in all cases. The function always allocates the Child Tax Credit to the mother unless one is not present in the nuclear family. The function only outputs a value for the federal child tax credit and this reflects the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txctc` function operates at the nuclear family level. It first calculates a local variable for the family's net income by adding the eldest member's net income and that of their spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are then obtained by multiplying the number of children in the nuclear family by the maximum benefit per child (`nfkids * CTCPC`). The maximum CTC is then reduced at the specified reduction rate (`CTCRR`) applied to family net income in excess of the CTC turndown (`CTCTD`). This reduction is performed using the `taxbak1` function. Finally the federal Child Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

When the `FCBEIE` flag is turned on, the Working Income Supplement has a different rate according to the number of children in the household, `FCBEIS1`, `FCBEIS2`, `FCBEIS3` and is also reduced at varying rates, `FCBERR1`, `FCBERR2`, `FCBERR3`. The enriched WIS is phased in starting at family incomes `FCBECI` and reaches its maximum at `FCBEMX`. The phase in rate is linear and depends again on the number of children in the family.

There was also a fix for the Quebec child tax benefits. The benefits (`QCBC3`) are now being assigned to the third and each additional child in a family.

Interpretation

Results obtained from the SPSM with respect to Child Tax Credit benefits differ from Revenue Canada administrative data. Overall the SPSM reports 101.9% more 1984 tax year benefits than does Revenue Canada for provincial Canada. However, the number of children for which the credit is paid is 99.6% of Revenue Canada's figures. One would expect the number of children on the SPSD to be low due to the non-coverage of persons residing on reservations and outside Canada. Thus there would seem to be a small deficit on the SPSD in the net income of families with eligible children.

Relation to Other SPSM Routines

The txctc function is called by drv. The function outputs one dollar value variable that is used in memo1 for reporting purposes.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| ACBC1 | Alberta Child benefit per child aged 0 - 6 |
| ACBC2 | Alberta Child benefit per child aged 7 - 11 |
| ACBC3 | Alberta Child benefit per child aged 12- 15 |
| ACBC4 | Alberta Child benefit per child aged 16- 17 |
| CTCERF | CTC child care expense reduction fraction |
| CTCINC | CTC family income scaling factor |
| CTCOPT | Child tax credit option |
| CTCPC | Child tax credit per child |
| CTCREF | CTC post-reform rules flag |
| CTCRR | Child tax credit reduction rate |
| CTCSUP | CTC young child supplement |
| CTCTD | Family income child tax credit turndown |
| CTCTUR | CTC take up rate table [benefit,rate] |
| FCBBAS | Basic child benefit (per child) |
| FCBECE | Child benefits earning supplement cut-in level |
| FCBEIE | Flag for WIS dependent on number of children |
| FCBEIS | Child benefits earned income supplement |
| FCBEIS1 | Enriched WIS for first child |
| FCBEIS2 | Enriched WIS for second child |
| FCBEIS3 | Enriched WIS for each additional child |
| FCBEMX | Earnings where WIS phase-in is at maximum |
| FCBERR | Child benefits earning supplement reduction rate |
| FCBERR1 | WIS reduction rate for families with 1 child |
| FCBERR2 | WIS reduction rate for families with 2 children |
| FCBERR3 | WIS reduction rate for families with 3+ children |
| FCBESR | Child benefits earned income supplement rate |
| FCBETD | Child benefits earning supplement turndown level |
| FCBLRG | Supplement for 3rd and subsequent kids |
| FCBRR | Multi-children family income reduction rate |

| | |
|-------------|---|
| FCBRRS | Single-child family income reduction rate |
| FCBTD | Federal child benefits family income turndown |
| FCBYNG | Supplement for children under age 7 |
| FCBYNGR | Child care expense reduction rate |
| PYINC | Deflator to calculate previous year income |
| QCBC1 | Quebec Child benefit for 1st child |
| QCBC2 | Quebec Child benefit for 2nd child |
| QCBC3 | Quebec Child benefit for 3rd child |
| QCBCFLG | Quebec Child benefit flag for Quebec calculation |
| methodology | |
| QCBCS | Quebec Child benefit supplement child aged 12- 17 |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idrand | Random numbers [array] |
| idsex | Sex |
| imcce | Child care expenses claimed on behalf of child |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--|
| imctc | Child tax credit |
| imfcben | Total Federal Child Benefits |
| imfcbenb | Total Federal Child Benefits Base |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imninc | No income flag |

txfstc Compute federal sales tax credit

SUMMARY

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales

Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

Program Description

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. It was implemented for the 1986 and subsequent tax years and is administered by Revenue Canada, Taxation, through the income tax system.

Upon application, through the filing of an income tax return, the federal sales tax credit is available to any individual who at the end of the year was married, had a child, or was over 18 years of age. Eligible individuals may claim the credit for themselves, their qualified relations, and one spouse. Individuals who are not subject to tax in Canada or who were confined to a prison or similar institution for a period of over six months in the year for which a claim is made may not claim the credit. A married couple may make only one claim.

Maximum family benefits are a function of the type and number of individuals in the family as well as the net income of the family. There are three individual credit maximums; one for the filer; one for a spouse with whom the filer resided at the end of the year; and one for any other person under the age of 18 at the end of the year who was a child of the individual or their spouse or was a person in respect of whom the individual or his spouse has claimed a personal deduction. Family net income is the net income, for tax purposes, of the head of the family and their spouse if present.

The maximum annual credit is payable if net family annual income is less than a specified level of income (called turndowns, exemptions, or benefit reduction levels). Families with net incomes above this reduction point are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum STC is zero. In 1986 the maximum credit was \$50 per adult and \$25 per dependent child, the reduction point was \$15,000 and the reduction rate was 5%. So, for example, a family with a spouse and two eligible children and a net income of \$17,000 would receive a tax credit of \$100.00. (The 1986 credit becomes zero for families of this type with a net income at or above \$18,000.)

SPSM Implementation

The `txfstc` function calculates the federal Sales Tax Credit based on the number, age, and type of persons in a family and the net income of the family. The function always allocates the Sales Tax Credit to the spouse with the higher net income in the nuclear family. The function outputs values for the federal Sales Tax Credit and these reflect the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txfstc` function operates at the nuclear family level. It first increments two local variables based on information on the eldest member of the nuclear family; one for the family's net income by adding the eldest member's net income; and one for the maximum family benefits by adding the maximum entitlement for a filer. The program next increments both local

variables for the spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are incremented last by multiplying the number of children in the nuclear family by the maximum benefit per child ($nfnkids * FSTCC$). The maximum STC is then reduced at the specified reduction rate (FSTCR) applied to family net income in excess of the STC reduction point (FSTCL). This reduction is performed using the `taxbak1` function. Finally the federal Sales Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

The federal sales tax credit is claimable at age 19. Parents may claim additional amounts for children aged 18 and younger. When calculating the GST credit, the income concept used is the previous year's incomes. The GST credit for a given year, say 1992, would represent the amounts paid from July 1992 to July 1993.

Interpretation

Results obtained from the SPSM with respect to Sales Tax Credit benefits have no valid Revenue Canada administrative data with which to compare the results. In general, the SPSM should be slightly low due to certain coverage issues. Further analysis will be required to correctly estimate who in a married couple is claiming the benefit. Take-up issues may also be relevant.

Relief for Heating Expenses

When `HEATRLFLG` is turned on, persons will receive a transfer from the federal government for the relief of heating expenses (`imheatrl`). In order to receive it, a person has to have received a GST credit (`imfstc`). Qualifying persons who live with a spouse or children receive `HEATFAM` and others receive `HEATSNG`.

Note that, as indicated in the federal economic statement 2000, in order to receive a check in 2001 a person had to qualify for the GST credit in January 2001 or June 2000. In the SPSM this is the modeled GST credit for 2000 (we assume that the entire check is given in June), based on 1999 income. In order to simplify the code, we used receipt of the 2001 GST credit as a proxy for receipt of the 2000 GST credit. Given the fact that there was no change in the rules governing the GST credit in these two years, this should have a small effect.

Relation to Other SPSM Routines

The `txfstc` function is called by `drv`. The function outputs one variable that is used in `memo1` for reporting purposes. The function makes use of (calls) the `taxbak1` function.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| FSTCC | Federal sales tax credit amount for dependant |
| FSTCF | Federal sales tax credit amount for filer |
| FSTCL | Federal sales tax credit reduction level |
| FSTCR | Federal sales tax credit reduction rate |
| FSTCS | Federal sales tax credit amount for spouse |
| GSTAC | GST additional credit amount |
| GSTAR | GST additional credit rate of net income |
| GSTASPFLAG | Maximum GST additional credit for single parents flag |
| GSTAXM | GST additional credit exemption |
| GSTCTUNC | GST credit take up by number of children |
| GSTFLAG | GST credit activation flag |
| HEATFAM | Federal relief for heating expenses for families |
| HEATRLFLG | Federal relief for heating expenses activation flag |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| INPUT VARIABLES: | |
| cfageeld | Age of eldest in census family |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idrand | Random numbers [array] |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| OUTPUT VARIABLES: | |
| imfstc | Federal sales tax credit |
| imheatrl | Federal relief for heating expenses |
| imninc | No income flag |

SUMMARY

When IMSHTOPT is set to 1, imputation of provincial paid rents and property taxes are calculated based on Greenbook data, when set to .2 they are based on FAMEX. The rent and property tax are imputed to head's of census families and census family spouses reporting positive net income.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| IMSHTOPT | Paid rent and property tax imputation option |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| fxio | I/O expenditure categories [array] |
| fxprtax | Property tax |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hnnin | Number of individuals in household |
| idcfrh | Relationship to census family head |
| idhhrh | Relationship to head of household |
| idproptx | Net property taxes paid (556) |
| idrentpd | Total rental payments (555) |

OUTPUT VARIABLES:

| | |
|----------|---------------------------|
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |

SUMMARY

This function calculates exemptions or tax credits for dependants as well as performing transfers of deductions between spouses. The algorithms included in this function are:

- calculate and allocate Tax Credits for Wholly Dependant Children
- calculate and allocate Spouse (or Married) Tax Credit
- calculate Spouse (or Married) Equivalent Tax Credit
- calculate Deductions Transferred from Spouse

Calculate and Allocate Tax Credits for Wholly Dependant Children

Before 1988, filers with dependant children were eligible to claim a personal exemption based upon the age and net income of the child. The exemption was calculated as a fixed amount (adjusted annually) minus a proportion of the child's income exceeding the reduction level. The amounts varied with the age of the child. Children under 18 years of age were treated differently from children 18 and over. This claim could be split between supporting parents or grandparents.

The June 1987 White Paper on Tax Reform proposed the conversion of the exemption on behalf of children under 18 into a tax credit and the elimination of the exemption for children 18 and over.

SPSM Implementation

(Note: this paragraph needs to be rewritten.) The amount of the tax credit on behalf of dependants under 18 is calculated by subtracting a proportion (YCTCR) of the child's Net Income (iminet) which exceeds the Reduction Level (YCTCT) from the Maximum Young Child Tax Credit (YCTC).

The amounts for all children are accumulated in ctxct which may later be adjusted by the calculation of the Spouse Equivalent Tax Credit. If a spouse is present, the one with the higher Net Income iminet receives the full amount of the tax credit for all dependent children (imctxcs) which is used to reduce Basic Federal Tax imbft in the function txcalc.

There is no tax credit for dependent children 18 and over. The model has no provision for a tax credit for infirm dependants aged 18 and over.

The model does not partition exemptions for wholly dependant children between spouses as is allowed in tax regulations. If it were partitioned, certain families would pay slightly lower taxes.

Spouse Tax Credit

Persons legally married during the taxation year are eligible to claim a non-refundable Spouse Tax Credit. The tax credit amounts to a fixed amount reduced by a proportion of the spouse's net income exceeding a specified level. Net income for this purpose includes the spouse's GIS/SPA benefits.

SPSM Implementation

The Spouse Tax Credit (immartxc) amounts to a fixed value (MXM) reduced by the amount of the spouse's Net Income (imdepni) exceeding the reduction level (MXMT). This is

calculated only for the spouse with the higher Net Income.

The Spouse Tax Credit (immartxc) is used to reduce Basic Federal Tax in the function txcalc.

Although the regulations allow special considerations for persons who changed marital status during the taxation year, they are not implemented in the model.

Equivalent-to- Spouse Tax Credit

Filers who are single, divorced, separated or widowed and supported a relative related by blood, marriage or adoption are eligible to claim that relative for the Equivalent-to-Spouse Tax Credit, amounting to a fixed value reduced by a proportion of the relative's net income exceeding a reduction level.

SPSM Implementation

The SPSM calculates the Equivalent-to-Spouse Tax Credit on behalf of dependant children, not other relatives who may be eligible. If a non-claimable dependant is present, he or she is chosen to be claimed for the credit. If there is no such dependant, then the one with the lowest Net Income (iminet) is claimed.

The credit is calculated as a fixed amount (EMXM) reduced by the amount of the dependant's Net Income (imdepni) exceeding the reduction level (EMXMT). If the credit is being claimed on behalf of a dependant who is also eligible for the Wholly Dependant Child Tax Credit, the amount claimed for that dependant is subtracted from the total Wholly Dependant Child Tax Credit and the total number of children claimed is reduced by one.

The Spouse Equivalent Tax Credit is added to Total Nontransferable Tax Credits (imtaxcr) which is subtracted from Basic Federal Tax (imbft) in the function txcalc.

Calculate supplement to the basic personal tax credit

The supplement to the basic personal tax credit announced in the 1998 federal budget is calculated by reducing the maximum supplement (BXMS) by a proportion (BXMSRR) of taxable income above the level of the basic exemption (BXM) plus the maximum supplement (BXMS). The supplement is added to the basic personal tax credit (imbtc). Persons who claim the married amount or equivalent-to-spouse amount get an additional supplement. This program was cancelled in the 1999 federal budget.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----|---------------------------------|
| BXM | Basic personal exemption/amount |
|-----|---------------------------------|

| | |
|--------|--|
| BXMS | Basic personal exemption supplement |
| BXMSPI | Basic personal exemption supplement phase in |
| BXMSRR | Basic personal exemption supplement reduction rate |
| EMXM | Married equivalent exemption/amount |
| EMXMT | Married equivalent exemption/amount turndown level |
| FNTCR | Federal non-refundable tax credit rate |
| MXM | Married exemption/amount |
| MXMT | Married exemption/amount turndown level |
| YCXM1 | Dependent child amount (1st child) |
| YCXM2 | Dependent child amount (2nd child) |
| YCXM3 | Dependent child amount (3rd ,etc.) |
| YCXMT | Dependent child exemption/amount turndown level |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imbtcs | Basic personal tax credit supplement |
| imcchc | Child's non-refundable credit |
| imcemc | Child's equivalent to married credit |
| imchclm | Number of dependent children claimed |
| imctxcs | Dependent children tax credits |
| imdepni | Dependant's net income |
| immartxc | Married tax credit claimed |

txinet Compute net income

SUMMARY

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures which are discussed in order in terms of the description of the tax measure and its SPSM implementation.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Calculate Taxable Dividends
- Calculate Taxable Capital Gains
- Calculate Total Income
- CPP/QPP Contributions Tax Credit

- Unemployment Insurance Contributions Tax Credit
- Tuition Fees Tax Credit
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

Program Description

Other Allowable Employment Expenses

Certain special employment expenses not claimable elsewhere are allowed.

According to the 1984 definition, these expenses include:

- employee's expenses for travel, office and wages to assistants,
- commission sales employees may claim certain expenses paid to earn their income,
- transport employees may deduct the cost of meals and lodging while away from home, and
- power saw operators may claim expenses incurred in operating the power saw.

This is a special deduction from employment income and is not available to most employees.

SPSM Implementation

The value for Other Allowable Employment Expenses (idalexp) already exists on the database. This value is derived from actual taxation statistics. For more details, please see the [Database Creation Guide](#). This value is multiplied by the parameter ALEXPP (Proportion of Other Allowable Expenses to Use as a Deduction) to obtain imalexp, the modeled amount for Other Allowable Expenses.

Calculate Taxable Capital Gains

Capital Gains arise when an individual sells a property for more than it originally cost. If a property is sold for less than it cost, a capital loss may be claimable.

Only a portion of Capital Gains received are considered taxable. Similarly only a portion of capital losses may be claimed as a loss. The value of idicapg represents the actual amount of the Capital Gain or Loss Allowed. Losses, in 1984, were limited to \$2,000. This represents the lower limit of the variable idicapg. Modeled Taxable Capital Gains or Losses imicapgt are calculated by multiplying idicapg by the Capital Gains Inclusion Rate (CAPGIR).

Calculate Taxable Dividends

To avoid double taxation of dividends earned in Canadian business, the dividends from taxable Canadian corporations are treated differently from other sources of income. Before taxation, these dividends are "grossed-up" or increased to an amount which approximates the underlying corporate tax already paid on these earnings. A Dividend Tax Credit is paid based on the grossed-up amount and approximated the corporate taxes already paid.

The gross-up tax credit system ensures that income earned by Canadian corporations and then distributed in the form of dividends bears the same amount of total tax as if the income were earned directly by the shareholders.

SPSM Implementation

Total Dividends Received is represented on the database by the variable `idivid`. The taxable amount (`imidivt`) which is added to total income is calculated by multiplying `idivid` by the Federal Dividend Gross-up Rate (FDGUR).

Calculation of Total Income

At this point, the SPSM is able to calculate a first approximation of total income for tax purposes. This is not a final value since Family Allowances cannot be allocated to the mother or father until the Net Income of both is known. This temporary value of Total Income (`itot`) is the sum of:

| | |
|------------------------|--|
| <code>idiemp:</code> | Earnings From Employment |
| <code>idisenf:</code> | Self-employment Earnings (Non-farm), optionally scaled by the parameter <code>FACTISENF</code> |
| <code>idisefm:</code> | Self-employment Earnings (Farm) |
| <code>idiint:</code> | Interest Income |
| <code>idioinv:</code> | Other Investment Income |
| <code>idicqp:</code> | CPP/QPP Benefits Received |
| <code>iditogv:</code> | Other Taxable Government Income |
| <code>idipens:</code> | Pension Income |
| <code>iditoth:</code> | Other Taxable Income |
| <code>imiuib:</code> | Modeled Unemployment Insurance Benefits Received |
| <code>imiotg:</code> | Modeled New Taxable Demogrants |
| <code>imioas:</code> | Modeled OAS Benefits |
| <code>imidivt:</code> | Modeled Taxable Amount of Dividends |
| <code>imicapgt:</code> | Modeled Taxable Capital Gains and Losses |

Calculate CPP/QPP Contribution Tax Credit

All Canadians aged 18 to 64 and in the labour force are covered by either the Canada Pension Plan (CPP) or the Quebec Pension Plan (QPP). The pension plans provide retirement benefits as well as survivor benefits for a widow or dependant when the contributor dies prematurely, a death benefit and disability benefits. The plans are publicly funded, based on contributions from all employed persons aged 18 to 70 with pensionable earnings.

Contributions to the Canada and Quebec Pension Plans are based on employment income and are usually made through payroll deductions. Self-employed persons make their contribution through the tax system, the amount of the contribution is added to federal taxes payable.

The amount contributed is not subject to taxation and is therefore either deducted from total income or treated as a tax credit.

In most cases, an employee and his or her employer will contribute the same amount to the employee's pension plan. Self-employed persons contribute a twice the rate of employees.

Although employees have their CPP/QPP contribution deducted from their paycheck, refunds for overpayment are made through the personal income tax system.

SPSM Implementation

CPP/QPP Contributions are calculated separately on employment and self-employment earnings. Employment earnings subject to contribution are calculated by subtracting the amount of exemptable earnings (CPPXM) from Earnings from Employment (*idiemp*). This amount cannot exceed the Maximum Earnings Subject to Contribution (YMPE minus CPPXM). Earnings Subject to Contribution are then multiplied by the CPP/QPP contribution rate (WSCF) to derive the amount of the contribution (*wscon*).

Contributions from self-employment earnings (*secon*) is a proportion (SECF) of Earnings from Employment (*idiemp*) plus Earnings from Self-employment (*idisenf* + *idisefm*) that are in excess of the Annual Exemption Level (CPPXM) and less than the year's Maximum Pensionable Earnings Level, less a multiple (WSCM) of contributions made on Earnings from Employment (*wscon*). WSCM is the ratio of the contribution rate on earnings from self-employment to the rate on earnings from employment.

The total CPP/QPP Contribution is the sum of the Contribution Payable on Earnings from Employment (*wscon*) plus the Contribution Payable on Earnings from Self-employment (*secon*).

There is no information in the database concerning the actual amount deducted through payroll deductions; therefore, refunds for overpayment cannot be calculated.

The CPP/QPP Contribution tax credit (*imcppctc*) is calculated as a proportion (FNTCR) of the total contributions (*imcqqpc*). The tax credit is applied in the function *txcalc*.

When CPPSEDEDFLG is turned on, a fraction (CPPSEDFRC) of a person's contributions to

the CPP/QPP in regards to their self employment earnings are treated as an exemption (imcppse) and is added to imdedft. The rest, along with the contributions on wages and salaries, can still be claimed as a tax credit (imcppct).

Unemployment Insurance Contributions

Unemployment Insurance is intended to provide short-term financial support to the unemployed. It also provides benefits for those suffering from extended sickness, for women leaving the labour force temporarily because of pregnancy and childbirth, and supplementary benefits to unemployed fishermen and to persons undertaking manpower training courses. The program is given its mandate by the Unemployment Insurance Act (1971). The act covers nearly all members of the labour force except self-employed persons and those who earn less than the minimum insurable earnings. The program is funded by employee and employer contributions as well as additional revenue from the consolidated revenue fund.

Contributions are calculated as a proportion of weekly earnings. Only earnings above the minimum insurable earnings and less than the maximum insurable earnings are subject to contribution.

Unemployment Insurance premiums are deducted from the employee's paycheck by the employer. Reimbursements for overpayment are made through the tax system. The amount contributed is not subject to tax. Before 1988, UI contributions were deducted from total income. The June 1987 White Paper on Tax Reform proposed the conversion of this deduction into a non-refundable tax credit.

Two major Employment Insurance Reforms were added, the difference in contributions, and the benefits repayable.

SPSM Implementation

The database contains no detail on an individual's weekly distribution of earnings throughout the year. Weekly earnings are estimated by dividing the annual Earnings from Employment (idiemp) by the Number of Weeks Worked (idlyww). This assumes that the earnings were evenly distributed throughout the year. It also assumes that the earner worked at least 20 hours during each week.

If average weekly earnings are less than $UIMINPCT * UIERNMAX$, no UI contributions are made. Otherwise, the annual UI Contribution (imuic) are calculated as a proportion (UIPF) of average weekly earnings not exceeding the Maximum Weekly Earnings Subject to Contribution (UIERNMAX), multiplied by the number of weeks worked.

The UI Contribution Tax Credit (imuictc) is calculated as a proportion (FNTCR) of the contributions. This tax credit is later applied to reduce Basic Federal Tax in the function txcalc.

When Employment Insurance is activated (UIEIOPT = 2), then the EI contributions (imuic) are calculated using the UI contribution rate on earnings (UIPF) with no weekly maximums and no exemptions for low income. The EI contribution refund (imuicrf) is then calculated

and subtracted from the contributions.

The method of calculating UI/EI benefit recovery (*imuibr*) is also changed when *UIEIOPT* is activated. When *UIEIREPOPT* is set to 1, it now depends on the amount of previous weeks of EI received. If employment insurance benefits (*imiuib*) have been received and net income is in excess of: (a) *UIBRA* for persons with previous EI receipt, or (b) *UIBRANR* for persons with little previous benefits or for persons not on regular EI claims; *UIEIRPR* is applied to the lower of (a) total EI benefits and (b) the excess net income up to a maximum percent of their total benefits (*UIEIBRP*), to calculate the repayment.

When *UIEIREPOPT* is set to 2, sickness, maternity, and parental benefits are exempt from benefit repayment. Persons who claim EI for the first time are also exempt from benefit repayments. For the rest, the repayment is equal to the *UIEIRPR* times the minimum of net income in excess of *UIBRANR* and EI benefits.

See *UIEIRPR*, *UIBRANR*, *UIEIBRP*, *UIBRA*, and *UIEINRT* for more details.

Tuition Fees

Tuition fees paid to an educational institution may be claimed as a tax credit by the student or may be transferred to a spouse or supporting parent.

SPSM Implementation

A value for Tuition Deduction Allowed in the base year (*idtuitn*) exists on the database. This value is imputed from income tax records (see the [*Database Creation Guide*](#)). To calculate the Tuition Tax Credit, *idtuitn* is multiplied by the Federal Non-Refundable Tax Credit Rate *FNTCR* and the result (*imtutxc*) is later applied as a tax credit in the function *txcalc*.

Assign Taxable Family Allowance

For tax purposes, Family Allowances are attributed to the person who claims a personal exemption (or post-reform, a tax credit) for the child. The model assumes that the exemptions are allocated to the spouse with the higher net income (*iminet*, excluding FA) if present. This is the spouse who would benefit most from claiming the children and, therefore, this is the one who also must claim Taxable Family Allowances.

Calculate Net Income

Net Income (*iminet*) is calculated as Total Income (*imitot*) minus All Deductions from Total Income (*imdedft*). *imdedft* is the sum of:

| | |
|------------------|--|
| <i>idrpp</i> : | Registered Pension Plan Contributions |
| <i>idrrsp</i> : | Registered Retirement Savings Plan Contributions |
| <i>iddues</i> : | Union and Professional Dues |
| <i>imiloss</i> : | Allowable Business Investment Loss |

idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions
imuic: optionally, UI Contributions
idtuitn: optionally, Tuition Fees
imcceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txceca)

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALEXPP | Proportion of other allowable employment expenses to use as deduction |
| CAPGIR | Capital gains inclusion rate |
| CPP60T64 | CPP/QPP Contributions Take up (60 - 64) by earnings with CPP income |
| CPPGT64 | CPP/QPP Contributions Take up (over 64) by earnings with CPP income |
| CPPLT60 | CPP/QPP Contributions Take up (under 60) by earnings with CPP income |
| CPPSEDEDFLG | CPP/QPP contribution deduction for self-employed earnings flag |
| CPPSEDFRC | CPP/QPP contribution deduction fraction for self-employed earnings |
| CPPXM | CPP/QPP exemptible earnings |
| FACTISENF | Scale-up factor for non-farm self-employment income |
| FARR | Family allowance repayment rate |
| FATBPI | Family allowance take-back phase in |
| FATD | Family allowance turndown income |
| FDGUR | Federal dividend gross-up rate |
| FNTCR | Federal non-refundable tax credit rate |
| NETOASFLG | Net the clawback from Old Age Security |
| OASRR | OAS reduction rate |
| OASTBPI | OAS take-back phase in |
| OASTD | OAS turndown income |
| REPNETFLAG | Social program repayments reduce net income flag |
| SECF | CPP/QPP contribution rate on self-employment earnings |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |
| UIBRP | UI benefit recovery portion (UI only) |

| | |
|------------|--|
| UIEIBRP | Maximum clawback under EI reform [Past Wks ben][Rate] (EI only) |
| UIEINRT | UI EI Non repeater level for higher clawback turndown (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIREF | EI contribution refund cut-in (EI only) |
| UIEIREFTK | EI contribution refund take up |
| UIEIREPOPT | EI Benefit repayment option (1=repeaters have higher rate,2=one rate)(EI only) |
| UIEIRPR | UI EI benefit clawback rate (EI only) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIMINPCT | Exemption limit (percent of maximum insurable earnings) (UI only) |
| UIPF | UI contribution rate on earnings (UI and EI) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| WSCF | CPP/QPP contribution rate on employment earnings |
| WSCM | Ratio of self-employed to employed contribution fraction |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|----------|--|
| hdprov | Province |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcarry | Carrying charges (221) |
| iddalimo | Alimony paid (220) |
| iddues | Union and professional dues (212) |
| idexplr | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idlyww | Weeks worked |
| idmovexp | Imputed moving expenses (219) |
| idothded | Other deductions from total income (232) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idtuitn | Tuition fees (320) |
| iduirank | Predicted ranked likelihood of getting UI |
| imiotg | Other taxable demogrants |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| nfineld | Eldest person in nuclear family [pointer] |
| nfnspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |
| ubcalpd | Benefits paid in calendar year |

| | |
|---------|---------------------------|
| ubeiwbp | Weeks of past EI benefits |
| ucbtyp | Claim type |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|----------|---|
| imalexp | Allowable employment expenses |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedft | Deductions from total income |
| imfar | Family allowance recovery |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imioas | OAS benefits |
| imitot | Total income |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imtfa | Taxable family allowances |
| imtutxc | Tuition tax credit |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |
| imuicrf | UI EI contribution refund |
| imuictc | UIC contributions tax credit |

txitax Compute taxable income and individual credits

SUMMARY

The process of computing taxable income is divided into two separate routines. Deductions and tax credits which are not dependent upon information from other members of the family (e.g., Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

The algorithms contained in txitax are:

- Basic Personal Tax Credit
- Age Tax Credit
- Pension Income Deduction
- Medical Expense Tax Credit, Charitable Donations Tax Credit
- Disability Tax Credit
- Education Tax Credit
- Capital Gains Deduction

- UI Benefit Repayment Payable
- Family Allowance and OAS Repayment Payable (optional)
- Employee Home Relocation Loan Deduction
- Stock Option Deduction

Basic Personal Tax Credit

The non-refundable Basic Personal Tax Credit is calculated by assigning the value of the parameter BXM (Basic Personal Tax Credit) to the variable imbtc (Modeled Basic Personal Tax Credit) which is applied to reduce Basic Federal Tax in the function txcalc.

Age Tax Credit

All Canadians who were 65 years of age or older on December 31st of the taxation year would be eligible to claim the Age Tax Credit.

When the Age Tax Credit is calculated, imatxc (Modeled Age Tax Credit) receives the value assigned to the parameter AXM. The function txcalc performs any applicable transfer of the tax credit from the spouse and applies the tax credit to reduce Basic Federal Tax.

Pension Income Tax Credit

Certain pension income from a pension plan or upon the death of a spouse qualifies for a Pension Income Tax Credit. The deduction amounted to the lesser of the maximum deduction (fixed at \$1,000) and eligible income. Any amount of this deduction not required to reduce taxable income to zero is transferable to the spouse.

The June, 1987 White Paper on Tax Reform proposed the conversion of this deduction into a tax credit amounting to a proportion of eligible income up to a maximum of \$170. This tax credit would also be transferable.

SPSM Implementation

The Modeled Pension Income Tax Credit (impentxc) is assigned the minimum of:

- a) qualified pension income (idipens) and
- b) the Maximum Allowable Tax Credit (YPNDL),
times the Tax Credit Rate (FNTCR).

Any portion of the Pension Income Tax Credit not required to reduce a filer's Basic Federal Tax to zero is transferable to the spouse. The transfer is calculated in the function txcalc.

Medical Expense Tax Credit

The filer is allowed a non-refundable tax credit for certain medical expenses paid on behalf of the filer, spouse or dependants. All medical expenses claimed require supporting proof to be allowed as a tax credit and only medical expenses in excess of 3% of net income are claimable.

SPSM Implementation

The value of Medical Expenses Allowed (immeda) is calculated as the value of the gross medical expenses from the database (idmedgro) less either MEDANF percent of net income or MEDALL, whichever is less. The Medical Expense Tax Credit (immedatc) is calculated as a proportion (FNTCR) of the value of Medical Expenses Allowed (immeda). The Medical Expense Tax Credit is applied to reduce Basic Federal Tax in the function txcalc.

Although medical expenses paid on behalf of dependants are claimable by either spouse, no transfers between spouses are made for this tax credit.

Charitable Donations Tax Credit

The filer is allowed a non-refundable tax credit on behalf of charitable donations and gifts to Canada or a province. SPSM Implementation

The database contains a value for gross charitable donations (idcharit). The allowable charitable donations (imchara) are calculated as the lesser of idcharit and CHATNF percent of net income. The value of gifts or donations to Canada, a province or a cultural institution are then added to imchara.

A two-tier, non-refundable Charitable Donation Tax Credit (imchartc) is calculated. Allowable Donations (imchara) up to a set amount (CHATL1) are converted at the first tax credit rate (CHATR1) and the remainder is converted at the second rate (CHATR2).

The Charitable Donations Tax Credit is a component of the total non-refundable tax credits used to calculate Basic Federal Tax in the function txcalc.

Disability Tax Credit

Disabled persons whose impairment has markedly restricted or is expected to restrict their activities of daily living for a continuous period of at least 12 months are eligible to claim a special Disability Tax Credit. SPSM Implementation

The Disability Tax Credit (imdisatc) is assigned the value of the parameter MAXDX (Maximum Disability Tax Credit) for filers with reported disability amounts for self (iddisslf) or other dependents (iddisoht). Any portion of the tax credit not required to reduce Basic Federal Tax to zero may be transferred to the spouse or a supporting parent in the function txcalc.

Education Tax Credit

The Education Tax Credit represents the amount that students with full-time attendance at a designated post-secondary institution may claim. The number of eligible months is multiplied by a maximum allowable amount per month. The filer may transfer to a spouse, parent or grandparent the part of the education tax credit that is not needed to reduce the federal income tax to zero.

SPSM Implementation

The Education Tax Credit (*imedtxc*) is calculated as the number of eligible months of education amount (*ideducm*) multiplied by the Education Tax Credit per Month (*EDXPM*). The function *txcalc* may transfer unused amounts of the tax credit to a parent or spouse.

Capital Gains Deduction

Since 1985, a deduction has been allowed on behalf of capital gains income. The Capital Gains Deduction is being phased in with an increasing annual deduction limit amounting to \$10,000 in 1985 and \$25,000 in 1986. The amount an individual may claim during his or her lifetime is limited to a fixed amount. These measures were introduced in the May, 1985 Budget Papers and subsequently modified in the June, 1987 White Paper on Tax Reform.

SPSM Implementation

The Capital Gains Deduction is calculated as the minimum of:

- a) the Annual Capital Gains Deduction Limit (The Annual Limit based on gross Capital Gains, *CAPGAL*, times the Capital Gains Inclusion Rate, *CAPGIR*, and
- b) Taxable Capital Gains (*imicapgt*) minus:
 - Allowable Business Investment Loss (*idcloss*)
 - Net Capital Losses of Other Years (*imiloss*)

The resultant deduction is added to Total Deductions from Net Income (*imdedfn*).

The database contains no information on the filer's previous Capital Gains Deduction and therefore, the lifetime limit cannot be applied.

Unemployment Insurance Benefit Repayment Payable

If an individual has received Unemployment Insurance Benefits and his or her Net Income exceeds a fixed amount (\$38,610 in 1986), a portion of the benefits must be repaid. This repayment is added to Federal Taxes Payable. The amount repaid becomes a deduction from Net Income.

SPSM Implementation

The amount repayable is a proportion (*UIBRP*) of the UI Benefits received (*imiuib*) or a proportion of Net Income exceeding the Repayment Level (*UIBRA*) whichever is less. The Repayment Amount (*imuibr*) is a proportion (*UIBRP*) of the lesser of:

- (a) *imiuib*: Modeled UI Benefits
- (b) *iminet* *UIBRA*: the amount by which Net Income exceeds the Repayment Level

The value of *imuibr* is added into the variable *imrepay* which accumulates modeled repayment amounts. *imrepay* is added to Total Deductions from Net Income (*imdedfn*).

Family Allowance and OAS Repayments

The SPSM includes optional algorithms which allow the analysis of certain modifications to Family Allowances and the Old Age Supplement. These algorithms are presented with the SPSD/M for illustrating a glass box application. Users may consult the *Programmer's Guide* for further details.

The Family Allowance Repayment is calculated if the parameter FARR (Family Allowance Repayment Rate) is non-zero. The repayment is calculated as the lesser of:

- a) a proportion (FARR) of family net income (the net income of the head plus the net income of the spouse) exceeding the Family Allowance Reduction Level (FATD), and
- b) Taxable Family Allowances Received (imtfa).

The OAS repayment is based on the filer's own Net Income and is computed as the lesser of:

- a) OAS Received (imioas), and
- b) a proportion (OASRR) of Net Income (iminet) exceeding the OAS Repayment Reduction Level (OASTD).

Neither the FA nor the OAS repayments are stored in separate variables. They are accumulated into the variable imrepay which is applied as a deduction from Net Income in the function txitax and is added to Taxes Payable in the function memo1.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AXM | Age amount |
| AXPI | Age amount phase in rate for 1994 and beyond |
| AXRR | Age amount credit reduction rate |
| AXTD | Age amount net income turndown |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CHATL1 | Charitable donations amount level 1 |
| CHATNF | Charitable donations maximum net income fraction |
| CHATR1 | Charitable donations tax credit rate 1 |
| CHATR2 | Charitable donations tax credit rate 2 |
| EDXPM | Education amount per month |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MEDALL | Medical allowance maximum lower limit |
| MEDANF | Medical allowance lower limit net income fraction |
| REPNETFLAG | Social program repayments reduce net income flag |
| YPNDL | Maximum pension income deduction/amount |
| INPUT VARIABLES: | |
| hnnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idcapgex | Capital gains exemptions (254) |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idclose | Allowable other years capital loss (253) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idemplo | Employee home relocation loan dedn (248) |
| idforavg | Forward averaging amount withdrawal (237) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idipens | Pension income (115) |
| idmedgro | Medical expenses, gross (330) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idstkded | Stock option deduction (249) |
| imicapgt | Capital gains (taxable) |
| iminet | Net income |
| imninc | No income flag |
| imrepay | Social Benefits Repayments |

OUTPUT VARIABLES:

| | |
|----------|---|
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imcapgex | Modelled capital gains deduction (254) |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchartc | Charitable donations tax credit |
| imdedfn | All deductions from net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |

txman Compute provincial taxes for Manitoba

SUMMARY

When MTXFLG is turned off, Manitoba Basic Provincial Tax (imbpt) is calculated as a proportion (MPTF) of Basic Federal Tax (imbft).

The Manitoba Surtax is calculated based on a series of family credits. The surtax is added to Basic Provincial Tax to derive Manitoba Tax (imtxp).

When the tax on taxable income flag is turned on (MTXFLG), a provincial tax table (MPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax).

Non-refundable tax credits are calculated using the non-refundable tax credit rate (MPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (MBXM) |
| impatxc | Age amount tax credit | (MAXM, MAXRR, MAXTD, MAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (MMXM, MMXMT, MEMXM, MEMXMT) |
| impcgtc | Caregiver tax credit | (MCGTC, MCGTCFLG, MCGTCTC, MCGTCTD, MCGTCTK) |
| impchrctc | Charitable donations | (MCHATL1, MCHATR1, MCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (MMAXDX) |
| impdtxc | Dividend tax credit | (MDTCR) |
| impedtxc | Education tax credit | (MEDXPM, MMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (MYPNDL) |
| imptutxc | Tuition Tax credit | (MMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using MAMTOPT.

The refundable learning tax credit (immanltc) is equal to MANLTCF times (the tuition amount (idtuitn) plus the education amount (imeducm * EDXPM) plus the education amounts transferred from a spouse or kids (imedrcv) minus the education amounts which have been transferred to a spouse or parents (imedtrf)). It is included in the refundable tax credits (imptc). Beginning in 1998, the credit is limited to MANLTMAX for each student.

The Manitoba labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Manitoba provincial credit is modelled as MLVCRT times the gross amount up to MLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Manitoba homeowner's school tax assistance was introduced in 1993 and is part of the total property tax credit (impptxtc). MSCHFLAG turns it on or off. In order to qualify for assistance, Manitoba residents must be homeowners and be older than MSCHAGE. The basic credit is MSCHBXM which is reduced by income over the turndown MSCHTD by a rate MSCHRR. The value of the benefit is also rounded (see MSCHRND). The benefit may not exceed school taxes paid (idmschpd) less the minimum threshold of MSCHMNTH. The school tax assistance is added to the basic property tax credit and applied against occupancy

costs in order to derive the total property tax credit (impptxtc).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| EDXPM | Education amount per month |
| MAMTOPT | Man. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| MAMTPCTF | Man. amt rate as pct of additional fed tax due to minimum tax |
| MAMTPCTM | Man. amt rate as pct of federal minimum tax amount |
| MAMTTX | Man. amt rate as tax on adjusted income |
| MANLTCF | Manitoba learning tax credit factor |
| MANLTMAX | Manitoba learning tax credit maximum amount per student |
| MAXM | Man. Age Amount |
| MAXPI | Man. Age Amount phase in rate for 1994 and beyond |
| MAXRR | Man. Age Amount credit reduction rate |
| MAXTD | Man. Age Amount net income turndown |
| MBXM | Man. Basic Personal Exemption/amount |
| MCAXM | Manitoba cost-of-living age credit |
| MCBXM | Manitoba cost-of-living basic credit |
| MCDISEX | Manitoba cost-of-living disability credit |
| MCEMXM | Manitoba cost-of-living married equivalent credit |
| MCFINCR | Manitoba cost-of-living family income reduction rate |
| MCGTC | Man. Caregiver Tax Credit |
| MCGTCFLG | Man. Caregiver Tax Credit activation flag |
| MCGTCTC | Man. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| MCGTCTD | Man. Caregiver Tax Credit Turn Down Income |
| MCGTCTK | Man. Caregiver tax credit take-up rate by income level [employment income,rate] |
| MCHATL1 | Man. Charitable Donations amount level 1 |
| MCHATR1 | Man. Charitable Donations tax credit rate 1 |
| MCHATR2 | Man. Charitable Donations tax credit rate 2 |
| MCMXM | Manitoba cost-of-living married credit |
| MCODISEX | Manitoba cost-of-living old disabled dependant credit |
| MCSAXM | Manitoba cost-of-living spouse age credit |
| MCSDISEX | Manitoba cost-of-living spouse disabled credit |
| MICYCXM | Manitoba cost-of-living young dependants credit |
| MDTCR | Man. dividend tax credit rate |
| MEDXPM | Man. Education Amount per month |
| MEMXM | Man. equivalent to married amount |
| MEMXMT | Man. equivalent to married turndown level |
| MHMASOPT | Manitoba homeowner assistance option (1=Model 2=database) |
| MLVCMAX | Maximum Man. labour-sponsored funds tax credit allowed |
| MLVCRT | Percent of Man. labour-sponsored funds cost allowed as credit |
| MMAXDX | Man. Maximum Disability deduction/amount |
| MMAXET | Man. maximum on transfer of education and tuition amount |

| | |
|----------|--|
| MMXM | Man. married amount |
| MMXMT | Man. married amount turndown level |
| MNITR | Manitoba net income tax rate |
| MPAXM | Manitoba property tax credit senior citizen credit |
| MPBXM | Manitoba property tax credit basic credit |
| MPFINCRR | Manitoba property tax credit family income reduction rate |
| MPMINC | Manitoba property tax credit minimum credit |
| MPMNTH | Manitoba property tax minimum threshold |
| MPNTR | Man. provincial non-refundable tax credit rate |
| MPRIR | Manitoba property tax credit rental inclusion rate |
| MPTC | Manitoba political contribution table [total donations, donation allowed] |
| MPTCBEN | Maximum Manitoba political tax credit allowed |
| MPTF | Manitoba provincial tax fraction |
| MPTX | Man. tax table [taxable income, basic provincial tax] |
| MRAXM | Manitoba tax reduction age credit |
| MRBXM | Manitoba tax reduction basic credit |
| MRDISEX | Manitoba tax reduction disability credit |
| MREMXM | Manitoba tax reduction married equivalent credit |
| MRMXM | Manitoba tax reduction married credit |
| MRODISEX | Manitoba tax reduction old disabled dependant credit |
| MRSAXM | Manitoba tax reduction spouse age credit |
| MRYCXM | Manitoba tax reduction young dependants credit |
| MSAXM | Manitoba surtax age credit |
| MSBXM | Manitoba surtax basic credit |
| MSCHAGE | Manitoba school tax minimum age |
| MSCHBXM | Manitoba school tax basic amount |
| MSCHFLAG | Manitoba school tax assistance activation flag |
| MSCHMNTH | Manitoba school tax minimum threshold |
| MSCHRND | Manitoba school tax assistance rounding unit |
| MSCHRR | Manitoba school tax reduction rate |
| MSCHTD | Manitoba school tax turndown |
| MSDISEX | Manitoba surtax disability credit |
| MSEMXM | Manitoba surtax married equivalent credit |
| MSMXM | Manitoba surtax married credit |
| MSODISEX | Manitoba surtax old disabled dependant credit |
| MSSAXM | Manitoba surtax spouse age credit |
| MSYCXM | Manitoba surtax young dependants credit |
| MTCINCFI | Manitoba tax credit income definition flag |
| MTRNIO | Manitoba tax reduction net income offset |
| MTXFLG | Man. tax on taxable income activation flag |
| MYPNDL | Man. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdtenur | Tenure |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |

| | |
|----------|---|
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idmschpd | Manitoba school taxes paid |
| idothpe | Other dependant exemptions (305) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imatxc | Age tax credit |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imstxcrt | Tax credits transferred from spouse |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------|
| imbpt | Basic provincial tax |
| immanltc | Manitoba learning tax credit |
| immhmas | Manitoba Homeowners Assistance |

| | |
|-----------|---|
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impptxtc | Provincial Property tax tax credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impттxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnb Compute provincial taxes for New Brunswick

SUMMARY

When BTXFLG is turned off, the basic Provincial Tax (imbpt) for New Brunswick is simply a proportion (BPTF) of Basic Federal Tax (imbft).

The 2000 budget announced that New Brunswick would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (BTXFLG), a provincial tax table (BPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (BPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|---------|-----------------------|----------------------|
| impbtc | Basic amount | (BBXM) |
| impatxc | Age amount tax credit | (BAXM, BAXRR, BAXTD, |

| | | |
|-----------|--|--|
| | | BAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (BMXM, BMXMT, BEMXM, BEMXMT) |
| impcgtc | Caregiver tax credit | (BCGTC, BCGTCFLG, BCGTCTC, BCGTCTD, BCGTCTK) |
| impchrctc | Charitable donations | (BCHATL1, BCHATR1, BCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (BMAXDX) |
| impdtxc | Dividend tax credit | (BDTCR) |
| impdtxc | Education tax credit | (BEDXPM, BMAXET) |
| impmedtc | Medical expenses tax credit | |
| impptenc | Pension income tax credit | (BYPNDL) |
| imptutxc | Tuition Tax credit | (BMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using BAMTOPT.

The New Brunswick labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The New Brunswick provincial credit is modeled as BLVCRT times the gross amount up to BLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Child Tax Benefit

When NBCTBFLG is assigned a value of 1, the New Brunswick Child Tax Benefit calculation is activated. imnbcben is the total benefits received under the New Brunswick Child Benefits program announced in the 1997 New Brunswick Budget and commencing in April 1997. A first component is the base amount, imnbcbb, which is calculated as the base amount per child, NBCBBAS, times the number of children. The level of benefit is reduced, based on family income, at a rate NBCBRRS for families with only one child, and at rate NBCBRR for the others.

If the family gross employment income is higher than a threshold, NBCBECI, then the maximum supplement is NBCBEIS. The supplement is reduced at a rate NBCBESR for each \$ of employment income exceeding the threshold FCBECI. If the family income is higher than NBCBETD then the supplement is reduce at a rate NBCBERR. The final value of the work income supplement is stored in imnbwis.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BAMTOPT | N.B. alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| BAMTPCTF | N.B. amt rate as pct of additional fed tax due to minimum tax |
| BAMTPCTM | N.B. amt rate as pct of federal minimum tax amount |
| BAMTTX | N.B. amt rate as tax on adjusted income |
| BAXM | N.B. Age Amount |
| BAXPI | N.B. Age Amount phase in rate for 1994 and beyond |
| BAXRR | N.B. Age Amount credit reduction rate |
| BAXTD | N.B. Age Amount net income turndown |
| BBXM | N.B. Basic Personal Exemption/amount |
| BCGTC | N.B. Caregiver Tax Credit |
| BCGTCFLG | N.B. Caregiver Tax Credit activation flag |
| BCGTCTC | N.B. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| BCGTCTD | N.B. Caregiver Tax Credit Turn Down Income |
| BCGTCTK | N.B. Caregiver tax credit take-up rate by income level [employment income,rate] |
| BCHATL1 | N.B. Charitable Donations amount level 1 |
| BCHATR1 | N.B. Charitable Donations tax credit rate 1 |
| BCHATR2 | N.B. Charitable Donations tax credit rate 2 |
| BDCR | N.B. dividend tax credit rate |
| BEDXPM | N.B. Education Amount per month |
| BEMXM | N.B. equivalent to married amount |
| BEMXMT | N.B. equivalent to married turndown level |
| BLVCMAX | Maximum N.B. labour-sponsored funds tax credit allowed |
| BLVCRT | Percent of N.B. labour-sponsored funds cost allowed as credit |
| BMAXDX | N.B. Maximum Disability deduction/amount |
| BMAXET | N.B. maximum on transfer of education and tuition amount |
| BMXM | N.B. married amount |
| BMXMT | N.B. married amount turndown level |
| BPNTCR | N.B. provincial non-refundable tax credit rate |
| BPTC | New Brunsw. political contribution table [total donations,donation allowed] |
| BPTCBEN | Maximum New Brunswick political tax credit allowed |
| BPTF | New Brunswick provincial tax fraction |
| BPTX | N.B. tax table [taxable income,basic provincial tax] |
| BSCI | New Brunswick provincial tax above which surtax applies |
| BSF | New Brunswick provincial surtax rate |
| BTRBAS | Base N.B. low income tax reduction |
| BTRRR | N.B. low income tax reduction Reduction Rate |
| BTRSP | N.B. low income tax reduction for spouse or equivalent-to-spouse |
| BTRTD | N.B. low income tax reduction Turndown |
| BTXFLG | N.B. tax on taxable income activation flag |
| BYPNDL | N.B. Pension Income Deduction Amount |

| | |
|----------|---|
| CTCINC | CTC family income scaling factor |
| NBCBBAS | NB Basic child benefit (per child) |
| NBCBECI | NB Child benefits earning supplement cut-in level |
| NBCBEIS | NB Child benefits earned income supplement |
| NBCBERR | NB Child benefits earning supplement reduction rate |
| NBCBESR | NB Child benefits earned income supplement rate |
| NBCBETD | NB Child benefits earning supplement turndown level |
| NBCBPI | NB Child benefits phase-in rate |
| NBCBRR | NB Multi-children family income reduction rate |
| NBCBRRS | NB Single-child family income reduction rate |
| NBCBTD | NB child benefits family income turndown |
| NBCTBFLG | NB child benefit activation flag |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinseld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtsg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |

| | |
|-----------|--|
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnbcbb | NB child tax Benefits base amount |
| imnbcben | Total NB child tax Benefits |
| imnbwis | NB child tax Benefits WIS |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transferred |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnfld Compute provincial taxes for Newfoundland

SUMMARY

When NTXFLG is turned off, Basic Provincial Tax (imbpt) for Newfoundland is simply a

proportion (NPTF) of Basic Federal Tax (imbft).

For Newfoundland, the SPSM calculates provincial surtax (impsur) as NSF percent of provincial taxes (imtxp) above the level NSCI.

The 2000 budget stated that Newfoundland would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (NTXFLG), a provincial tax table (NPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (NPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (NBXM) |
| impatxc | Age amount tax credit | (NAXM, NAXRR, NAXTD, NAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (NMXM, NMXMT, NEMXM, NEMXMT) |
| impcgtc | Caregiver tax credit | (NCGTC, NCGTCFLG, NCGTCTC, NCGTCTD, NCGTCTK) |
| impchrctc | Charitable donations | (NCHATL1, NCHATR1, NCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (NMAXDX) |
| impdtxc | Dividend tax credit | (NDTCR) |
| impedtxc | Education tax credit | (NEDXPM, NMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (NYPNDL) |
| imptutxc | Tuition Tax credit | (NMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using NAMTOPT.

A new refundable sales tax credit was modeled and added to the provincial tax credit (imptc). Similar to the federal credit, it allows for NSTCA dollars for each adult, NSTCC dollars for each child, and it reduced starting at family incomes over NSTCL at a rate of NSTCR.

Newfoundland and Labrador Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget. The Newfoundland and Labrador Child Benefit (imncb) is a tax-free monthly payment to help low-income families with the cost of raising children under age 18. Benefits from this program are combined with the Canada Child Tax Benefit into a single monthly payment. The program was implemented in July 1999.

SPSM Implementation

This benefit is turned by NCBFLG. Under the Newfoundland and Labrador Child Benefit program, you may be entitled to receive a benefit of NCB1 for the first child, NCB2 for the second child, NCB3 for the third child, and NCB4 for each additional child. The benefit is reduced when net family income is greater than NCBTD and is completely phased out when net family income is at least NCBPO. The benefit (imncb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| NAMTOPT | NFLD alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| NAMTPCTF | NFLD amt rate as pct of additional fed tax due to minimum tax |
| NAMTPCTM | NFLD amt rate as pct of federal minimum tax amount |
| NAMTTX | NFLD amt rate as tax on adjusted income |
| NAXM | NFLD Age Amount |
| NAXPI | NFLD Age Amount phase in rate for 1994 and beyond |
| NAXRR | NFLD Age Amount credit reduction rate |
| NAXTD | NFLD Age Amount net income turndown |
| NBXM | NFLD Basic Personal Exemption/amount |
| NCB1 | Nfld. child benefit for first child |
| NCB2 | Nfld. child benefit for second child |
| NCB3 | Nfld. child benefit for third child |
| NCB4 | Nfld. child benefit for 4th and subsequent child |
| NCBFLG | Newfoundland child benefit activation flag |
| NCBPI | Nfld. child benefit program phase in |
| NCBPO | Nfld. child benefit family income phase out |
| NCBTD | Nfld. child benefit family income turndown |
| NCGTC | NFLD Caregiver Tax Credit |
| NCGTCFLG | NFLD Caregiver Tax Credit activation flag |
| NCGTCTC | NFLD Caregiver tax credit take-up rate by age of elderly [age,rate] |
| NCGTCTD | NFLD Caregiver Tax Credit Turn Down Income |
| NCGTCTK | NFLD Caregiver tax credit take-up rate by income level [employment income,rate] |
| NCHATL1 | NFLD Charitable Donations amount level 1 |
| NCHATR1 | NFLD Charitable Donations tax credit rate 1 |
| NCHATR2 | NFLD Charitable Donations tax credit rate 2 |
| NDTCR | NFLD dividend tax credit rate |
| NEDXPM | NFLD Education Amount per month |
| NEMXM | NFLD equivalent to married amount |
| NEMXMT | NFLD equivalent to married turndown level |
| NHEATFLG | Newfoundland home heating fuel rebate activation flag |

| | |
|----------|---|
| NHEATREB | Newfoundland home heating fuel rebate amount |
| NLVCMAX | Maximum NFLD labour-sponsored funds tax credit allowed |
| NLVCRT | Percent of NFLD labour-sponsored funds cost allowed as credit |
| NMAXDX | NFLD Maximum Disability deduction/amount |
| NMAXET | NFLD maximum on transfer of education and tuition amount |
| NMXM | NFLD married amount |
| NMXMT | NFLD married amount turndown level |
| NPNTCR | NFLD provincial non-refundable tax credit rate |
| NPTC | Newfoundland political contribution table [total donations, donation allowed] |
| NPTCBEN | Maximum Newfoundland political tax credit allowed |
| NPTF | Newfoundland provincial tax fraction |
| NPTX | NFLD tax table [taxable income, basic provincial tax] |
| NSCI | Newfoundland provincial tax above which surtax applies |
| NSCI2 | Newfoundland provincial surtax level 2 |
| NSF | Newfoundland provincial surtax rate |
| NSF2 | Newfoundland provincial surtax rate 2 |
| NSTCA | NFLD sales tax credit amount for adults |
| NSTCC | NFLD sales tax credit amount for children |
| NSTCFLAG | NFLD sales tax credit activation flag |
| NSTCL | NFLD sales tax credit reduction level |
| NSTCR | NFLD sales tax credit reduction rate |
| NTXFLG | NFLD tax on taxable income activation flag |
| NYPNDL | NFLD Pension Income Deduction Amount |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfageeld | Age of eldest in census family |
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| fxio | I/O expenditure categories [array] |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |

| | |
|----------|---|
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| imigist | GIS provincial top-up |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imncb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| impstxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |

impuictc Prov UI/EI contributions tax credit
 imtxp Provincial income tax payable

txns Compute provincial taxes for Nova Scotia

SUMMARY

This function calculates provincial taxes and credits for Nova Scotia. The programs simulated are as follows:

- Basic provincial tax
- Two level surtax
- Family tax reduction
- Phamacare tax and tax credits
- Provincial foreign tax credit
- Provincial political tax credit
- Provincial labour-sponsored venture capital tax credit
- Stock savings plan tax credit
- Home ownership savings plan tax credit
- Direct Assistance

Basic Provincial Tax

When VTXFLG is turned off, the algorithm first calculates basic provincial tax. Basic provincial tax (imbpt) for Nova Scotia is calculated as a proportion (VPTF) of Basic Federal Tax (imbft). Provincial taxes payable (imtxp) are then initialized to the value of basic provincial tax (imbpt).

The 2000 budget announced that Nova Scotia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (VTXFLG), a provincial tax table (VPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (VPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (VBXM) |
| impatxc | Age amount tax credit | (VAXM, VAXRR, VAXTD, VAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (VMXM, VMXMT, VEMXM, VEMXMT) |
| impcgtc | Caregiver tax credit | (VCGTC, VCGTCFLG, VCGTCTC, VCGTCTD, VCGTCTK) |
| impchrtc | Charitable donations | (VCHATL1, VCHATR1, |

| | | |
|-----------|-----------------------------|------------------|
| | | VCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (VMAXDX) |
| impdtxc | Dividend tax credit | (VDTCR) |
| impedtxc | Education tax credit | (VEDXPM, VMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (VYPNDL) |
| imptutxc | Tuition Tax credit | (VMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using VAMTOPT.

Provincial Surtax

The Nova Scotia surtax (impsur) is calculated as VSF percent of provincial taxes (imtxp) above the level VSCI plus VSF2 percent of provincial taxes above the level VSCI2. This amount is then added to provincial taxes payable (imtxp).

Family Tax Reduction

Program Description

The Nova Scotia tax reduction for low income individuals and families was introduced in 1994. To be eligible for the reduction a filer must be either over age 18, or have a spouse, or be a parent. This a family based tax reduction and only one person of a married couple may claim the reduction. The reduction has prescribed maximum amounts for the claimant, a spouse and children. There is an equivalent to married amount in cases where a claimant has filed for the federal equivalent to married non-refundable tax credit. The total of these amounts is then subject to a family income test.

SPSM Implementation

The calculation closely follows the structure on form T1C (N.S.). Individuals are first tested for eligibility on the basis of age (idage), marital status (idspoflg), and parental status. Parental status is only relevant for young (<19) families and single parents and so is tested using relation to head (idcfrh == 0) and presence of young children (nfnkids).

Persons without a spouse are assigned the basic amount (VTRBAS). Heads of census families with a spouse are assigned the basic and spouse amounts (VTRBAS + VTRSP). Equivalent to married amounts (VTREM) are given to spouseless heads who claim the federal married tax credit (immartxc). Amounts for children are given to the head of the census family. No child amounts are given with respect to children who triggered the equivalent to married amount.

The maximum deduction is then reduced by a fixed proportion (VTRRR) of the net income (iminet) of the head plus spouse (if present) in excess of the income base amount (VTRTD). This calculation is performed for persons without spouses or heads of census families with

spouses. The amounts for families with spouses are then assigned to the spouse with the higher net income. The tax reduction thus calculated is written to the non-refundable provincial tax reduction variable (imptr) and is used to decrease provincial taxes payable (imtxp).

Pharmacare Program

Program Description

Introduced in the 1995 provincial budget, the pharmacare program consists of an annual pharmacare premium payable by all seniors and a refundable tax credit for low income seniors.

SPSM Implementation

The pharmacare premium (VPHPREM) is assigned to the variable impeht for all Nova Scotians age 65 or older. This amount is then used to increase provincial taxes payable (imtxp).

The pharmacare refundable tax credit (impehtc) is calculated for all Nova Scotia seniors in receipt of GIS benefits (imigis). It is calculated as the basic tax credit (VPHTC) less a fixed proportion (VPHRR) of income (imgisinc) above a threshold (VPHTD). The pharmacare refundable tax credit (impehtc) is added to the variable for refundable provincial tax credits (imptc).

Starting in 1996, the tax credit no longer depended on whether or not a person received GIS. Instead, the credit is taxed back depending on family income. When VPHOPT is set to 1, the program depends on GIS receipt, and when it is set to 2 it depends on family income. There are now two turndowns, VPHTD for singles (also used in the original program) and VPHTDC for couples.

Provincial Foreign Tax Credit

The provincial foreign tax credit is imputed from the Greenbook (idprvftc). Only the amount of the foreign tax credit required to reduce provincial tax payable (imtxp) to zero is applied to the variable for non-refundable provincial tax credits (imnptc). Provincial tax payable (imtxp) is then reduced by the amount imnptc.

Political Contribution Tax Credit

Labour Sponsored Venture Capital Tax Credit

The Nova Scotia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Nova Scotia provincial credit is modeled as

VLVCRT times the gross amount up to VLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Direct Assistance

Program Description

Introduced in the 1997 provincial budget, direct assistance gives a benefit to low income Nova Scotians who would not be otherwise eligible for the tax reduction.

Beginning in 2000, direct assistance is only granted to families with children.

SPSM Implementation

Nova Scotia residents 19 and over are eligible for direct assistance if their income is below the cut-off (VDACI for families or VDASI for single individuals). The benefits are VDACB for families and VDASB for single individuals.

Differences between the SPSM estimate and reality will primarily come from two problems. Persons are eligible for Direct Assistance if they were full time students for 4 months or less or if they received Social Assistance for three months or less. In the SPSM model, anyone who is a full-time student in March (idestat==1) or anyone who receives Social Assistance was deemed ineligible for the program. This should lower estimates. But since people have to apply for the program, the take-up is probably not going to be 100% which will increase the SPSM estimate.

Nova Scotia Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget.

SPSM Implementation

The benefit is turned on by the flag VCBFLG, and families whose net income is less than VCBTD are eligible. They receive VCBBAS1 for their first child, VCBBAS2 for their second child, and VCBBAS3 for their third and each additional child. The benefit is completely phased out when the family net income reaches VCBPO. The benefit (imnscb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

CTCINC CTC family income scaling factor
 PYINC Deflator to calculate previous year income
 VAMTOPT N.S. alternative minimum tax option (1=none, 2=% fed, 3=fed
 adj inc, 4=% min amt)
 VAMTPCTF N.S. amt rate as pct of additional fed tax due to minimum
 tax
 VAMTPCTM N.S. amt rate as pct of federal minimum tax amount
 VAMTTX N.S. amt rate as tax on adjusted income
 VAXM N.S. Age Amount
 VAXPI N.S. Age Amount phase in rate for 1994 and beyond
 VAXRR N.S. Age Amount credit reduction rate
 VAXTD N.S. Age Amount net income turndown
 VBXM N.S. Basic Personal Exemption/amount
 VCBBAS1 NS child benefit for first child
 VCBBAS2 NS child benefit for second child
 VCBBAS3 NS child benefit for third or additional child
 VCBFLG NS child benefit activation flag
 VCBPO NS child benefit family income phase out
 VCBTD NS child benefit turndown
 VCGTC N.S. Caregiver Tax Credit
 VCGTCFLG N.S. Caregiver Tax Credit activation flag
 VCGTCTC N.S. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 VCGTCTD N.S. Caregiver Tax Credit Turn Down Income
 VCGTCTK N.S. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 VCHATL1 N.S. Charitable Donations amount level 1
 VCHATR1 N.S. Charitable Donations tax credit rate 1
 VCHATR2 N.S. Charitable Donations tax credit rate 2
 VDACB NS Direct assistance benefit for couples
 VDACI NS Direct assistance maximum income for couples
 VDAFLAG NS Direct assistance benefit flag
 VDAFWC NS Direct assistance benefit for families with children
 flag
 VDASB NS Direct assistance benefit for singles
 VDASI NS Direct assistance maximum income for singles
 VDTCR N.S. dividend tax credit rate
 VEDXPM N.S. Education Amount per month
 VEMXM N.S. equivalent to married amount
 VEMXMT N.S. equivalent to married turndown level
 VLVCMAX Maximum N.S. labour-sponsored funds tax credit allowed
 VLVCRT Percent of N.S. labour-sponsored funds cost allowed as
 credit
 VMAXDX N.S. Maximum Disability deduction/amount
 VMAXET N.S. maximum on transfer of education and tuition amount
 VMXM N.S. married amount
 VMXMT N.S. married amount turndown level
 VPHOPT Nova Scotia pharmacare premium option (1=GIS, 2=income)
 VPHPREM Nova Scotia pharmacare premium
 VPHRR Nova Scotia pharmacare tax credit reduction rate
 VPHTC Nova Scotia pharmacare refundable tax credit
 VPHTD Nova Scotia pharmacare tax credit turndown
 VPHTDC Nova Scotia pharmacare tax credit turndown for couples
 VPNTCR N.S. provincial non-refundable tax credit rate
 VPTC Nova Scotia political contribution table [total
 donations,donation allowed]
 VPTCBEN Maximum Nova Scotia political tax credit allowed

| | |
|--------|---|
| VPTF | Nova Scotia provincial tax fraction |
| VPTX | N.S. tax table [taxable income,basic provincial tax] |
| VSCI | Nova Scotia provincial tax above which surtax applies |
| VSCI2 | Nova Scotia provincial tax above which surtax applies (2nd level) |
| VSF | Nova Scotia provincial surtax rate |
| VSF2 | Nova Scotia provincial surtax rate (2nd level) |
| VTRBAS | Nova Scotia tax reduction basic amount |
| VTREM | Nova Scotia tax reduction equivalent to spouse amount |
| VTRKID | Nova Scotia tax reduction child amount |
| VTRRR | Nova Scotia tax reduction family income reduction rate |
| VTRSP | Nova Scotia tax reduction spouse amount |
| VTRTD | Nova Scotia tax reduction family income turndown |
| VTXFLG | N.S. tax on taxable income activation flag |
| VYPNDL | N.S. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idestat | Educational status |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtvg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imcemc | Child's equivalent to married credit |
| imchara | Allowable charitable donations and gifts (calculated) |

| | |
|----------|--|
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imgisinc | Individual's income for GIS/SPA reduction |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| idinspo | Person's spouse [pointer] |
| imbpt | Basic provincial tax |
| iminsda | NS Direct Assistance Program |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imnscb | Nova Scotia Child Benefit |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impeht | Provincial elderly health tax |
| impehtc | Provincial elderly health tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |

imtxp Provincial income tax payable

txont Compute provincial taxes for Ontario

SUMMARY

When OTXFLG is turned off, the Ontario Provincial Tax (imbpt) is calculated as a proportion (OPTF) of Basic Federal Tax (imbft). Added to Basic for some years is the Social Services Maintenance Tax which is a proportion (OSSMR) of Basic Provincial Tax (imbpt) exceeding the tax level (OSSML).

When the tax on taxable income flag is turned on (OTXFLG), a provincial tax table (OPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (OPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (OBXM) |
| impatxc | Age amount tax credit | (OAXM, OAXRR, OAXTD, OAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (OMXM, OMXMT, OEMXM, OEMXMT) |
| impcgtc | Caregiver tax credit | (OCGTC, OCGTCFLG, OCGTCTC, OCGTCTD, OCGTCTK) |
| impchrctc | Charitable donations | (OCHATL1, OCHATR1, OCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (OMAXDX) |
| impdtxc | Dividend tax credit | (ODTCR) |
| impdtxc | Education tax credit | (OEDXPM, OMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (OYPNDL) |
| imptutxc | Tuition Tax credit | (OMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using OAMTOPT.

Ontario provides a tax reduction for persons with a low taxable income. This reduction amounts to a proportion (OTRF) of taxable income (imitax) below the Ontario Tax Reduction Level (OMTY). This is subtracted from Basic Provincial Tax to derive Provincial

Tax Payable (imtxp).

The Ontario labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Ontario provincial credit is modeled as OLVCRT times the gross amount up to OLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Employer Health Tax (imonteht) only applies to self-employed persons, and is calculated when OEHTFLAG is set to 1. When a person's income from self-employment is less than OEHTTD1, the Employer Health Tax is calculated using the rate OEHTRR1 on self-employment earnings over the exemption OEHTEX. When a person's income from self-employment is less than this value, but greater than OEHTTD1, the Employer Health Tax is calculated by adding OEHTRR1 times the difference between the first turndown (OEHTTD1) and the exemption rate (OEHTEX) and OEHTRR2 times the difference between earnings from self-employment and OEHTTD1. When self-employment earnings are greater than OEHTTD2, the Ontario Employer Health Tax is calculated as OEHTRR3 times earnings from self-employment which are greater than the exemption OEHTEX.

When the parameter OCCEAFLG is set to 1, the child care expense credit is calculated. The maximum amount of the benefit is calculated as the lower of either OCCEAPCT times actual child care expenses (imccea), or of a specified amount per child (OCCEAYNG) times the number of children age 6 and under in the census family. Maximum family benefits are then reduced by a proportion (OCCEARR) of family net income above the threshold (OCCEATD). The model assigns the imputed Child Care credit (imoccea) to the mother, if present.

When OCWISFLG is set to 1, the supplement for working families is calculated as a percentage (OCWISRR) of family income over a threshold OCWISTD. The percentage depends on the number of children under the age of 7 in the family. The Supplement cannot exceed OCCEAYNG times the number of children under the age of 7. In single parent families, the maximum cannot exceed OCWISSP times the number of children under the age of 7 as announced in the Ontario 2000 Budget. The benefit which is given is the maximum value of either the supplement or the childcare expenses credit.

The taxpayer dividend (imotxdv) announced in the 2000 Budget was implemented. It is equal to taxes paid in the previous year up to a maximum (OTXDVMAX). People who paid over 0\$ in taxes would get a minimum rebate of OTXDVMIN. The benefit is included in refundable tax credits of 2000. Since it is based on the previous year's taxes, the taxes are multiplied by OPYTAX in order to estimate the lagged effect.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CAPGIR | Capital gains inclusion rate |
| OAMTOPT | Ont. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| OAMTPCTF | Ont. amt rate as pct of additional fed tax due to minimum tax |
| OAMTPCTM | Ont. amt rate as pct of federal minimum tax amount |
| OAMTTX | Ont. amt rate as tax on adjusted income |
| OAXM | Ont. Age Amount |
| OAXPI | Ont. Age Amount phase in rate for 1994 and beyond |
| OAXRR | Ont. Age Amount credit reduction rate |
| OAXTD | Ont. Age Amount net income turndown |
| OBXM | Ont. Basic Personal Exemption/amount |
| OCAPGIR | Ont. Capital Gains Inclusion Rate |
| OCCEAFLG | Ont. Child Care Expense Credit activation flag |
| OCCEAPCT | Ont. Child Care Expense Credit qualifying percentage |
| OCCEARR | Ont. Child Care Expense Credit benefit reduction rate |
| OCCEATD | Ont. Child Care Expense Credit family income turndown |
| OCCEAYNG | Ont. Child Care Expense Credit allowance per child |
| OCGIRFLG | Ont. Capital Gains Inclusion Rate Activation Flag |
| OCGTC | Ont. Caregiver Tax Credit |
| OCGTCTFLG | Ont. Caregiver Tax Credit activation flag |
| OCGTCTC | Ont. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| OCGTCTD | Ont. Caregiver Tax Credit Turn Down Income |
| OCGTCTK | Ont. Caregiver tax credit take-up rate by income level [employment income,rate] |
| OCHATL1 | Ont. Charitable Donations amount level 1 |
| OCHATR1 | Ont. Charitable Donations tax credit rate 1 |
| OCHATR2 | Ont. Charitable Donations tax credit rate 2 |
| OCWISFLG | Ont. Child Care Working Income Supplement activation flag |
| OCWISRR | Ont. Child Care Working Income Supplement Rate [children][rr] |
| OCWISSP | Ont. Child Care Working Income Supplement maximum benefit for single parents |
| OCWISTD | Ont. Child Care Working Income Supplement minimum earnings |
| ODTCR | Ont. dividend tax credit rate |
| OEDXPM | Ont. Education Amount per month |
| OEHTDRR | OEHT - Income Tax Deduction Rate |
| OEHTEX | OEHT - Exemption |
| OEHTFLAG | OEHT - Ontario Employer Health Tax Flag |
| OEHTRR1 | OEHT - Rate 1 |
| OEHTRR2 | OEHT - Rate 2 |
| OEHTRR3 | OEHT - Rate 3 |
| OEHTTD1 | OEHT - Turndown 1 |
| OEHTTD2 | OEHT - Turndown 2 |
| OEMXM | Ont. equivalent to married amount |
| OEMXMT | Ont. equivalent to married turndown level |

| | |
|----------|---|
| OLVCMAX | Maximum Ont. labour-sponsored funds tax credit allowed |
| OLVCRT | Percent of Ont. labour-sponsored funds cost allowed as credit |
| OMAXDX | Ont. Maximum Disability deduction/amount |
| OMAXET | Ont. maximum on transfer of education and tuition amount |
| OMTY | Ontario tax reduction limit |
| OMXM | Ont. married amount |
| OMXMT | Ont. married amount turndown level |
| OPCRA | Ontario property tax college residence amount |
| OPNTCR | Ont. provincial non-refundable tax credit rate |
| OPOCAR | Ontario property tax percent of occupancy cost |
| OPOCM | Ontario property tax maximum occupancy cost |
| OPRIR | Ontario property tax credit rental inclusion rate |
| OPSMAX | Ontario property/sales tax credit maximum |
| OPTC | Ontario political contribution table [total donations,donation allowed] |
| OPTCBEN | Maximum Ontario political tax credit allowed |
| OPTCFLAG | Ontario political contribution refundable tax credit flag |
| OPTF | Ontario provincial tax fraction |
| OPTX | Ont. tax table [taxable income,basic provincial tax] |
| OPYTAX | Estimate of previous year's Ontario taxes |
| ORDOPT | Ontario tax reduction calculation option |
| OSPOCM | Ontario seniors property tax maximum occupancy cost |
| OSSML | Ontario surtax first cut-in level |
| OSSML2 | Ontario surtax second cut-in level |
| OSSMR | Ontario surtax first level rate |
| OSSMR2 | Ontario surtax second level rate |
| OSSTCP | Ontario seniors sales tax credit percent of income |
| OSTCB | Ontario sales tax credit basic credit |
| OSTCD | Ontario sales tax credit dependant credit |
| OSTCFLAG | Ontario seniors tax credit claimed flag |
| OSTCNIBA | Ontario seniors tax credit net income base amount |
| OSTCP | Ontario sales tax credit percent of income |
| OSTCS | Ontario sales tax credit spouse credit |
| OTCNIBA | Ontario tax credit net income base amount |
| OTRBPA | Ontario tax reduction basic personal amount |
| OTRDCA | Ontario tax reduction dependant child amount |
| OTRDDA | Ontario tax reduction disabled dependant amount |
| OTRF | Ontario tax reduction Ontario tax multiplier |
| OTRFP | Ontario tax reduction personal amount multiplier |
| OTXDVMAX | Maximum taxpayer dividend |
| OTXDVMIN | Minimum taxpayer dividend for people with non-zero taxes |
| OTXFLG | Ont. tax on taxable income activation flag |
| OYPNDL | Ont. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |

| | |
|----------|---|
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcapgex | Capital gains exemptions (254) |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnfn | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imccea | Child care expenses allowed |
| imchcara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdedft | Deductions from total income |
| imdepni | Dependant's net income |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfnkids | Number of children in nuclear family |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imiotax | Ontario taxable income |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| imonteht | Ontario Employers Health Tax (Self-employed) |
| imotxdv | Ontario Taxpayer Dividend |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgctc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txpei Compute provincial taxes for P.E.I.

SUMMARY

When PTXFLG is off, the Basic Provincial Tax (imbpt) for Prince Edward Island is simply a proportion (PTF) of Basic Federal Tax (imbft).

The 2000 budget announced that PEI would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (PTXFLG), a provincial tax table (PPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (PPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (PBXM) |
| impatxc | Age amount tax credit | (PAXM, PAXRR, PAXTD, PAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (PMXM, PMXMT, PEMXM, PEMXMT) |
| impcgtc | Caregiver tax credit | (PCGTC, PCGTCFLG, PCGTCTC, PCGTCTD, PCGTCTK) |
| impchrctc | Charitable donations | (PCHATL1, PCHATR1, PCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (PMAXDX) |
| impdtxc | Dividend tax credit | (PDTCR) |
| impedtxc | Education tax credit | (PEDXPM, PMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (PYPNDL) |
| imptutxc | Tuition Tax credit | (PMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using PAMTOPT.

The Prince Edward Island labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Prince Edward Island provincial credit is modeled as PLVCRT times the gross amount up to PLVCMAX. The credit cannot be more than provincial taxes (imtxp).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| PAMTOPT | P.E.I. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| PAMTPCTF | P.E.I. amt rate as pct of additional fed tax due to minimum tax |
| PAMTPCTM | P.E.I. amt rate as pct of federal minimum tax amount |
| PAMTTX | P.E.I. amt rate as tax on adjusted income |
| PAXM | P.E.I. Age Amount |
| PAXPI | P.E.I. Age Amount phase in rate for 1994 and beyond |
| PAXRR | P.E.I. Age Amount credit reduction rate |
| PAXTD | P.E.I. Age Amount net income turndown |
| PBXM | P.E.I. Basic Personal Exemption/amount |
| PCGTC | P.E.I. Caregiver Tax Credit |

PCGTCTCFLG P.E.I. Caregiver Tax Credit activation flag
 PCGTCTC P.E.I. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 PCGTCTD P.E.I. Caregiver Tax Credit Turn Down Income
 PCGTCTK P.E.I. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 PCHATL1 P.E.I. Charitable Donations amount level 1
 PCHATR1 P.E.I. Charitable Donations tax credit rate 1
 PCHATR2 P.E.I. Charitable Donations tax credit rate 2
 PDTCR P.E.I. dividend tax credit rate
 PEDXPM P.E.I. Education Amount per month
 PEMXM P.E.I. equivalent to married amount
 PEMXMT P.E.I. equivalent to married turndown level
 PLVCMAX Maximum P.E.I. labour-sponsored funds tax credit allowed
 PLVCRT Percent of P.E.I. labour-sponsored funds cost allowed as
 credit
 PMAXDX P.E.I. Maximum Disability deduction/amount
 PMAXET P.E.I. maximum on transfer of education and tuition amount
 PMXM P.E.I. married amount
 PMXMT P.E.I. married amount turndown level
 PPNTCR P.E.I. provincial non-refundable tax credit rate
 PPTC P.E.I. political contribution table [total
 donations,donation allowed]
 PPTCBEN Maximum P.E.I. political tax credit allowed
 PPTF P.E.I. provincial tax fraction
 PPTX P.E.I. tax table [taxable income,basic provincial tax]
 PSCI P.E.I. provincial tax above which surtax applies
 PSF P.E.I. provincial surtax rate
 PTRBAS Base PEI low income tax reduction
 PTRKID PEI low income tax reduction for dependent child
 PTRRR PEI low income tax reduction Reduction Rate
 PTRSP PEI low income tax reduction for spouse or equivalent-to-
 spouse
 PTRTD PEI low income tax reduction Turndown
 PTXFLG P.E.I. tax on taxable income activation flag
 PYPNDL P.E.I. Pension Income Deduction Amount

INPUT VARIABLES:

cfin First person in census family [pointer]
 cfinch First child in census family [pointer]
 cfineld Eldest person in census family [pointer]
 cfinspo Spouse of eldest [pointer]
 cfnchild Number of children (including 18+)
 cfnpers Number of persons in census family
 cfspoflg Census family contains married couple
 efin First person in economic family [pointer]
 efnpers Number of persons in economic family
 hhncf Number of census families in household
 hhnef Number of economic families in household
 hhnin Number of individuals in household
 hhnnf Number of nuclear families in household
 idage Age
 idcfrh Relationship to census family head
 iddisab Disability status
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 ideducm Eligible months of education allowance

| | |
|----------|---|
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impdtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |

| | |
|----------|-------------------------------------|
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txprov Compute provincial taxes

SUMMARY

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax as in Newfoundland, Prince Edward Island, New Brunswick and Nova Scotia to a parallel of the federal system in Quebec. The other provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|--------|----------|
| hdprov | Province |
|--------|----------|

txqcalc Calculate income tax (Quebec)

SUMMARY

The txqcalc function calculates Quebec income tax for those individuals affected.

SPSM Implementation

Each census family is processed in turn. First, the basic provincial tax is computed via a table look-up for each person. Next the non-refundable tax credits are applied and unused credits are transferred between spouses, if appropriate. Subsequently, the 'family situation' and 'eligible income' are computed followed by the family tax reduction. After the family tax reduction has been calculated, the refundable property tax credit is computed.

Relation to Other SPSM Routines

txqcalc is called from within txprov and is in a subsidiary relationship to it. It does not call, and is not called by, any further functions.

Sales tax credit

The refundable sales tax credit (imqstr) is activated when QSTRFLAG is set to 1. The sales tax credit includes a base credit (QSTRBCRD), a credit (QSTRCHILD) is added for each child in the family. A second credit is added (QSTRFTP3) when no spouse is present and at least one dependent child is present. And finally another credit is added (QSTRFTP4) is for a person living alone or with at least one dependent. The credit is reduced by the income considered at a rate QSTRRR.

Housing of Parent tax credit

The Housing of Parent Tax Credit (imqhptc) calculation is activated by a flag (QHPTCFLG) and the base tax credit is QHPTC. An economic family is eligible to the imqhptc if the parent or grandparent of the head of the economic family, or his/her spouse is in the economic family. A take-up rate QHPTCTC based on age of the potential parent assigns individuals with idefrh=3 as a parent according to SCF data. A take-up rate QHPTCTK based on employment income select the appropriate number of beneficiaries according to Portrait de la fiscalité des particuliers au Québec.

Medical Expenses tax credit

The calculation of the refundable tax credit for medical expenses is activated by the flag QMRTCFLG. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). The tax credit is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. Eligibility is also limited to persons aged 18 and over with employment related earnings greater than QMEDRMIN. The medical expenses tax credit was introduced in 1997.

Dues as non-refundable tax credit

Starting in 1997, dues that where a deduction (iddues) in txqinet are a tax credit activated by the option QDUESOPT = 2. The value of the tax credit is imquetc. When QDUESOPT = 1, the dues are calculated in txqinet.

Tuition as non-refundable tax credit

Starting in 1997, tuition are considered as a deduction (idtuitn) in txqinet are now a tax credit activated by the option QTUIOPT = 2. The value of the tax credit is imquitc.

Family Allowance Tax Credit

The Quebec Family Allowance Tax Credit started in September 1997 but is implemented in the model starting 1998. The Quebec Family Allowance Tax Credit is a credit based on

previous year net family income and is non-taxable. The maximum credits vary with the number of children (QFATCMXK), and a supplement QFATCSUP is allocated to single parent families. For families with 4 kids and more, a supplement, QFATCK6, is added that varies with the number of kids and the number of kids under 6 years of age. The credit is the maximum until it reaches the first turn down income level with a specific reduction rate. The sequence of turn down incomes and reduction rates for single parent families are in QFATCSRR and for married couples in QFATCMRR. The turning point at QFATD4K is increased by QFATD4KI for each child over three. The benefits are reduced up to a minimum based on the number of children in the family (QFATCMNK) until the net family income reaches the last turning point in either QFATCSRR or QFATCMRR. At this last turning point the benefits are starting to reduce until they reach a minimum for payments of QFATCMIN. The program is implemented by copying the reduction rate table (QFATCSRR or QFATCMRR) into a temporary table. Then another temporary table assigns benefits and reduction rates to turning point incomes. Finally, the calculated benefits, imqfatc, are assigned to the women in the married couples or to the head of the single parent family. When activated, the take-up rate, QFATCTK, selects the assigned individual only if a random number is higher than the level specified by its total income. As a standard, QFATCTK is set to zero and all individuals are selected.

Alternative Minimum Tax

The Alternative Minimum Tax in Quebec started in 1986 and is now fully implemented. The calculation is activated by QAMTXFLG. The calculation of the income considered is slightly different than the Federal Alternative Minimum Tax because of difference in the rates considered for:

- . the inclusion of an amount of capital in the income considered (QCAPAMTX),
- . the dividing factor for the dividends (QDIVRAT), and
- . the allowable taxable portion the capital gains (QAMTINCRT - QCAPGIR).

The exemption level is QAMTX and the tax rate is QAMTTX. When the Alternative Minimum Tax is higher than the calculated tax using the standard algorithm, the difference is stored in imqamt. A flag, imqamtfg, identifies the individuals with the modified income tax. In 1995, the definition of income was changed and QAMTXREF indicates new components used in the calculation of taxable income.

When QAMTXSTKFLG is set to 1, the stock option deduction (imqstkdd) can be deducted when calculating the Quebec Alternative Minimum Tax.

Political Contribution

Starting in 1995, the political contribution is subject to two rates (QPCTR) instead of one (QPTC). The calculation procedure for 1995 and after is activated when QPCOPT is set to 2, otherwise it is the single rate that applies.

Labour-sponsored venture capital tax credit

The Quebec labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Quebec provincial credit is modeled as QLVCRRT times the gross amount up to QLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Simplified tax program (low income credit)

The simplified tax program, which includes a flat tax credit, started in 1998. People were allowed to decide whether it was in their benefit to fill out the simplified or general tax form. A worksheet was provided in order to facilitate the choice.

The SPSM has implemented this tax system in the following way. When QSFOPT is set to 1, everyone in Quebec fills out the general tax form. This is the system which was in place prior to 1998. If QSFOPT is set to 2, then everyone fills in the simplified tax form. And when QSFOPT is set to 3, then an optimization procedure is run. In this scenario, an approximation of the worksheet which was provided with the 1998 tax form is calculated prior to the computation of taxes. People are assigned to either the general tax form (which includes all deductions) or the simplified tax form (which includes few deduction but an additional credit - QSFTC). The variable imqsfllg notes which form was chosen.

A person can transfer all of their extra credits and deductions to their spouse when both spouses fill out the simplified tax form. When using the general form, only a limited number of deductions can be transferred. Because the worksheet does not take into account all the inter-spouse complexities, the optimization procedure will tend to overstate taxes. While it is very accurate for single persons, it tends to maximize the individual's gain which is not necessarily the couple's gain. The model may therefore slightly overstate Quebec taxes.

At the same time, the number of income tax brackets in QTX is reduced from 5 to 3, the Surtax and the Tax Reduction are eliminated.

This tax change also signified the replacement of the age, living alone, and retirement credits with a combined family-based credit (imqcalr).

Improved Tax System for Self Employed Workers

The improved tax system for self employed workers in Quebec was added. This improved system was announced in the Quebec 2000 Budget to enable the increasing number of self-employed workers to benefit from the simplified tax form. This system will standardize the tax treatment applicable to that part of the contribution paid by a worker in respect of pensionable self-employed earnings that could be equated with an employer's contribution, and refrain from excluding a growing number of self-employed workers from the simplified tax system. When activated (QITSFSEW), it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new

deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine the contribution to the Health Services Fund payable by individuals. The calculated amount of the contributions to be converted is held in imqcpse.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. The value of the tax credit is calculated in txqitax.

Refundable Tax Credit for Medical Expenses

When QMRTCFLG is assigned to 1, the Quebec refundable tax credit for medical expenses (imqmedrc) is calculated for persons aged 18 and over who had employment related earnings greater than QMEDRMIN. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). It is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. When QMRTCFLG is assigned to 0, the calculation of the Quebec refundable tax credit for medical expenses is suppressed.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| PYINC | Deflator to calculate previous year income |
| QAMTCBX | Quebec Alternative Minimum Tax Calculate Basic Exemption |
| QAMTDIV | Quebec Alternative Minimum Tax Taxable Dividend Limit |
| QAMTINCRT | Quebec Alternative Minimum Tax Inclusion Rate |
| QAMTNEGTTI | Quebec Alternative Minimum Tax Allow Negative Taxable Income |
| QAMTRITC | Quebec Alternative Minimum Tax Retirement Income Credit Deduction |
| QAMTRPFLG | RRSP/RPP included in Quebec Alternative Minimum Tax (1=include) |
| QAMTTX | QAMTX tax rate |
| QAMTX | QAMTX exemption level |
| QAMTXFLG | Quebec alternative minimum tax, QAMTX, activation flag |
| QAMTXREF | Quebec alternative minimum tax 1995 reform indicator (flag) |

| | |
|------------------|--|
| QAMTXSTKFLG | QAMTX stock option deduction inclusion (1=stk can be deducted) |
| QAPFFLG | Quebec anti-poverty fund activation flag |
| QAPFRAT | Quebec anti-poverty fund rate |
| QAXM | Quebec age exemption/amount |
| QBXM | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPAMTX | QAMTX taxable capital ratio |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |
| QCCETCR | Refundable CCE credit rate [net income, % cce claimable] |
| QCRDFLG | Quebec income credit flag [1=if social contribution are deducted] |
| QDIVRAT | QAMTX dividends ratio |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEIA1 | Quebec eligible income family type #1 |
| QEIA2 | Quebec eligible income family type #2 |
| QEIA3 | Quebec eligible income family type #3 |
| QEIA4 | Quebec eligible income family type #4 |
| QEIA5 | Quebec eligible income family type #5 |
| QEIAA | Quebec eligible income aged amount |
| QFAMDED | Quebec Family related deduction on income in refundable credits |
| QFAMFLG | Quebec family income deduction activation flag |
| QFAMNETI | Quebec family allowance tax credit net income concept flag |
| QFAMRAT | Quebec family income rate |
| QFATCHIRR | QFATC High income reduction rate |
| QFATCHITD | QFATC High income turndown |
| QFATCK6 | QFATC Supplement for kids under 6 in large families |
| [#kids][#kids<6] | |
| QFATCK6PYR | QFATC supplement for kids under 6 phase out year proportion |
| QFATCK6YR | QFATC Supplement for kids under 6 phase out year |
| QFATCMIN | QFATC minimum benefit paid |
| QFATCMNK | QFATC Minimum benefits by kid rank |
| QFATCMRR | QFATC turn down income levels and reduction rate for married parents |
| QFATCMXK | QFATC Maximum benefits by kid rank |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFATCSRR | QFATC turn down income levels and reduction rate for single parent |
| QFATCSUP | Quebec Family Allowance Tax Credit Supplement for single parent |
| QFATCTK | QFATC Take-up rates by total income |
| QFATD4K | QFATC turn down income for 4 children and more |
| QFATD4KI | QFATC turn down income increase by child for 4 children and more |
| QFTRA1 | Quebec family tax reduction family type #1 |
| QFTRA2 | Quebec family tax reduction family type #2 |
| QFTRA3 | Quebec family tax reduction family type #3 |
| QFTRA4 | Quebec family tax reduction family type #4 |
| QFTRFLAG | Quebec family tax reduction activation flag |
| QFTRRR | Quebec family tax reduction reduction rate |

QGIFTOPT Quebec gifts as tax credit
 QHPTC Quebec Housing Parent Tax Credit
 QHPTCFLG Quebec Housing Parent Tax Credit activation flag
 QHPTCTC QHPTC take-up rate by age of elderly [age,rate]
 QHPTCTK QHPTC take-up rate by income level [employment income,rate]
 QHSCI Quebec surtax first cut-in level
 QHSCI2 Quebec surtax second cut-in level
 QHSF Quebec surtax first level rate
 QHSF2 Quebec surtax second level rate
 QITSFSEW Quebec improved tax system for self-employed worker
 activation flag
 QLAXM Quebec living alone exemption/amount
 QLVCMAX Maximum Quebec labour-sponsored funds tax credit allowed
 QLVCRT Percent of Quebec labour-sponsored funds cost allowed as
 credit
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDRATE Proportion of expenses allowed for refundable tax credit
 for medical expenses
 QMEDRMAX Maximum expenses allowed for Que. refundable tax credit for
 medical expenses
 QMEDRMIN Minimum earnings for Quebec refundable tax credit for
 medical expenses
 QMEDRRR Reduction rate for the Que. refundable tax credit for
 medical expenses
 QMEDRTD Turndown level for Que. refundable tax credit for medical
 expenses
 QMRTCFLG Quebec refundable tax credits for medical expenses
 activation flag
 QNTPCR Quebec nominal tax credit rate
 QPCOPT Quebec political contribution option
 QPCTR Quebec political contribution tax rates
 QPTC Quebec political contribution table [total
 donations,donation allowed]
 QPTCBEN Maximum Quebec political tax credit allowed
 QPTRGISB Quebec property tax rebate GIS bonus
 QPTRMTP Quebec property tax minimum tax per person
 QPTRMTR Quebec property tax maximum tax for reduction
 QPTRRR Quebec property tax rebate reduction rate
 QPTRTF Quebec property tax fraction
 QRTRFLAG Quebec real estate rebate activation flag
 QSFDISFLAG Quebec Simplified Form Disability tax credit inclusion flag
 QSFOPT Quebec Simplified Form Option (1=general 2=simplified
 3=optimized)
 QSFTC Quebec Simplified Form tax credit
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QSTRBCRD Quebec sales tax rebate base credit
 QSTRCHILD Quebec sales tax rebate children dependent credit
 QSTRFLAG Quebec sales tax rebate activation flag
 QSTRFTP3 Quebec sales tax rebate family type 3 credit
 QSTRFTP4 Quebec sales tax rebate family type 4 credit
 QSTROPT Quebec sales tax rebate option=1 based on imigis, =2
 otherwise
 QSTRRR Quebec sales tax rebate reduction rate
 QTRBE Quebec Tax Reduction Breakeven
 QTROPT Quebec Tax Reduction calculation option 1=universal
 2=income tested

| | |
|------------|---|
| QTRP | Quebec tax Reduction proportion |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QYPDL | Quebec deduction limit for pension income |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfindeld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdnadult | Number of adults in household |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idnorth | Northern deductions (255) |
| idpartlo | Limited partnership losses (251) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsex | Sex |
| idspoflg | Person has spouse |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| immtot | Total income |
| improptx | Imputed property tax paid |
| imqalexp | Quebec allowable employment expenses |
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |

| | |
|----------|--|
| imqcchc | Quebec child's non-refundable credit |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdctc | Quebec dependent child tax credits |
| imqdedfn | Quebec all deductions from net income |
| imqdedft | Quebec deductions from total income |
| imqdistc | Quebec disability tax credit |
| imqduetc | Quebec Dues Tax Credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqidivt | Quebec taxable dividends |
| imqinet | Quebec net income |
| imqitax | Quebec taxable income |
| imqitot | Quebec total income |
| imqlatc | Quebec living alone tax credit |
| imqmeda | Quebec medical expenses allowed |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |
| imqritc | Quebec retirement income tax credit |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqstkdd | Quebec modelled Stock option deduction (249) |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| implvctc | Provincial labour-sponsored funds tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impsur | Provincial surtax |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| imqamt | Quebec Minimum Tax Amount |
| imqamtfg | Quebec Minimum Tax flag |
| imqapf | Quebec Anti-Poverty Fund |
| imqcalr | Quebec combined age, living alone, retirement credit |
| imqcceni | Quebec net income for refundable cce credit calculation |
| imqccetc | Quebec refundable child care expenses Tax Credit |
| imqdtxc | Quebec dividend tax credit |
| imqei | Quebec eligible income for tax reduction |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqfs | Quebec family situation (1-5) |
| imqftr | Quebec family tax reduction |
| imqhptc | Quebec Home Parent Tax Credit level |
| imqittr | Quebec income tested tax reduction |
| imqmedrc | Quebec refundable tax credit for medical expenses |
| imqptr | Quebec property tax refund |
| imqstr | Quebec sales tax refund |
| imqtca | Quebec tax credits applied |
| imqtct | Quebec tax credits transferable |
| imqtcts | Quebec tax credits transferred from spouse |
| imqtottc | Quebec total tax credits |

imtxp Provincial income tax payable

txqceea Compute child care expense allowance (Quebec)

SUMMARY

Since the amounts allowable for the Child Credit Expense Deduction differ slightly between the federal and Quebec provincial tax systems, it would be desirable to use the actual amount allowed for Quebec provincial tax purposes in the calculation of this deduction. The rules for eligibility exactly parallel the federal (see txceea). The algorithms are therefore essentially the same as the ones modeling the allocation of the federal Child Care Expense Deduction.

Unlike the federal algorithm, child care expenses are always treated as a deduction from total income. There is no option for treating them as a tax credit.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|----------|---|
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| QCCEAC1 | Quebec CCEA earned income fraction (1 child) |
| QCCEAC2 | Quebec CCEA earned income fraction (2 children) |
| QCCEAC3 | Quebec CCEA earned income fraction (3+ children) |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |

INPUT VARIABLES:

| | |
|----------|---|
| cfinch | First child in census family [pointer] |
| cfined | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |

OUTPUT VARIABLES:

| | |
|----------|---|
| imqccea | Quebec child care expenses allowed (dedn) |
| imqdedft | Quebec deductions from total income |
| imqinet | Quebec net income |

txqhstr Compute family-related deductions or credits (Quebec)

SUMMARY

This function parallels txhstr which performs similar calculations for federal taxes. The major difference is that the model does not incorporate the conversion of deductions into tax credits for the calculation of Quebec taxes. The algorithms include:

- calculate and allocate Personal Exemptions for Wholly Dependent Children
- calculate and allocate Married Exemption
- calculate Family Support Exemption (similar to federal Married Equivalent Exemption)
- calculate and transfer deductions from spouse

Calculate and Allocate Personal Exemptions for Wholly Dependent Children

Quebec filers with dependent children are eligible to claim an exemption based on the age and net income of the child. The exemption is calculated as a fixed amount minus a proportion of the child's net income exceeding the reduction level. The young child exemption is claimable on behalf of children aged 16 or 17. The old child exemption is claimable on behalf of children 18 and over but under 21, or over 20 and attending school full-time.

For taxation year 1986 and later, the definition of dependant's net income for the purpose of calculating the Exemption for Wholly Dependent Children requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The exemptions for all children are accumulated in cdeds which may later be adjusted by the calculation of the Family Support Exemption. If a spouse is present, the one with the higher Net Income (imqinet) receives the full amount of the exemption for all dependent children (imqcdeds) which is used to reduce Taxable Income (imqitax).

The model does not partition the exemptions for dependent children between spouses as is allowed by the tax regulations. This means that the tax burden of spouses with similar net incomes is not minimized.

In calculating the amount of the exemption, the model does not adjust the Net Income of the dependant to include certain non-taxable amounts of the Guaranteed Income Supplement (GIS), Spouse's Allowance (SPA) or Social Assistance as is specified in the Quebec tax regulations.

Calculate and Allocate Married Tax Credit

Persons legally married during the taxation year are eligible to claim a Married Tax Credit amounting to a fixed value reduced by the spouse's net income. The definition of spouse's net income for the purpose of calculating the Married Tax Credit requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The Married Tax Credit (imqmtc) is calculated only for the spouse with the lower Net Income (imqinet). It amounts to a fixed value (QMXM) reduced by the other spouse's Net Income. imqmtc is used to reduce the taxable income (imqitax) of the claiming spouse.

Note that the value of Net Income is not adjusted to include GIS, SPA, Social Aid and non-taxable amounts from international sources. GIS and SPA are calculated later in the model and the amounts are not available when this function is executed. Non-taxable amounts from international sources cannot be separated from other non-taxable income in the database.

Calculate Family Support Exemption

The definition of the Family Support Exemption is similar to the federal Married Equivalent Exemption. Filers who are single, divorced, separated or widowed and who supported a relative related by blood, marriage or adoption are eligible to claim that relative for a Family Support Exemption. This exemption amounts to a fixed value reduced by a proportion of the dependant's net income exceeding a reduction level.

The definition of the dependant's net income for the purpose of calculating the Family Support Exemption requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- Earnings from international sources which are tax exempt in Canada

SPSM Implementation

SPSM calculates the Family Support Exemption on behalf of dependent children and not other relatives who may be eligible.

The model attempts to make the claim on behalf of the dependant for whom a claim will benefit the filer most. The first choice for the exemption is a dependant who is not claimable for the child exemption, i.e., one who is 15 years of age or younger, or one who is over 21 and not attending an educational institution. If more than one dependant is eligible under these conditions, then the one with the lower Net Income (imqinet) is chosen. If there is no such dependant, the dependant claimable for the child exemption with the lowest Net Income is chosen.

If the Family Support Exemption is claimed on behalf of a dependant who is also claimable for the child exemption, the accumulated amount of the child exemption is adjusted by subtracting the amount claimed for that dependant.

The Family Support Exemption (imqmarex) is added to Total Personal Exemptions (imqpex) and subtracted from Taxable Income (imqitax).

Calculate and Transfer Deductions From Spouse

As in the federal case (see the function txhstr) Quebec allows the transfer of certain deductions from the spouse in the calculation of provincial income taxes. Deductions that may be transferred are:

- Age Exemption
- Interest and Dividend Income Deduction
- Deduction for Retirement Income
- Disability Deduction

Only the amount not required to reduce the spouse's taxable income to zero may be transferred. There is a limit to the amount of combined Interest and Dividend Income Deduction and Pension Income Deduction transferable which amounts to the unused proportion of the Married Exemption, i.e., if the full Married Exemption was claimed, no portion of these two deductions may be transferred.

SPSM Implementation

For the spouse with the lower Net Income (imqinet) the model calculates a value for potentially transferable deductions as the sum of:

- Age Exemption (imqaxm)
- Disability Deduction (imqdisex)

the lesser of:

- Total Pension Income Deduction (imqpendn) and Interest Income Deduction (imqintdn),
and
- the unused portion of the Married Exemption (QMXM minus imqmarex).

minus any amount required to reduce the spouse's Taxable Income to zero (imqinet minus QBXM).

The amount transferred from the spouse is subtracted from the filer's Taxable Income (imqitax) and added to Total Deductions from Net Income (imqdedfn). The spouse's Taxable Income and deductions are not adjusted because, if a transfer occurs, taxable income is zero by definition. The amounts recorded for the individual deductions (e.g., imqaxm, imqpendn) are not adjusted to reflect the transfer.

The value of Net Income used in the calculation of the transfer is not adjusted to include GIS, SPA and Social Aid income.

Calculate Living alone tax credit

The calculation of the living alone tax credit imqlatc is based on the value of the tax credit QLAXM adjusted by the nominal tax credit rate (QNTCR).

Starting in 1996, the calculation of the living alone tax credit is subject to turndown income (QLAXTD) and a reduction rate (QLAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QLAXPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqlatc is set to zero.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QLAXM | Quebec living alone exemption/amount |
| QLAXPI | Quebec living alone phase-in |
| QLAXRR | Quebec living alone reduction rate |
| QLAXTD | Quebec living alone turn down |
| QLPXM | Quebec lone parent exemption/amount |
| QMEDINC | Income definition for Que. refundable tax credit for medical expenses |
| QMXM | Quebec married exemption/amount |
| QNTCR | Quebec nominal tax credit rate |
| QPSXM | Quebec post-secondary exemption/amount |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QYCXM1 | Quebec dependent child #1 amount |
| QYCXM2 | Quebec dependent child #2 amount |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |

| | |
|----------|--|
| cfspoflg | Census family contains married couple |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idestat | Educational status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqinet | Quebec net income |
| imqitot | Quebec total income |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imqcchc | Quebec child's non-refundable credit |
| imqdctc | Quebec dependent child tax credits |
| imqdepni | Quebec dependant's net income |
| imqlatc | Quebec living alone tax credit |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |

txqinet Compute net income (Quebec)

SUMMARY

The Quebec provincial personal income tax system largely parallels the federal system: deductions and exemptions reduce total income to a taxable amount for which the basic provincial tax is calculated, then tax credits are applied to derive the amount of provincial tax payable. The function calculates net income for Quebec taxpayers and is similar to the process for calculating net income for federal income tax purposes.

SPSM Implementation

The algorithms for calculating Net Income for Quebec Provincial Income Tax Purposes are similar to the algorithms for calculating federal Net Income described under the function txinet. The major difference is that there are no options to treat deductions and personal exemptions as tax credits.

Whenever possible values already calculated in the computation of federal Net Income are applied here. The implementation of specific measures are described below.

Employment Expense Deduction

The calculation of the Quebec Employment Expense Deduction (imqdedia) is the same as the federal case. imqdedia is a proportion (QEAP) of Earnings from Employment (idiemp) up to a maximum deduction of QEAMAX. There is no flag controlling the calculation of

this value. If this deduction is to be eliminated, the values of QEAP and QEAMAX may be set to zero.

This value is added into Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Other Allowable Employment Expenses

The model assumes that the definition for Other Allowable Employment Expenses as applied to Quebec Provincial Taxes is the same as the federal definition (see txinet). The same value as used in the federal algorithm (idalexp) is used here. The value of idalexp may be scaled up or down by supplying an appropriate value for the parameter QALEXP (Proportion of Other Allowable Employment Expenses to Use as a Deduction).

The amount idalexp is added to Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Calculate Taxable Capital Gains

Capital Gains are treated as they are for federal taxes (see function txinet). Taxable Capital Gains for Quebec Provincial Tax Purposes (imqcapgt) is calculated as Total Capital Gains Received (idicapg) multiplied by the Capital Gains Inclusion Rate for Quebec Provincial Taxes (QDGUR).

Taxable Dividends

The treatment of dividends is similar to the federal algorithms described under the function txinet. Taxable Dividends for Quebec Provincial Taxes (imqdivt) are calculated as Total Dividends Received (idivid) multiplied by the Quebec Dividend Gross-up Rate (QDGUR).

Calculation of Total Income

As in the federal case (see function txinet), Total Income at this stage does not include Family Allowances which cannot be allocated until it is known whether the mother or the father have the higher net income. Total Income (imqitot) is calculated as the sum of:

| | |
|----------|---|
| idiemp: | Earnings From Employment |
| idisenf: | Self-employment Earnings (Non-farm), optionally scaled by the parameter FACTISENF |
| idisefm: | Self-employment Earnings (farm) |
| idiint: | Interest Income |
| idioinv: | Other Investment Income |
| idicqp: | CPP/QPP Benefits Received |
| iditogv: | Other Taxable Government Income |
| idipens: | Pension Income |
| iditoth: | Other Taxable Income |
| imiuib: | Modeled Unemployment Insurance Benefits Received |
| imiotg: | Modeled New Taxable Demogrants |
| imffa: | Modeled Family Allowance Benefits (optional) |

imioas: Modeled OAS Benefits
imqidivt: Modeled Taxable Amount of Dividends for Quebec
imqcapgt: Modeled Taxable Capital Gains and Losses for Quebec

The parameter QFAIFLAG controls whether federal Family Allowances are included in total income. If QFAIFLAG is set to one then imffa is added to imqitot. Also, Employment Expenses (imqdedia) and Other Allowable Employment Expenses (imqalexp) are added into All Deductions from Total Income (imqdedft) and not subtracted from Total Income as in the federal algorithms.

Calculation of Net Income

All Deductions from Total Income (imdedft) is calculated as the sum of:

idrpp: Registered Pension Plan Contributions
idrrsp: Registered Retirement Savings Plan Contributions
iddues: Union and Professional Dues
idtuitn: optionally, Tuition Fees
imqiloss: Allowable Business Investment Loss
idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions (calculated in txinet)
imuic: optionally, UI Contributions (calculated in txinet)
imqceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txqceca)
imqdedia: Employment Expenses
imqalexp: Other Allowable Employment Expenses

Dues as a tax credit

The dues as a deduction is activated by the option QDUESOPT = 1. Starting in 1997, dues are used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Tuition as a tax credit

The tuition as a deduction is activated by the option QTUIOPT = 1. Starting in 1997, tuition is used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Improved Tax System for Self-Employed Workers

The improved tax system for self employed workers in Quebec was added. When activated by QITSFSEW, it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine

the contribution to the Health Services Fund payable by individuals.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CPPXM | CPP/QPP exemptible earnings |
| QALEXP | Quebec proportion of other allowable employment expenses to use |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCPPOPT | Quebec CPP/QPP contribution deduction/credit option [1=deduction,2=credit] |
| QDGUR | Quebec dividend gross-up rate |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEAMAX | Quebec maximum employment allowance deduction |
| QEAP | Proportion of earnings for Quebec employment allowance deduction |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QITSSEF | Quebec percentage of self-employ CPP/QPP contributions to convert to deduction |
| QMAXDX | Quebec maximum disability deduction/amount |
| QMEDANF | Quebec medical allowance lower limit net income fraction |
| QNTCR | Quebec nominal tax credit rate |
| QREPNETFG | Social program repayments reduce Quebec net income flag |
| QSFDISFLAG | Quebec Simplified Form Disability tax credit inclusion flag |
| QSFOPT | Quebec Simplified Form Option (1=general 2=simplified 3=optimized) |
| QSFSMXI | Quebec simplified form spouse maximum income for work sheet |
| QSFTC | Quebec Simplified Form tax credit |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QUICOPT | Quebec UI contributions deduction/credit option [1=deduction,2=credit] |
| WSCF | CPP/QPP contribution rate on employment earnings |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|---------|---|
| hhnin | Number of individuals in household |
| idalexp | Other allowable employment expenses (229) |

| | |
|----------|--|
| idcarry | Carrying charges (221) |
| idcclos | Allowable other years capital loss (253) |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmedgro | Medical expenses, gross (330) |
| idmovexp | Imputed moving expenses (219) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imcqpcc | CPP/QPP contributions |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imiotg | Other taxable demogrants |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|---|
| imqalexp | Quebec allowable employment expenses |
| imqcapgt | Quebec taxable capital gains |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdedia | Quebec employment allowance |
| imqdedft | Quebec deductions from total income |
| imqduetc | Quebec Dues Tax Credit |

| | |
|----------|--|
| imqidivt | Quebec taxable dividends |
| imqiloss | Quebec Modelled Business investment losses (243) |
| imqinet | Quebec net income |
| imqitot | Quebec total income |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |

txqitax Compute taxable income and individual credits (Quebec)

SUMMARY

The process of computing taxable income for Quebec provincial taxes parallels that of the federal method. The following deductions are calculated and subtracted from Net Income (imqinet) to derive a tentative value for Taxable Income (imqitax):

| | |
|-----------|---|
| imqpendn: | Pension Income Deduction |
| imqintdn: | Interest Income Deduction |
| imqstddn: | Combined Medical Expense Deduction, Charitable Donations and Gifts to Canada or a Province |
| imqdisex: | Disability Deduction |
| imqdedfn: | Calculate Deductions from Net Income |
| imqaxm: | Age Exemption |
| imqexm: | Basic Exemption |

The computation of Taxable Income is completed by the function txqhstr which calculates exemptions for dependents and performs the transfer of deductions between members of the family.

Unlike the algorithms for the calculation of Federal Taxable Income, this function contains no options for converting these deductions into tax credits.

Pension Income Deduction

Depending upon the filer's age and the type of income, pension and retirement income may be eligible for the Pension Income Deduction. Any portion of this deduction not required to reduce a filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Modeled Pension Income Deduction (imqpendn) is calculated as the lesser of:

- a) Eligible Pension Income (idipens), and
- b) the Maximum Pension Income Deduction (QYPDL)

The Modeled Pension Income Deduction (imqpendn) is added to Total Deductions from Net

Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet).

The function txqhstr may transfer some amount of the Pension Income Deduction to the spouse. In this event, adjustments are made to imqdedfn and imqinet but not to imqpendn.

The model assumes that the value of idipens represents pension income eligible for this deduction. No further checks are made to ensure that the pension is of the appropriate type for the age of the filer.

After the reform in 1988, the non-refundable tax credit for pension income (imqritc) was the minimum of the base credit (QYPDL) and the eligible pension income (idipens). Starting in 1996, the calculated deduction for pension income (imqritc) based on the credit (QYPDL) is now subject to turn-down income (QYPTD) and a reduction rate (QYPRR) for pension income (idipens) in excess. In 1996 the reduction is only 50% and 100% after and it is controlled by the phase in variable QYPPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqritc is set to zero.

Interest Income Deduction

Interest income and dividends from Canadian sources are eligible for the Interest Income Deduction. This deduction amounts to the lesser of a fixed amount and the eligible income. Any portion of the deduction not required to reduce the filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Interest and Dividend Income Deduction (imqintdn) is calculated as the lesser of:

- a) the Maximum Interest and Dividend Income Deduction (QYIDL), and
- b) the sum of Interest Income (idiint) and Dividends (imqidivt) minus Carrying Charges (idcarry).

The deduction is added to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet) to derive Taxable Income (imqitax).

Since the Interest and Dividend Income Deduction is transferable between spouses, the function txqhstr may adjust the values of imqdedfn and imqitax. The value of imqintdn is not adjusted to reflect a transfer to the spouse.

Medical Expense and Charitable Donations Deduction

The filer is allowed a deduction for certain medical expenses, charitable donations and gifts to Canada or a province. In 1984, eligible medical expenses were deductible if they exceeded 3% of Net Income. Deductible charitable donations were limited to 20% of Net Income.

Before 1997, the calculation of the medical exemption in txqitax was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997,

(with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

SPSM Implementation

The database contains variables representing the federal Medical Expense Deduction Allowed (immeda) and combined Eligible Charitable Donations and Gifts to Canada or a Province (imchara). Net Medical Expenses represent medical expenses in excess of 3% of Net Income. Eligible Charitable Donations represent charitable donations not exceeding QCHATNF percent of Net Income.

The Combined Medical Expense and Charitable Donations Deduction (imqstddn) is calculated by taking the higher of:

- a) the Standard Deduction (QSTD), which may be zero, and
- b) the sum of Net Medical Expenses Allowed (imqmeda), Eligible Charitable Donations and Gifts to Canada or a Province (imqchara).

The variable imqstddn is added to Total Deductions from Net Income (imqdedfn) which is subsequently used to reduce Taxable Income.

Disability Deduction

As in the case of the federal income tax system, Quebec allows a special deduction for blind persons or persons confined to a bed or a chair. Any unused portion of the Disability Deduction may be transferred to a spouse or supporting parent.

SPSM Implementation

The database contains a value of the Disability Deduction Allowed on behalf of the filer (iddisslf), spouse or dependents (iddisoth). If either of these values are non-zero, the Quebec Disability Deduction (imqdisex) takes on the value assigned to the parameter QMAXDX. imqdisex is added in to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income.

Since this deduction is potentially transferable, the function txqhstr checks the relative net incomes of the head and spouse and performs any necessary transfers. The values of imqdedfn and imqitax are adjusted to reflect these changes. The value of imqdisex is not updated if the Disability Deduction is transferred to a spouse.

The model does not transfer unused portions of the Disability Deduction from dependant to parent. This probably does not cause a large error since the value on the database already takes into account amounts transferred from the spouse or dependents. The transfer between head and spouse is repeated in txqhstr because the estimate of Net Income is more accurate at this stage than during the database creation process.

Calculate Deductions from Net Income

The variable imqdedfn stores the value of All Deductions from Net Income. It is calculated

as the sum of:

| | |
|-----------|---|
| imqstdn: | Combined Medical Expense and Charitable Donations Deduction |
| imqintdn: | Interest and Dividend Income Deduction |
| imqpendn: | Pension Income Deduction |
| imqdisex: | Disability Deduction |
| imuibr: | Unemployment Insurance Benefits Reimbursed |
| idclos: | Capital Losses from Other Years |
| idnclos: | Non-capital Losses from Other Years |

The variable imqdedfn is subtracted from Net Income (imqinet) and may be adjusted in the function txqhstr if deductions are transferred between spouses.

The model does not include the Exemption for Members of a Religious Order, the Exemption for Dependents Aged 21 and Over Suffering from a Physical or Mental Infirmary, Deduction for a Home Relocation Loan, the Sociétés de placements dans l'entreprise québécois Deduction, or the Capital Gains Deduction.

Basic Exemption

Each filer claims a Basic Exemption which is subtracted from Net Income. The Amount of the Basic Exemption for Quebec Provincial Income Taxes is increased occasionally.

SPSM Implementation

For all filers with income, the Quebec Basic Exemption (QBXM) is added to the variable imqexm which accumulates personal exemptions. imqexm is subsequently added to imqpex which accumulates all exemptions and is later subtracted from Net Income imqinet.

Age Exemption

All filers who were 65 years of age or older during the taxation year claim the Age Exemption. The value of the Age Exemption is increased occasionally. Any unused portion of the Age Exemption may be transferred to the spouse.

SPSM Implementation

The Modeled Quebec Age Exemption (imqaxm) is assigned the value of the parameter QAXM for all filers 65 or over (idage \geq 65) if they have income (imninc $>$ 0). This value is added to imqexm (All Personal Exemptions on behalf of filer) which is subsequently added to imqpex (All Personal Exemptions) and subtracted from Net Income imqinet. The function txqhstr may transfer the unused portion of the Age Exemption to the spouse and make corresponding adjustments to the value of imqinet but not to imqaxm.

Starting in 1996, the calculation of the age exemption tax credit is subject to turndown income (QAXTD) and a reduction rate (QAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QAXPI.

Medical exemption calculation

Before 1997, the calculation of the medical exemption was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997, the calculation of the medical exemption is transferred to txqhstr (with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. Beginning in 2000, there are two tax credit rates applied to gifts in Quebec. The activation flag, QGIFTHCR, is used to implement the calculation. Allowable gifts up to QGIFTL1 use the QNTCR. The higher credit rate QGFTCR is applied to allowable gifts over QGIFTL1. The total value of the tax credit is imqchatc.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| QAXM | Quebec age exemption/amount |
| QAXPI | Quebec age exemption reduction phase in |
| QAXRR | Quebec age exemption reduction rate |
| QAXTD | Quebec age exemption income turn down |
| QBXN | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCHATNF | Quebec charitable donations maximum % net income |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QGFTCR | Quebec credit rate for gifts over upper limit |
| QGIFTFLG | Quebec max to gifts to Federal/Province/Crown activation flag |
| QGIFTHCR | Quebec higher tax credit on large gifts activation flag |
| QGIFTL1 | Quebec minimum gift limit subject to higher credit rate |
| QGIFTOPT | Quebec gifts as tax credit |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSCFLAG | Quebec Health Services Fund Contribution calculation flag |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QMAXDX | Quebec maximum disability deduction/amount |

QMEDALL Quebec medical allowance maximum lower limit
 QMEDANF Quebec medical allowance lower limit net income fraction
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDOPT Quebec Medical Tax Credit option
 QNFSDED Quebec deduction of net federal supplements (SPA and GIS)
 from net income flag
 QNTRC Quebec nominal tax credit rate
 QREPNETFG Social program repayments reduce Quebec net income flag
 QSADED Quebec deduction of social assistance benefits from net
 income flag
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QYPDL Quebec deduction limit for pension income
 QYPPI Quebec deduction phase-in for pension income
 QYPRR Quebec deduction reduction rate for pension income
 QYPTD Quebec deduction turn down for pension income

INPUT VARIABLES:

hhnin Number of individuals in household
 idage Age
 idcagex Capital gains exemptions (254)
 idcarry Carrying charges (221)
 idcfrh Relationship to census family head
 idcharit Charitable donations (340)
 idclos Allowable other years capital loss (253)
 iddalimo Alimony paid (220)
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 idemplo Employee home relocation loan dedn (248)
 idgifts Gifts to Canada/provinces/culture (342)
 ididiv Dividend income (actual)
 idiemp Wages & salaries
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idmedgro Medical expenses, gross (330)
 idnclos Allowable other years non-capital loss (252)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idspoflg Person has spouse
 idstkded Stock option deduction (249)
 imigis GIS benefits
 imioas OAS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 imninc No income flag
 imoasr OAS recovery
 imqalexp Quebec allowable employment expenses
 imqcapgt Quebec taxable capital gains
 imqcppse Quebec self-employ. QPP/PPP Cont. deduction
 imqiloss Quebec Modelled Business investment losses (243)
 imqinet Quebec net income
 imqitot Quebec total income
 imqsfflg Quebec simplified tax form flag 0=general 1=simplified
 imrepay Social Benefits Repayments
 imuibr UI benefit recovery

OUTPUT VARIABLES:

| | |
|----------|--|
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |
| imqchara | Quebec allowable charitable donations(calc) |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqdedfn | Quebec all deductions from net income |
| imqdistc | Quebec disability tax credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqitax | Quebec taxable income |
| imqmeda | Quebec medical expenses allowed |
| imqritc | Quebec retirement income tax credit |
| imqstkdd | Quebec modelled Stock option deduction (249) |

txque Compute provincial taxes for Quebec

SUMMARY

For residents of Quebec, the calculation of provincial taxes roughly approximates the process of calculating federal taxes. The SPSM divides this task among three functions which are described in another section of this document:

1. txqinet calculates total and net income tax
2. txqitax calculates a provisional value for taxable income subject to updating by txqhstr
3. txqhstr performs the calculation of personal exemptions for dependents and the allocation of deductions between head and spouse

The value of Taxable Income (imqitax) calculated by txqhstr is used to look up a value for Basic Provincial Tax (imbpt) in the tax table (QTX).

The Quebec Dividend Tax Credit (imqdtxc) is calculated as a proportion (QDTCR) of Taxable Dividends (imqidivt) and is subtracted from Basic Provincial Tax to derive Provincial Tax Payable (imtxp). Also subtracted is the Quebec Tax Reduction which is a proportion (QTRP) of Provincial Tax Payable (imtxp).

txsask Compute provincial taxes for Saskatchewan

SUMMARY

When STXFLG is off, Saskatchewan Basic Provincial Tax is a proportion (SPTF) of Basic Federal Tax (imbft). A flat surtax, calculated as a proportion (SFTAX) on Net Income (iminet) is added to Basic Tax.

The 2000 budget announced that Saskatchewan would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (STXFLG), a provincial tax table (SPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (SPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (SBXM) |
| impatxc | Age amount tax credit | (SAXM, SAXRR, SAXTD, SAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (SMXM, SMXMT, SEMXM, SEMXMT) |
| impcgtc | Caregiver tax credit | (SCGTC, SCGTCFLG, SCGTCTC, SCGTCTD, SCGTCTK) |
| impchrctc | Charitable donations | (SCHATL1, SCHATR1, SCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (SMAXDX) |
| impdtxc | Dividend tax credit | (SDTCR) |
| impedtxc | Education tax credit | (SEDXPM, SMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (SYPNDL) |
| imptutxc | Tuition Tax credit | (SMAXET) |
| impuictc | EI contributions tax credit | |
| imsctxc | Saskatchewan Non-refundable child tax credit | (SCNTC) |
| imssstxc | Saskatchewan senior supplement tax credit | (SSSTC) |

The option to apply a minimum tax is controlled using SAMTOPT.

Adjusted Saskatchewan Tax Payable (before a tax reduction is applied, is stored in the temporary variable a) is calculated as Basic Saskatchewan Tax (imbpt) plus a proportion (SSF) of Basic Saskatchewan Tax exceeding the Saskatchewan Surtax Level (SSCI).

Saskatchewan also implements a system of tax reductions for senior citizens and persons with dependent children. The Basic Tax Reduction (STRBR) is augmented by the Senior Citizen's Tax Reduction (STRSC) if the filer is age 65 or older. A tax reduction per child under 18 (STRPC) up to a maximum total for all children (STRCL) is also added. The number of children claimable for this tax reduction is taken from imnfach, the number of children eligible for Family Allowances.

The total potential tax credit is reduced by a proportion (STRRR) of the tax credit exceeding Adjusted Saskatchewan Tax Payable a to derive Reduced Saskatchewan Tax Payable imtxp.

Starting in 1992, a surtax (SDSF) for the reduction of the deficit is applied to the tax (imtxp). In 1995, an amount (SDSRA) was deducted from the surtax.

The Saskatchewan labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Saskatchewan provincial credit is modeled as SLVCRT times the gross amount up to SLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Saskatchewan Child Benefit and Saskatchewan Employment Supplement announced in the 1998 budget are modeled. When the SCBFLG is activated, families receive a benefit which depends on the number of children in the family (SCB1, SCB2, and SCB3). The benefit is reduced in two stages. Net family income greater than SCBTD1 and less than SCBTD2 is reduced at a rate SCBRR1 which depends on the number of children in the family. The benefit is further reduced at a rate of SCBRR2 for income over SCBTD2.

The Saskatchewan Employment Supplement is a monthly program. In the SPSD/M, the program is modeled in a yearly fashion. The maximum benefit is derived by multiplying a family's employment income in excess of SESCO (up to a maximum of SESMXIP) by a rate (SESR) which depends on the number of children in the family. The benefit is reduced for any family net income in excess of SESTD by a SESRR rate. The supplement started in mid-1998 and hence a phase-in rate SESPI was applied.

The estimate resulting from the SPSD/M may differ from the administrative totals. In modeling the program, employment income is assumed to be evenly distributed during the year. No maintenance income (e.g. child or spousal support) is added to employment income. The program is administered monthly with eligibility being determined depending on each month's income.

The Saskatchewan Sales Tax Credit announced in their 2000 Budget is now modelled. The Saskatchewan Sales Tax Credit is activated when SSTCFLAG is set to 1.

The Saskatchewan Sales Tax Credit was introduced in 2000 and became effective April 1, 2000 to offset the effect of sales taxes on lower income earners. SSTCPI represents the phase in rate for the program. The Saskatchewan Sales Tax Credit (imsstc) will consist of an adult component and a child component. This credit will be fully refundable and will be assigned to the spouse with the highest income.

The adult component of the Saskatchewan Sales Tax Credit will rise at a rate of SSTCBASPIR of individual net income up to a maximum (SSTCBAS). It will be reduced at a rate of SSTCRR as family net income increases above SSTCBASTD. An individual will also be eligible for SSTCSP in additional benefits for a dependent spouse or equivalent. This amount will be reduced at a rate of SSTCRR as family net income rises over SSTCSPTD.

The child component of the Saskatchewan Sales Tax Credit will provide an additional

SSTCKID per child. For two-parent families, the maximum child component will be SSTCKID + SSTCKID. For single parent families, the first child will be eligible for the adult benefit of SSTCSP and the maximum child component will be SSTCKID. The child component of the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC1KIDTD for families with one qualifying child. For families with more than one qualifying child, the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC2KIDTD.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| SAMTOPT | Sask. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| SAMTPCTF | Sask. amt rate as pct of additional fed tax due to minimum tax |
| SAMTPCTM | Sask. amt rate as pct of federal minimum tax amount |
| SAMTTX | Sask. amt rate as tax on adjusted income |
| SAXM | Sask. Age Amount |
| SAXPI | Sask. Age Amount phase in rate for 1994 and beyond |
| SAXRR | Sask. Age Amount credit reduction rate |
| SAXTD | Sask. Age Amount net income turndown |
| SBXM | Sask. Basic Personal Exemption/amount |
| SCB1 | Sask Child Benefit max for 1st child |
| SCB2 | Sask Child Benefit max for 2nd child |
| SCB3 | Sask Child Benefit max for 3rd and additional child |
| SCBFLG | Sask Child Benefit activation flag |
| SCBRR1 | Sask Child Benefit 1st reduction rate [number of kids] |
| SCBRR2 | Sask Child Benefit 2nd reduction rate [number of kids] |
| SCBTD1 | Sask Child Benefit 1st turndown |
| SCBTD2 | Sask Child Benefit 2nd turndown |
| SCGTC | Sask. Caregiver Tax Credit |
| SCGTCFLG | Sask. Caregiver Tax Credit activation flag |
| SCGTCTC | Sask. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| SCGTCTD | Sask. Caregiver Tax Credit Turn Down Income |
| SCGTCTK | Sask. Caregiver tax credit take-up rate by income level [employment income,rate] |
| SCHATL1 | Sask. Charitable Donations amount level 1 |
| SCHATR1 | Sask. Charitable Donations tax credit rate 1 |
| SCHATR2 | Sask. Charitable Donations tax credit rate 2 |
| SCNTC | Sask. non-refundable child tax credit amt per child |
| SDSF | Saskatchewan provincial deficit surtax fraction |
| SDSRA | Saskatchewan deficit surtax reduction rate |
| SDTCR | Sask. dividend tax credit rate |

| | |
|------------------------------|---|
| SEDXPM | Sask. Education Amount per month |
| SEMXM | Sask. equivalent to married amount |
| SEMXT | Sask. equivalent to married turndown level |
| SESCI | Sask Employment Supplement cut in level |
| SESMIN | Sask Employment Supplement minimum benefit |
| SESMXIP | Sask Employment Supplement maximum benefit income point |
| SESPI | Sask Employment Supplement phase-in |
| SESR | Sask Employment Supplement benefit rate [number of kids] |
| SESRR | Sask Employment Supplement reduction rate |
| SESTD | Sask Employment Supplement turndown level |
| SESTK | Sask. Employment Supplement take up by number of kids |
| SESYPI | Sask Employment Supplementary benefit for under 13 phase-in |
| SESYR | Sask Employment Supplementary benefit for under 13 rate |
| [number of kids] | |
| SESYRR | Sask Employment Supplementary benefit for under 13 |
| reduction rate | |
| SFTAX | Saskatchewan provincial flat surtax rate on net income |
| SHEATFAM | Saskatchewan Home Heating Assistance Rebate for families |
| SHEATFLG | Saskatchewan Home Heating Assistance Rebate activation flag |
| SHEATSNG | Saskatchewan Home Heating Assistance Rebate for singles |
| SLVCMAX | Maximum Sask. labour-sponsored funds tax credit allowed |
| SLVCRT | Percent of Sask. labour-sponsored funds cost allowed as |
| credit | |
| SMAXDX | Sask. Maximum Disability deduction/amount |
| SMAXET | Sask. maximum on transfer of education and tuition amount |
| SMXM | Sask. married amount |
| SMXMT | Sask. married amount turndown level |
| SPNTR | Sask. provincial non-refundable tax credit rate |
| SPTC | Saskatchewan political contribution table [total |
| donations, donation allowed] | |
| SPTCBEN | Maximum Saskatchewan political tax credit allowed |
| SPTF | Saskatchewan provincial tax fraction |
| SPTX | Sask. tax table [taxable income, basic provincial tax] |
| SSCI | Saskatchewan surtax cut-in |
| SSF | Saskatchewan provincial high income surtax fraction |
| SSSTC | Sask. senior supplement tax credit |
| SSTC1KIDTD | Sask. sales tax credit child amount turndown if only 1 |
| child | |
| SSTC2KIDTD | Sask. sales tax credit child amount turndown if more than 1 |
| child | |
| SSTCBAS | Sask. sales tax credit base amount |
| SSTCBASPIR | Sask. sales tax credit base amount phase in rate |
| SSTCBASTD | Sask. sales tax credit base amount turndown |
| SSTCFLAG | Sask. sales tax credit activation flag |
| SSTCKID | Sask. sales tax credit child amount |
| SSTCPI | Sask. sales tax credit phase in |
| SSTCRR | Sask. sales tax credit reduction rate |
| SSTCSP | Sask. sales tax credit spousal amount |
| SSTCSPTD | Sask. sales tax credit spousal amount turndown |
| SSTR | Saskatchewan spousal & married equivalent tax reduction |
| STRBA | Saskatchewan tax reduction base amount |
| STRBR | Saskatchewan basic provincial tax reduction |
| STRCL | Saskatchewan child tax reduction limit |
| STRPC | Saskatchewan tax reduction per child |
| STRRR | Saskatchewan tax reduction reduction rate |
| STRSC | Saskatchewan tax reduction for senior citizens |
| STXFLG | Sask. tax on taxable income activation flag |

SYPNDL Sask. Pension Income Deduction Amount

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| imuic | UIC contributions |

| | |
|----------|---|
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| impptc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imscb | Saskatchewan Child Benefit |
| imsctxc | Saskatchewan Non-refundable child tax credit |
| imses | Saskatchewan Employment Supplement |
| imssstxc | Saskatchewan senior supplement tax credit |
| imsstc | Saskatchewan refundable sales tax credit |
| imtxp | Provincial income tax payable |

ui Compute UI benefits

SUMMARY

Unemployment Insurance (UI) and Employment Insurance (EI) benefits are calculated by a set of functions which mimic application of UI/EI regulations to individual employment and

claim histories. These histories are summaries of administrative data from a 1% sample of persons with some UI/EI claim activity . Benefits are first calculated on a claim basis. Adjustments are then made to allow for claims overlapping more than one calendar year. Finally, taxable benefits received by individuals within a calendar year are determined.

Program Description

Unemployment/Employment insurance is an income support program financed jointly by employees, employers and the federal government. It is intended to provide income maintenance during temporary interruptions in employment. As such, it is not a universal program. Among those excluded from coverage are persons who do not participate in the labour force, the self-employed (other than fishermen) and persons who have exhausted benefit entitlements.

SPSM Implementation

The SPSM implementation of the UI/EI program has distinct steps representing application of program regulations to a given claim. The function `ui` operates as a controller which calls the sub-functions which apply UI/EI regulations to each claim and each UI/EI claimant within a household and returns the benefits received by individuals for the calendar year. Claimants may have one or two claims overlapping the survey calendar year. Payments within the calendar year are determined assuming benefits are paid on consecutive weeks.

For SPSM purposes, the unemployment regions are urban size classes within each province. These are not the regions defined for administration of the UI/EI program. The use of proxy unemployment regions is required to ensure data confidentiality.

For purposes of determining entitlements, the claim histories include the initial claim type `ucbtyp` (i.e., Maternity, Sickness, Retirement, Fishing or Regular) and a type change flag (i.e., indicating that a Sickness claim, for example, was changed to a Regular claim within the Initial Phase). SPSM deems the type change to have taken place immediately after the claim is established and does not attempt to subdivide the Initial Phase into Special and Regular periods. Since type change takes place, the special benefits totals (e.g., Sickness benefits) can not be determined by eliminating the type (e.g., by setting eligibility requirements high) and calculating the reduction in benefits. A second claim type (`ucmtyp`) is also imputed. If there was more than one type of benefit received within a claim, `ucmtyp` represents the claim type which had the majority of weeks. By turning on `UIEIMTYPFLG`, `ucmtyp` is modelled instead of `ucbtyp`.

The UI/EI algorithm has no behavioral response capacity, so that, for example, no new claims can be created. However, there have been more people with claims imputed in the base year than was necessary. The means that the number of persons with claims can be modified using the `UITARGET` and `UIEITKP` parameters. Similarly, the duration of modeled claims does not exceed observed durations, except when the following parameters are used: `UIREGWKFCT`, `UITRNWKFCT`, `UIOTHWKFCT`, `UIEXTMATWKS`. Unless these parameters are modified, the assumption is that individuals would not increase their duration on claim, if their entitlements were increased. However, no restriction is placed on

durations within each phase. Consequently, the elimination of a phase need not reduce the overall duration of a claim.

There are several sub-functions contained in the *ui* function. The first called is *uicl*m which calculates benefits for a single claim. *uicl*m does this by first calling three sub-functions which test for eligibility requirements based on claim type, repeat claim status, and regional unemployment rates (*uielent*, *uielrep*, *uielrge*). *uicl*m next calls three sub-functions which determine the weeks of entitlement in the Initial, Labour Force Extended and Regional Extended Phases (*uiwkbas*, *uiwklfe* and *uiwkrge*). The *ui* function then calls *uitrnc*l*m* which calculates training and other benefits (excluding regular, fishing, sickness, maternity, and parental which are calculated in *uicl*m). If a second claim is required *uicl*m and *uitrnc*l*m* are called again. Each function and sub-function are briefly described below.

ui

The *ui* function serves to pass information about each individual with a UI/EI claim in a household to *uicl*m. If an individual has more than one claim, modeled weeks of benefits in the qualifying period are computed for the first claim and passed to *uicl*m when the second claim is processed. UI/EI benefits for a calendar year are returned.

***uicl*m**

The sub-function *uicl*m processes distinct claims from the information passed to it by *ui*. In the event of a repeat claim, *ui* passes information about modeled claim activity in the qualifying period. Modeled changes to UI/EI regulations may produce important differences in first claim activity, thereby effectively changing the status of the second claim.

The *uicl*m function operates at a claim rather than an individual level. It calls *uielent*, *uielrep* and *uielrge* to establish eligibility. It then changes the type of eligible claims, where appropriate.

Once a claim is established, *uicl*m calls *uiwkbas*, *uiwklfe* and *uiwkrge* to determine the weeks of entitlement in each of the Initial, Labour Force Extended and Regional Extended Phases, respectively. The claim is represented by four pointers which identify:

Pointer #1 - 1st week of benefits (following waiting period)

Pointer #2 - 1st week of Labour Force Extended benefits

Pointer #3 - 1st week of Regional Extended benefits

Pointer #4 - week after end of Regional Extended Benefits.

Weeks are identified by integers with the week of January 1 being zero. The differences between succeeding pointers will initially equal the entitlement on the appropriate phase. *uicl*m then calls a utility function *uisqz* which ensures that interval between #1 and #4 does not exceed the original claim (minus any training or other weeks) or the maximum allowable duration of a claim. A subsequent call to *uisqz* produces a second set of (windowed) pointers that do not include any weeks outside the calendar year.

The *uicl*m function then calculates the weekly benefits. Benefits are the product of phase weeks times the weekly benefit rate for each phase summed over phases. However, benefit

rates may be increased or decreased by the following modelled programs: minimum divisor rule (see UIEIDIVFLG), the intensity rule (see UIEIFIFLG), an enhanced rate should there be dependents (see UIENSTRO), and the family supplement (see UIEIFSFLG).

uielent

The uielent sub-function applies eligibility tests based on the minimum weeks or hours of insurable employment in the qualifying period required for each initial claim type. These are basic tests which may be superseded by special tests applied to repeaters, new entrants/re-entrants, and other regular claimants. The function sets a flag indicating eligibility status.

uielrep

The uielrep function performs special eligibility tests that apply to repeaters only. The required weeks of insurable employment depend on the regional unemployment rate and on weeks of benefits in the qualifying period. The function performs a two dimensional table lookup to determine whether eligibility is established. The function sets a flag indicating eligibility status.

uielrge

Claims that are initiated as regular claims are subject to variable entrance requirements that depend on the regional unemployment rate. The function uielrge performs the table lookup necessary for these tests. The function sets a flag indicating eligibility status.

uiwkbas

The function uiwkbas determines entitlements in the Initial Phase. For special benefit types (i.e., claims that remain maternity, fishing, sickness or parental), this is the total claim entitlement and is determined by a table lookup. For regular claims, entitlements, up to a maximum number of weeks, are determined in proportion to weeks or hours of insurable employment in the qualifying period up to a maximum number of weeks.

uiwklfe

The function uiwklfe determines entitlements in the Labour Force Extended Phase. As in the Initial Phase, entitlements are determined in proportion to weeks, above a minimum, of insurable employment in the qualifying period.

uiwkrge

The function uiwkrge determines entitlements in the Regional Force Extended Phase. Entitlements are determined by the regional unemployment rate.

uitrnclm

The function uitrnclm is called by the ui function after the uicl function. Therefore, regular, sickness, maternity, fishing, and parental benefits have already been assigned. The uitrnclm function assigns first other types of benefits, then training benefits. Other types of

benefits will include everything not included in regular, sickness, maternity, parental, fishing or training. The list of other benefits included will vary depending on the year of the program. But they may include such items as job creation benefits, work sharing benefits, and self-employed assistance.

Other benefits are calculated using the imputed weeks of other benefits (ucothwk) and a weekly benefit rate (ucothbr). These can be adjusted using UIOTHWKFCT and UIOTHBNFCT. Training benefits are calculated in a similar manner using uctrnwk, uctrnbr, UITRNWKFCT, and UITRNBNFCT. There are no eligibility tests for these types of benefits. New pointers, ubp5 and ubp6 are created to signify the end of these benefit phases.

Adjusting UI/EI

Some parameters were added to the model in order to mimic some historical changes to the UI/EI program which the model cannot do without changes to the database. The UITARGET and UIEITKP parameters allow the users to increase or decrease the number of UI/EI recipients. The following parameters: UIREGWKFCT, UITRNWKFCT, UIOTHWKFCT, UIEXTMATWKS allow the users to increase the number of weeks of benefits over and above the weeks claimed on the database. UITRNBNFCT and UIOTHWKFCT allow the benefit rate for training and other benefits to be increased.

1 - Qualifying for benefits is now based on hours of work instead of weeks of work

Since the SPSD does not contain total hours of work, these are derived using the weeks of work prior to claim (ucwwork) multiplied by a new variable: the average weekly hours of work (ucwchr) which was imputed from the Survey of Labour and Income Dynamics. For more information, see UIREGHRMIN, UIMATHRMIN, UISICHRMIN,.

As for fishing benefits, qualification is based on earnings in the past 31 weeks. These are derived using weeks of work prior to claim (ucwwork) and average weekly earnings (ucern). It is assumed that the weeks ucwwork occurred immediately prior to the start of the claim. See UIFSHERMIN.

2 -The Family Income Supplement was added

When UIEIFSFLG is set to 1, the Family supplement is calculated. The total amount of the family supplement paid on a claim is ubclmfs. The total amount of family supplement paid on a claim in the calendar year is ubcalfs.

The Family Supplement was introduced as part of the Employment Insurance system reform introduced in 1995. It increases the basic benefit of families with low income. It replaces the older program which gave an enhanced rate for individuals with low income (in the SPSD/M this older program was controlled by UIENSRATE, UIDEPOPT, UIENSRTCO).

There are two methods of calculating the Family Supplement. When UIEIFSOPT is set to 1, then family supplement is directly tied into the Canada Child Tax Benefit (imfcben). Families which are eligible for the Child Tax Benefit receive the weekly amount of the benefit in addition to their regular Employment Insurance. It is reduced at a rate (UIEIFSRR) over incomes greater than UIEIFSRL.

Some simplifications were made in order to implement this program in the SPSM. The calculation of the Canada Child Tax Benefit is done after the calculation of EI in the model since it requires net income. But it requires the previous year's net income which is estimated as PYINC times the current year's net income.

When the Family Supplement is activated, the tax/transfer driver (drv) is run through twice per eligible household. The first time, no one will get a family supplement since the child tax benefit is equal to zero. The value of the benefit is saved (in cceopt) and drv is called again. This time, the previously saved value for the child tax benefit is used to calculate the family supplement. The family supplement will be slightly inconsistent with the child tax benefit since the latter will be recalculated and may be slightly smaller than the one used for deriving the family supplement since family net income will increase due to the family supplement.

Another simplification in deriving the family supplement derives from the fact that the SPSM assumes that the Child Tax Benefit is given in one lump sum amount in July. Therefore in the case of the Family supplement, the rules governing the Child Tax Benefit may be a year off if the benefit is received in the first half of the year.

When UIEIFSOPT is set to 2, the family supplement is calculated independently of the child tax benefit. First the number of children under the age of 7 is calculated (imuiydep). By going through the drv twice, the family's net income (prior to the addition of the family supplement) is available and the previous year's income is derived by multiplying it by PYINC. The family supplement is then derived by looking up the base value (UIEIFS1 for families with 1 child, UIEIFS2 for families with 2 children, and UIEIFS3 for families with 3 or more children). A supplement for each child over and above the third is added (UIEIFSTOPUP) as is a supplement for each child under the age of 7 (UIEIFSYNG).

The Family supplement rules changed on July 1999. Since the methodology under UIEIFSOPT = 1 would be off by a year, it was decided to treat all of 1999 under the methodology introduced in July 1999 (UIEIFSOPT = 2).

Under both options, EI weekly benefits including the family supplement cannot exceed a proportion (UIEIMFSP) of the claimant's weekly earnings (ubern). Nor can EI benefits, including the family supplement exceed the base rate (UIEIRATE) times the maximum weekly earnings (UIERNMAX).

Also, under both options, when the UIEIFIFLG is turned on, people who receive the family supplement are exempted from the intensity rule.

3 - The Intensity Rule

For persons receiving regular or fishing EI benefits and who did not receive the Family Income Supplement, the intensity rule was applied. The benefit rate (UIEIRATE) depends on the number of weeks of EI collected in the past. See UIEIFIFLG, UIEIRATE, UIEIYRS, ubeiwbp, ucy1, ucy2, ucy3, ucy4, ucy5 for more details.

4 -The Minimum Divisor

In order to obtain their maximum benefits, EI claimants must work two weeks more than the minimum entrance requirements. The minimum divisor rule is controlled by UIEIDIVFLG and UIEIDIV.

5 -Minor Changes

There was a minor change in the method used to derive training weeks and training benefits.

The method of using the UI/EI regular benefit weeks adjustment factor UIREGWKFACT was adjusted.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| PYINC | Deflator to calculate previous year income |
| UIBASFLAG | Basic phase calculation flag (UI and EI) |
| UIBASOPT | UI reform option [1=normal, 2=Apr'89] (UI and EI) |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIDEPOPT | UI dependency option [1=normal, 2=Feb'94] (UI only) |
| UIEFFFLAG | Observed effective weekly benefit rate flag (UI and EI) |
| UIEIDIV | EI minimum divisor [uer][divisor] (EI only) |
| UIEIDIVFLG | EI minimum divisor flag (EI only) |
| UIEIFIFLG | EI intensity rule exemption for family supplement receivers (EI only) |
| UIEIFS1 | Max fam supplement 1 child (EI only) |
| UIEIFS2 | Max fam supplement 2 children (EI only) |
| UIEIFS3 | Max fam supplement 3+ children (EI only) |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIFSOPT | UI EI calculate family supplement option (EI only) |
| UIEIFSRL | UI EI family supplement reduction level (EI only) |
| UIEIFSRR | UI EI family supplement reduction rate (EI only) |
| UIEIFSTOPUP | Max fam supplement top up for more than 3 kids (EI only) |
| UIEIFSYNG | Max fam supplement top up for young children (EI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIMTYPFLG | Flag to model main benefit type (UI and EI) |
| UIEINEREFLG | Flag to check for hours for new entrants and re-entrants (EI only) |

| | |
|----------------------------|---|
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIRATE | Benefit rate under EI reform [Past Wks ben][Rate] (EI only) |
| UIEITKP | UI EI takeup rate [index] : index based on prov, sex, age, |
| weeks | |
| UIEIYRS | Number of years of previous EI benefits calculated (EI |
| only) | |
| UIENSRATE | Enhanced rate for basic phase (UI only) |
| UIENSRTCO | Enhanced rate cutoff (UI only) |
| UIENTFLAG | Basic entrance requirements flag (UI and EI) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIEWK | Entitlement (weeks) [wkwrk, uer] (UI and EI) |
| UIEXTMATWKS | Additional weeks for maternity - behavioural response (UI |
| and EI) | |
| UIFLAG | UI/EI Activation flag (UI and EI) |
| UIFSHERMIN | Min. earnings to qualify for fish. benefits [unempl. rate] |
| (EI only) | |
| UIFSHMINWK | Minimum weeks to qualify for fishing benefits (UI only) |
| UILFEFLAG | Labour force extended phase calculation flag (UI only) |
| UILFEMIN | Weeks worked in qualifying period [UILFEWKS index] (UI |
| only) | |
| UILFERATE | Benefit rate for labor force extended phase (UI only) |
| UILFEWKS | Weeks LFE entitlement [UILFEMIN](UI only) |
| UIMATHRMIN | Minimum hours to qualify for maternity benefits (EI only) |
| UIMATMINWK | Minimum weeks to qualify for maternity benefits (UI only) |
| UIMAXBASEWKS | Maximum number of weeks - regular (UI and EI) |
| UIMAXDUR | Maximum duration of a UI claim (UI and EI) |
| UIMAXFSHWKS | Maximum number of weeks - fishing (UI and EI) |
| UIMAXMATWKS | Maximum number of weeks - maternity (UI and EI) |
| UIMAXPARWKS | Maximum number of weeks - parental (UI and EI) |
| UIMAXSICWKS | Maximum number of weeks - sickness (UI and EI) |
| UINEREHRMIN | Minimum hours to qualify for new entrant or re-entrant (EI |
| only) | |
| UIOTHBNFCT | UI other benefits per week adjustment factor (EI and EI) |
| UIOTHWKFCT | UI other benefits weeks adjustment factor (UI and EI) |
| UIREGHRMIN | Min. hours to qualify for reg. benefits [unempl. rate] (EI |
| only) | |
| UIREGMINWK | Minimum weeks to qualify for regular benefits (UI only) |
| UIREGWKFCT | UI regular benefit weeks adjustment factor (UI and EI) |
| UIREPPREV | Weeks of insurable employment [weeks] (UI only) |
| UIREPUER | Regional unemployment rate [rates] (UI only) |
| UIREPWWKD | Repeater eligibility requirements [weeks x rates] (UI only) |
| UIRGEFLAG | Regional extended phase calculation flag (UI only) |
| UIRGEMIN | Unemployment rate for Regional Extended entitlement |
| [UIRGEWKS index] (UI only) | |
| UIRGERATE | Benefit rate for regional extended phase (UI only) |
| UIRGEWKS | Weeks Regional Extended entitlement [UIRGEMIN] (UI only) |
| UIRGNFLAG | Regional requirements flag (UI only) |
| UIRGNMIN | Regional unemployment rate (UI only) |
| UIRGNWKS | Weeks required for eligibility (UI only) |
| UIRPTFLAG | Repeater requirements flag (UI only) |
| UISICHRMIN | Minimum hours to qualify for sickness benefits (EI only) |
| UISICMINWK | Minimum weeks to qualify for sickness benefits (UI only) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| UITRBNFCT | UI training benefit per week adjustment factor (EI and EI) |
| UITRNWKFCT | UI training benefit weeks adjustment factor (UI and EI) |
| UIWAITWKS | Minimum waiting period all claims (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hdurb | Size of urban area |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| hhnfn | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinot | Other money income (non-taxable) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditot | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idnfn | Person's nuclear family [pointer] |
| idninc | No income flag (SPSD variables) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| iduirank | Predicted ranked likelihood of getting UI |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imuidpfg | UI claimants has dependents flag |
| nfin | First person in nuclear family [pointer] |
| nfinch | First child in nuclear family [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnpers | Number of persons in nuclear family |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucgotpa | Received paternity benefits |
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucyl | Weeks on UI in first year before claim |

| | |
|------|---|
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

OUTPUT VARIABLES:

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imuibr | UI benefit recovery |
| imuidpfg | UI claimants has dependents flag |
| imuiydep | Number of dependents under 7 for family supplement (EI only) |
| ubcalfs | Family supplement paid in calendar year |
| ubcalpd | Benefits paid in calendar year |
| ubcalwk | Weeks on claim in calendar year |
| ubclmfs | Family supplement paid on claim |
| ubclmpd | Benefits paid on claim |
| ubclmwk | Weeks on claim |
| ubeiwbp | Weeks of past EI benefits |
| ubern | Modelled insurable weekly earnings |
| ubp1 | Week # of first payment |
| ubp1c | Week # of first payment (windowed) |
| ubp2 | Week # of start of second phase |
| ubp2c | Week # of start of second phase (windowed) |
| ubp3 | Week # of start of third phase |
| ubp3c | Week # of start of third phase (windowed) |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ubp5 | Week # of last other type of ui/ei payment |
| ubp5c | Week # of last other type of ui/ei payment (windowed) |
| ubp6 | Week # of last training payment |
| ubp6c | Week # of last training payment (windowed) |

vardef Define structure member as an SPSM variable

SUMMARY

The vardef function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.



SPSD/M 

Algorithm Guide

This guide is designed primarily to provide *SPSD/M* users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black box and glass box users.

September 21, 2001



Canada

Introduction

The Algorithm Guide provides SPSD/M users with a description of the specific personal tax and cash transfer programs which are simulated and the specific way in which this is done. An attempt is also made to guide and caution the user, where necessary, as to the interpretation of the results. Also included in this guide are descriptions of processing and utility algorithms which have a significant effect on the results. The guide is intended for both black box and glass box users.

The guide is organized into three main sections. After the first section (this Introduction), there is a section describing the algorithms organized into logical groupings. This is followed by an alphabetically-arranged encyclopaedic section that lists all algorithms in the SPSM.

These modules are referred to as functions. Function names are printed in lower case (e.g. `txinet`, `txcalc`). Sub-functions are defined within the function that calls them and are also shown in lower case (e.g. `uicl`, `gissub`). Both regular and local variables are shown as usual in lowercase (immicons). These local variables may not be used for reporting purposes unless modifications are made in glass box mode.

These functions tend to have a one-to-one correspondence with actual social and tax programs. In some cases however, two functions are required for one social program (Eg. the child care expense deduction is calculated in one function and allocated to a particular family member in another), or many programs may be simulated in one function (e.g. federal and provincial family allowances are both calculated by one routine).

Subject Reference

1 Algorithm by Program

1.1 Introduction

This guide is designed primarily to provide SPSPD/M users with an understanding of the specific personal tax and cash transfer programs which are simulated, together with specific information on how each program was implemented. The guide is intended for both black-box and glass-box users.

1.2 Pre-simulation Functions

The functions in this group are executed prior to the simulation of taxes and transfers. The database is first adjusted to the users specifications, by `adj`. This adjusted database will form the basis of all base/variant combinations executed in a single program run. Parameter edit checks and the calculation of derived parameters are performed next in `mpc`. This is done based on `.apr` parameters and rules embodied in the function. Finally, calls to the tax/transfer algorithms are made for each requested base and/or variant simulation as controlled by the `drv` function.

1.2.1 Adjust Database

Three functions perform certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database.

| | |
|-----------------------|--|
| <code>fmspopen</code> | Routines to read SPSPD file (.spd) |
| <code>fmxopen</code> | Routines for reading FAMEX (.fxv) file |
| <code>adj</code> | Perform SPSPD database adjustment |

1.2.2 Calculate Derived Parameters

The `mpc` function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters.

| | |
|------------------|---|
| <code>mpc</code> | Calculate derived model parameters and do edits |
|------------------|---|

1.2.3 Tax/Transfer Calculator

Two functions are responsible for invoking the algorithms which calculate all taxes and transfers.

| | |
|-------------------|------------------------------|
| <code>call</code> | Call tax/transfer calculator |
| <code>drv</code> | Tax/transfer calculator |

1.3 Government Cash Transfers

1.3.1 Unemployment Insurance Benefits

Unemployment Insurance benefits are calculated by a set of functions which mimic application of UI regulations to individual employment and claim histories. These functions are contained within the ui function

ui Compute UI benefits

1.3.2 Family Allowances

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

famod Compute family allowance

1.3.3 Federal Child Tax Benefit/Credit

This function is used to calculate either the federal Child Tax Credit program or the federal child tax benefit. Both programs are intended to provide benefits to help low and middle income families meet the costs of raising children under the age of 18.

txctc Compute child tax credit

ccept zero CCE for young kids if optimal

1.3.4 Federal Sales Tax Credits

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse.

txfstc Compute federal sales tax credit

1.3.5 Elderly Programs

1.3.5.1 Old Age Security

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. The SPSM calculates OAS based on the age of the individual and, for immigrants, the years since immigration. The clawback of OAS is performed in the txitax function.

oas Compute OAS for elderly

1.3.5.2 Guaranteed Income Supplement/Spouses Allowance

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable

txinet Compute net income

1.4.2 Calculate Taxable Income

The process of computing taxable income is divided into two separate routines. Exemptions, deductions and tax credits which are not dependent upon information from other members of the family (e.g., the Basic Personal Exemption or Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

txitax Compute taxable income and individual credits

txhstr Compute family-related deductions or credits

1.4.3 Child Care Expense Allowance

The txceea function calculates the value of the child care expense deduction. The calculation may be optionally converted to a tax credit basis rather than a deduction.

txceea Compute child care expense allowance

1.4.4 Calculate Federal Tax

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Basic Federal Tax (including credit transfers)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement

txcalc Calculate federal income tax

1.5 Calculate Provincial Taxes

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax to a parallel of the federal system in Quebec. Most provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

1.5.1 All Provinces except Quebec

| | |
|--------|---|
| txprov | Compute provincial taxes |
| txnfld | Compute provincial taxes for Newfoundland |
| txpei | Compute provincial taxes for P.E.I. |
| txns | Compute provincial taxes for Nova Scotia |
| txnb | Compute provincial taxes for New Brunswick |
| txont | Compute provincial taxes for Ontario |
| txman | Compute provincial taxes for Manitoba |
| txsask | Compute provincial taxes for Saskatchewan |
| txalta | Compute provincial taxes for Alberta |
| txbc | Compute provincial taxes for British Columbia |

1.5.2 Quebec

| | |
|---------|--|
| txque | Compute provincial taxes for Quebec |
| txqinet | Compute net income (Quebec) |
| txqccea | Compute child care expense allowance (Quebec) |
| txqitax | Compute taxable income and individual credits (Quebec) |
| txqhstr | Compute family-related deductions or credits (Quebec) |
| txqcalc | Calculate income tax (Quebec) |

1.6 Calculate and Assign Commodity Taxes

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures at the spending unit level of analysis in the following function..

| | |
|---------|--|
| ctmod | Compute commodity taxes for individuals and households |
| txhhexp | Compute and pro-rate household taxes, rent, etc. |

1.7 Aggregation Routines

Two aggregation functions are used to calculate several reporting variables as aggregates of other modeled variables. The functions calculate all dollar denominated reporting variables up to the level of consumable income. In addition taxable filer status is determined.

| | |
|-------|----------------------------------|
| memo1 | Compute memo items for reporting |
| memo2 | Compute consumable income, etc. |

1.8 Glass Box Stub Routines

There are two empty functions in both the standard and alternate drivers (drv) that are available to

allow completely new tax or benefit programs to be developed by glass box users.

| | |
|-----|--|
| dem | Compute new taxable demogrants |
| gai | Compute new refundable credits or guarantees |

1.9 Auxiliary Functions

There are a number of auxiliary functions which are used by the functions containing the tax/transfer algorithms. These functions perform routine tasks required in simulating the tax/transfer system such as table look-ups and benefit reduction functions. The description of these functions is of use to anyone attempting to fully understand or modify the C-language source code for the tax/transfer algorithms.

| | |
|----------|--|
| classu | Compute user-defined reporting variables |
| isneg | Is argument negative ? |
| isnneg | Is argument non-negative? |
| isnzro | Is argument non-zero? |
| iszero | Is argument zero? |
| lkup1 | Table look-up with interpolation/extrapolation |
| lkup2 | Table look-up without interpolation |
| maxn | Find the maximum of two numbers |
| minn | Find the minimum of two numbers |
| nneg | Change negative numbers to zero |
| pmaddent | Define and add a parameter |
| randrnd | Randomly round a floating point number to an integer |
| round | Round to nearest integer |
| strn | Retrieve string by string number |
| taxbak1 | One level tax-back function |
| taxbak2 | Two level tax-back function |
| vardef | Define structure member as an SPSM variable |

Alphabetic Reference

adj

Perform SPSD database adjustment

SUMMARY

The `adj` function performs certain adjustments to the database variables prior to the execution of the tax/transfer algorithms. These adjustments can be used to increase the potential applications of the database. The function may currently be used to adjust the amount of RRSP contributions claimed. A brief description of the database adjustment in general is also included.

SPSM Implementation

The SPSD is based on surveys and administrative data collected for the 1988 calendar year. Adjustment of this data may be required for several reasons. The user may wish to use the incomes to represent the incomes in a more recent year such as 1994. As such the user would supply estimates of growth rates for income by source and expenditures from 1988 to 1994. The user may also wish to make adjustments for simulation purposes in the 1988 year. For example, known under-reporting of alcohol expenditures may be treated by scaling each household's alcohol expenses or a deduction item could be scaled down to zero to represent a restriction of a certain tax measure. Finally, the user may wish to adjust the weights of individuals and households to reflect alternate demographic assumptions.

The scaling of money items is performed in two functions inaccessible to the glass box user. Prior to the calculation of any taxes or transfers each dollar denominated database variable is multiplied by a single corresponding database adjustment parameter. There are two key exceptions to this. Employment income, comprising about 70% of total income is given more rigorous treatment due to its relative importance in the overall tax/transfer system. Employment income may be adjusted by industry specific growth rates. CPP/QPP income may be adjusted by differential rates according to age groups which allows for the phasing in of that program. Users should refer to the *Parameter Guide* in this manual for further details on specific adjustment parameters.

The `adj` function is a means for glass box users to affect the adjustment of the database in ways not currently possible. The user may add their own adjustment routines to augment or even offset current means of adjustment. For example if the user wished to grow employment income by age and sex they would set the existing employment parameter to one and enter a new algorithm in this function. One such specific database adjustment provision is currently available in black box mode and is used in the analysis of RRSP contributions.

This adjustment (which will change the value of the `idrrsp` variable) is designed to allow the user to simulate the increase in RRSP contribution limits in a rough fashion. It allows the user to increase the RRSP contributions of individuals who are near to the current

contribution limits. The facility is activated by setting the RRSPIFLAG parameter to 1. Two cases are distinguished, those who are not covered by a employer-contributed pension plan, and those who are.

If individuals had RRSP contributions but had no RPP contributions, and their RRSP contributions fell between RRSPSMIN and RRSPSMAX inclusive, their RRSP contributions will be increased by RRSPSINC.

If individuals had RPP contributions, then, for those individuals whose total pension contributions (RRSP plus RPP) fell between RRSPEMIN and RRSPEMAX, their RRSP contributions will be increased by RRSPEINC.

Relation to Other SPSM Routines

The `adj` function is called before `drv` and as such is only executed once for every program run. This means that database adjustments will apply to both the base and variant scenarios. The function is called after the other database adjustment routines.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-----------|---|
| DNINCFLAG | Disable no income flag for calculation |
| PROVMAP | Provincial remapping [prov] |
| RRSPEINC | Increment to rrsp if conditions & rpp>0 |
| RRSPEMAX | Maximum (rpp+rrsp) for increment if rpp>0 |
| RRSPEMIN | Minimum (rpp+rrsp) for increment if rpp>0 |
| RRSPIFLAG | RRSP increment activation flag |
| RRSPSINC | Increment to rrsp if conditions & rpp=0 |
| RRSPSMAX | Maximum (rrsp) for increment if rpp=0 |
| RRSPSMIN | Minimum (rrsp) for increment if rpp=0 |

INPUT VARIABLES:

| | |
|-------|---|
| hhnin | Number of individuals in household |
| idrpp | Registered pension plan contributions (207) |

OUTPUT VARIABLES:

| | |
|---------|---------------------------------|
| hdprov | Province |
| idninco | No income flag (SPSD variables) |
| idrrsp | RRSP calculated amount (208) |

SUMMARY

Stub function for use by glass box users who wish to modify database variables either before and/or after tax/transfer calculation. This function calls the standard driver -- drv.c.

SUMMARY

The ccept function controls multiple calls to the tax transfer calculator drv.

Program Description

There are three instances in which the entire calculation of the tax/transfer system for household is necessary. The ccept function controls such recalculations. Each case is discussed under separate headings below:

Pre-calculation of the child tax benefit.

The calculation of Employment Insurance depends in part upon an individual's Child Tax Benefit entitlement. However, Employment Insurance is calculated prior to the Child Tax Benefit. ccept is used to calculate a preliminary value for the child tax benefit which can then be used in the calculation of Employment Insurance. The final value for a family's child tax benefit may differ from the preliminary estimate used for this calculation of Employment Insurance.

Optimization of the Child Tax Credit/Child Tax Benefit

Beginning in 1988 the rules for calculating the child tax credit/child tax benefit and the child care expense credit were altered to ensure that middle income families could not receive the full benefits from both programs. In practice this is done by reducing maximum child tax credit benefits by 25% of claimed child care expenses. The resulting situation is that below a certain income level it is advantageous not to claim any child care expenses incurred. The ccept function can locate this level and thus maximize the combined benefits from the child care expense credit and the child tax credit/child tax benefit.

SPSM Implementation

ccept performs the re-calculations and optimizations in a specific sequence. The pre-calculation of the federal Child Tax Benefit for purposes of correctly calculating Employment Insurance is performed first. Next the optimization of the child care expense deduction and the federal Child Tax Benefit is performed. The SPSM implementation of each

type of optimization are described separately below:

Pre-calculation of the child tax benefit.

The first time drv is called Employment Insurance is calculated with a zero value for the federal Child Tax Benefit. This will result in no EI family supplement benefits being assigned. The first time ccept is called by drv, it first determines if a family is eligible for both EI and the Child Tax Benefit. If so, that household has its entire tax/transfer entitlements/liabilities re-calculated using the value for the federal child tax benefit calculated in the first pass.

Note that there is a circularity between the two programs in that the federal Child Tax Benefit is based, in part, on Unemployment Insurance benefits to the extent that they are included in the definition of net income which is used to clawback the child benefits.

Optimization of the Child Tax Credit/Child Tax Benefit

The default calculation first performed in txceca makes use of any child care expenses associated with the children in the family. In the ccept function cases subject to optimization are first identified as families having children aged 0-6 with associated child care expenses.

The complexities of the tax reform situation in Canada make it difficult to know how to optimize many of this type of case. Consequently, once these families have been identified, the entire tax/transfer system is recalculated, setting child care expenses for young children to zero. The value of consumable income for both runs is then compared. If the family benefits from this change, the scenario with no child care expenses is kept. Otherwise, the previous scenario is restored by again re-running the entire tax transfer system.

The algorithm is controlled by the parameter CCEZOPT, which is described in the [Parameter Guide](#).

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UITARGET | UI/EI target for the number of cases (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| hdageeld | Age of eldest in household |
| hdnkids | Number of children in household |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idninc | No income flag (SPSD variables) |
| iduirank | Predicted ranked likelihood of getting UI |
| imcce | Child care expenses claimed on behalf of child |
| immicons | Consumable income |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|---------|--|
| imcceni | Consumable income with CCE not zeroed |
| imccez | Is CCE zeroed? |
| imccezi | Consumable income with CCE zeroed |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |

classu Compute user-defined reporting variables

SUMMARY

The classu function is a stub routine which allows the glass-box user to compute and assign values to new or re-defined variables. Variables first must be defined appropriately in vsdu.c and vsu.h. Since this function is normally called by both the standard and alternate model drivers, assignments made in classu will be effective in both cases.

Users should note that classu should only be used when the user is unable to create the desired classification with the User Defined Variable Facility. Please see the [*User's Guide*](#) for more information on this alternative facility.

Note that classu is called at the end of drv so that variables defined in classu are not available for use in other tax/transfer algorithms. See the [*Programmer's Guide*](#) for more information.

ctmod Compute commodity taxes for individuals and households

SUMMARY

Sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to

observed family expenditures at the spending unit level of analysis. The resulting federal government taxes span 48 consumer expenditure (CE) categories while provincial government taxes have both CE category and provincial dimensions. Commodity taxes are also estimated for other levels of analysis such as economic families and individuals.

Program Description

The federal government has a variety of taxes which are levied on goods used in production and for final demand consumption. Some of the major federal tax types are: custom import duties, alcohol and tobacco excise taxes and excise duties, manufacturers sales tax, gasoline excise tax, air transportation tax, and energy use taxes. The provincial governments also levy taxes but with more of an emphasis on consumer goods. Major taxes include liquor commission mark-ups, gasoline taxes, tobacco taxes, and retail sales taxes.

An important characteristic of this tax system is the cascading effect. Tax cascading occurs when a tax rate is applied to the value of a commodity inclusive of another tax type. For example, when an individual makes a long distance call a federal telecommunications tax of 10% is applied to the price of the call. Provincial governments then levy their retail sales tax rates to the value of the call inclusive of the federal tax.

SPSM Implementation

Input/Output Estimation of Tax Rates

Tax costs associated with domestic production are passed to the domestic consumers is the fundamental I/O modeling assumption. For example, alcohol producers require raw materials such as grains, water, energy source etc. If these inputs are produced themselves in other industries, then their selling price may include a manufacturer's tax component. Through Input/Output (I/O) techniques we are able to associate the implicit tax share of the production process to the correct final demand good.

The macroeconomic I/O system is used to construct effective tax rates by tax type, final demand good, and by province. This enables the calculation of the tax burden implicit in each household's reported final demand expenditures.

The federal tax rates have been grouped into six tax types: custom import duties; excise duties; manufacturer's sales tax; excise taxes; other energy taxes; and federal sales tax. The federal sales tax type that has been included for user simulations is set to zero by default. The array of provincial tax rates has also been reduced to six tax types: profits on liquor commissions; liquor gallonage tax; gasoline tax; amusement tax; tobacco tax; retail sales tax.

The above rates are defined as the ratio of a particular tax to the expenditure net of all commodity taxes for a given good in a given province. Therefore, an additional input parameter rate is applied to the FAMEX observations to net out the commodity taxes implicit in the base year.

For a more complete description of the I/O methodology, calculation procedures, tax type composition, etc. see *Commodity Tax Model User's Guide*.

Notes Regarding Expenditure Adjustments

Prior to the execution of the ctmof function, two modifications of the FAMEX data have been performed by the SPSM.

The first is made necessary because of the way SNA and FAMEX treat the expenditures on motor vehicles as net expenditures. If the trade-in exceeds the value of the purchase, or a household sells a vehicle outright, then the expenditure category will contain a negative value. In this case the SPSM treats the net expenditure as an income item (net sale of durables) and it is incorporated into the income calculation. The expenditure category is then set to zero. This procedure is conducted in the two consumer expenditure categories where net sales can occur: New & used automobiles; Recreation, sporting goods, and camping equipment. This modification is not accessible to the user.

The second data modification involves correcting for under-coverage of some FAMEX expenditure components. For example, sales of alcohol and tobacco are monitored very carefully by government agencies and their data indicate roughly twice as much consumption of these two goods as reported on the FAMEX. Two other FAMEX categories report substantially lower consumption than other information sources would indicate. They are semi-durables and expenditures for restaurants & hotels. The GFFMX parameter in the .APR file enables the adjustment of raw FAMEX values to the levels of other sources. We provide users with factors to inflate expenditures to known 1984 levels.

Estimation of commodity taxes

The ctmof function initially calls the ctfx sub-function to calculate the taxes based on the expenditure patterns of FAMEX spending units. The ctmof function then computes the taxes for other levels of analysis such as individuals or economic families.

The FAMEX expenditure categories must be stripped of their original tax component before the commodity tax calculation can be performed. This is accomplished in the ctfx sub-function by applying the I/O computed CTTXRM parameter (database adjustment parameter) to the expenditure observations.

The effective commodity tax rates are then multiplied by the net expenditures to produce commodity tax levels for each spending unit. If the CTDFLAG is set to 0 then total federal level taxes by commodity and provincial level taxes by commodity and province are calculated. If CTDFLAG is set to 1 then the six detailed federal taxes and seven provincial taxes are generated. Provincial taxes applied are defined in the following input parameters:

- CTPAMU Provincial amusement tax
- CTPGAS Provincial gasoline tax
- CTPICT Provincial commodity taxes on industry
- CTPLGL Provincial liquor gallonage tax
- CTPPLQ Provincial profits on liquor commissions
- CTPRST Provincial retail sales tax
- CTPTOB Provincial tobacco tax

The model ensures that both options will produce identical results in the aggregate.

Commodity taxes are then allocated to individuals in the FAMEX spending unit via personal income shares in the ctmof function. The income of the household's head is derived by adding three variables from the FAMEX income concept not surveyed elsewhere to his/her SPSD income concept variables. These variables are: savings; other money receipts; and net sales of durables. The shares reflect the income distribution after this modification.

The CTOPT parameter controls which income concept is used in the simulation. If the parameter is set to 1 then the FAMEX income concept is used. This measure of income is not linked to other SPSD variables in any way. Therefore, if the user wishes to examine the implications to commodity tax outflows based upon changes in SPSD income variables (i.e. OAS, GIS, income tax changes) then this option should never be specified. Its use should be restricted to pure FAMEX analyses.

If CTOPT is set to 2 then the SPSD income concept is used. This income measure has been corrected for an income bias inherent in Survey of Consumer Finance (SCF) data using Department of Revenue Green Book tax data. This income adjustment is described in detail in the *Database Creation Guide*. The result is a substantial increase in household income for observations in the extreme upper tail.

The FAMEX data suffers from the same under-coverage as the SCF so the reported spending unit expenditure can be out of synch with the Green Book adjusted income. For example, the largest total expenditure observation is around \$150,000 while a large tax adjusted household income exceeds \$5,000,000.

Setting the CTOPT parameter to 2 scales the commodity tax calculated conditioned on FAMEX spending unit income by the ratio of the SPSD "shared" income concept to an equivalent FAMEX "shared" income concept. In this way tax outlays bear closer relation to the SPSD income levels. However, this leads to some outlay distortions for the extremely wealthy which are described in the Interpretation Section.

Interpretation

There are some other discrepancies between the system of national accounts (SNA) definition of consumer expenditure and that of FAMEX. Generally, SNA includes the entire personal sector whose components are households, self-employed professionals, and universities. FAMEX tracks only households and, therefore, tax levels by commodity are generally lower. For a detailed description of these differences see the *Commodity Tax Model User's Guide*

In the aggregate, differences between income SPSM income concept (CTOPT=2) and the FAMEX income concept (CTOPT=1) are almost negligible. Using 1984 base case parameters the FAMEX option produced a \$20.997 billion tax burden on Canadian families while the scaled option generated \$21.048 billion. These compare favorably with the SNA estimate of \$22.5 billion. However, the differences for the highest income households in great. The top three households show differences of over \$200,000. This implies some caution when interpreting commodity tax values for high income observations.

Relation to Other SPSM Routines

The ctmod function calls the ctfx sub-function in order to calculate spending unit commodity taxes. The ctmod function itself is called by the drv function. The ctmod function makes use of parameters derived in the mpc function. The mpc function also ensures that the ctmod function is not executed if the FAMEX data vector is not being read (i.e. if FXVFLAG=0). The calculation of commodity taxes is highly dependent on the parameters applied to the database expenditure items during the database adjustment phase of the simulator.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTDFLAG | Commodity tax detailed calculation flag |
| CTFCID | Federal custom import duties [com] |
| CTFEXD | Federal excise duties [com] |
| CTFEXT | Federal excise taxes [com] |
| CTFGST | Federal GST [com] |
| CTFLAG | Commodity tax activation flag |
| CTFMFG | Federal manufacturer's sales [com] |
| CTFOEN | Federal other energy taxes [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTLPROP | Local property taxes |
| CTNES | Expenditures NES |
| CTOPT | Commodity tax calculation method [1=FAMEX,2=SPSM] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| CTPTOT | Provincial total retail tax equivalent |
| CTSAVE | All positive savings |

INPUT VARIABLES:

| | |
|----------|--|
| ctnexp | Household expenditure net of taxes |
| ctothmon | Household money from other sources |
| cttxfc | Federal commodity taxes (total) |
| cttxpc | Provincial commodity taxes (total) |
| fxfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |

| | |
|----------|------------------------------------|
| fxrecom | Real estate commissions |
| fxrfees | Registration and license fees |
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hhnin | Number of individuals in household |
| idhhrh | Relationship to head of household |
| immdisp | Disposable income |

OUTPUT VARIABLES:

| | |
|----------|--|
| ctfcid | Federal custom import duties |
| ctfexd | Federal excise duties |
| ctfext | Federal excise taxes |
| ctfgst | Federal GST |
| ctfmfg | Federal manufacturer's sales tax |
| ctfoen | Federal other energy taxes |
| ctishrh | Shared income concept (FAMEX) |
| ctlprop | Local property taxes on owned dwellings |
| ctnes | Household expenditure not elsewhere specified |
| ctnexp | Household expenditure net of taxes |
| ctnexp_ | Household expenditure net of taxes [array] |
| ctnsna | Household expenditure net of taxes -SNA adjusted |
| ctnsna_ | Household expenditure net of taxes [array] -SNA adjusted |
| ctothmon | Household money from other sources |
| ctpamu | Provincial amusement tax |
| ctpgas | Provincial gasoline tax |
| ctplgl | Provincial liquor gallonage taxes |
| ctpplq | Provincial profits on liquor commissions |
| ctprov | Province for COMTAX calculations |
| ctprst | Provincial retail sales tax |
| ctptob | Provincial tobacco tax |
| ctsave | Household savings |
| ctseqhv | FAMEX record sequence number |
| cttxfc | Federal commodity taxes (total) |
| cttxfc_ | Federal commodity taxes [array] |
| cttxpc | Provincial commodity taxes (total) |
| cttxpc_ | Provincial commodity taxes [array] |
| imishri | Shared income concept (FAMEX & SPSD) |
| imninc | No income flag |
| imtxfc | Federal commodity taxes |
| imtxpc | Provincial commodity taxes |

dem Compute new taxable demogrants

SUMMARY

This is a stub function for use by glass box users who wish to incorporate a new program which interacts with the tax system (i.e. taxable benefits).

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|--------------------------|
| imiotg | Other taxable demogrants |
|--------|--------------------------|

| | |
|------------|-------------------------|
| drv | Tax/transfer calculator |
|------------|-------------------------|

SUMMARY

The calculation of taxes and cash transfers for any base or variant run is controlled by a function whose only task is to call all other individual tax/transfer algorithm functions. The sequence of calls is critical to the simulation due to the informational requirements of the tax/transfer functions. For example net income must be known before gis can be calculated. The following list gives the functions called by drv in the order in which they are called.

| Function | Description |
|----------|---|
| ui | Compute UI benefits |
| famod | Compute family allowance |
| oas | Compute OAS for elderly |
| dem | Stub routine for new pre-tax system programs |
| txinet | Compute net income (including payroll taxes) |
| gis | Compute GIS/SPA for elderly |
| senben | Compute senior benefit |
| gist | Compute Provincial GIS top-ups for elderly(GAINS-A, SIP, etc) |
| samod | Compute social assistance or guarantees |
| txitax | Compute taxable income |
| txhstr | Apply tax transfers between head and spouse |
| txcalc | Calculate federal income tax |
| txctc | Compute child tax credit |
| txprov | Compute provincial taxes and credits |
| txfstc | Compute federal sales tax credit |
| gai | Stub routine for new post-tax system programs |
| memo1 | Compute memo items for reporting |
| ctmod | Compute commodity taxes |
| memo2 | Compute consumable income, etc. |

ccept
Classu

Zero CCE for young children if optimal
Stub routine to compute user defined reporting variables

The calling order of the component functions of drv reflects the logical precedence between them.

- The first functions, ui, famod and oas, simulate programs whose benefits are determined by factors other than income and as such are called first.
- dem is a stub routine for glass box applications that require calculations to occur before entering the tax system routines.
- txinet calculates net income prior to certain transfers.
- gis calculates transfers to the elderly.
- senben calculates senior benefits.
- gist, txctc, and txfstc calculate income tested transfer programs.
- samod calculates social assistance or guaranteed income transfers.
- Federal and provincial taxes are calculated next in the next six functions with the tx prefix (txitax, txhstr, txcalc, txprov, txctc, and txfstc).
- gai is another stub routine that is intended for use by glass box users who wish to simulate options requiring information on all personal income taxes and cash transfers. For example users may use this function to simulate an income supplementation program.
- The memol and memo2 functions create aggregate variables for reporting.
- In the ctmod function, sales & excise taxes are calculated by applying Input/Output based effective sales tax rates to observed family expenditures.
- ccept optimizes income by maximizing the child care expense credit and the child tax credit.
- classu is a stub routine which allows the glass box user to compute and assign values to new or re-defined variables.

The functions called by drv call other functions and sub-functions in order to complete their calculations. The following page contains a complete list of the names of functions and sub-functions along with a short description in the order in which they are called by drv. Please refer to the specific function in this guide for a more detailed description. Sub-functions (in italic) can be found listed under the function which calls them. Thus for a complete understanding of the calculation of net income one would have to consult both the txinet and txceca functions.

As mentioned earlier, function names are printed in lower case, bold, courier font (E.g. txinet, txcalc) and correspond to a single C language source code file (E.g. txinet.c, txcalc.c). Sub-functions are defined within the function (file) that calls them and are shown in lower case, courier font, italic (e.g. uisqz, gissub). All multiple calls to the same sub-function have been shown here. All functions directly called by drv begin in the first column below, other function calls are indented.

In ccept all the functions are called a second time by drv to find if a family benefit of setting CCE to zero, if it is the case the result is kept, otherwise drv call again all the functions to reset the original values.

| | | |
|----|---------------|---------------------|
| ui | | Compute UI benefits |
| | <i>uicl</i> m | Simulate a UI claim |

| | | |
|--------|-----------------|---|
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| | <i>uicl</i> | Simulate a UI claim |
| | <i>uielent</i> | Test UI eligibility: entrance requirements |
| | <i>uielrge</i> | Test UI eligibility: regional rules |
| | <i>uielrep</i> | Test UI eligibility: repeater rules |
| | <i>uiwkbas</i> | UI weeks of benefits: basic entitlement |
| | <i>uiwklfe</i> | UI weeks of benefits: labour force extended phase |
| | <i>uiwkrge</i> | UI weeks of benefits: regional extended benefits |
| | <i>uisqz</i> | Squeeze UI phases into time window |
| | <i>uitrnclm</i> | tack on a training claim for those eligible |
| famod | | Compute family allowance |
| oas | | Compute OAS for elderly |
| dem | | Stub routine for new pre-tax system programs |
| txinet | | Compute net income |
| | <i>txccea</i> | Compute child care expense allowance |
| gis | | Compute GIS/SPA for elderly |
| | <i>gissub</i> | Compute income used to tax back GIS/SPA |
| senben | | Compute senior benefit |
| | <i>sbsub</i> | Compute income used to tax back Seniors Benefit |
| gist | | Compute Provincial GIS top-ups for elderly |
| | <i>txhhexp</i> | Compute and pro-rate household taxes, rent, etc. |
| samod | | Compute social assistance or guarantees |
| txitax | | Compute taxable income |
| txhstr | | Apply tax transfers between head and spouse |
| txcalc | | Calculate federal income tax |
| txprov | | Compute provincial taxes |
| | <i>txnfld</i> | Compute Newfoundland provincial taxes |
| | <i>txpei</i> | Compute PEI provincial taxes |
| | <i>txns</i> | Compute Nova Scotia provincial taxes |
| | <i>txnb</i> | Compute New Brunswick provincial taxes |
| | <i>txque</i> | Compute Quebec provincial taxes |

| | | | |
|--------|--------------|--------------|--|
| | | txqinet | Compute net income (Quebec) |
| | | txqccea | Compute child care expense allowance (Quebec) |
| | | txqitax | Compute taxable income (Quebec) |
| | | txqhstr | Apply tax transfers between head and spouse (Quebec) |
| | | txqcalc | Calculate Income Tax (Quebec) |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txont | | Compute Ontario provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txman | | Compute Manitoba provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| | txsask | | Compute Saskatchewan provincial taxes |
| | txalta | | Compute Alberta provincial taxes |
| | txbc | | Compute BC provincial taxes |
| | | txhhexp | Compute and pro-rate household taxes, rent, etc. |
| txctc | | | Compute child tax credit |
| txfstc | | | Compute federal sales tax credit |
| gai | | | Stub routine for new post-tax system programs |
| memo1 | | | Compute memo items for reporting |
| ctmod | | | Compute commodity taxes |
| | <i>ctfx</i> | | Compute commodity taxes for FAMEX spending unit |
| | | <i>ctfxd</i> | Compute commodity taxes for FAMEX spending unit (detailed) |
| | | <i>ctfxs</i> | Compute commodity taxes for FAMEX spending unit (simple) |
| memo2 | | | Compute consumable income, etc. |
| cceopt | <i>pass2</i> | | Zero CCE for young kids if optimal recalculate UI with child benefits in place |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| | | drv | Conditional execution of the Tax/Transfer Calculator |
| classu | | | Compute User Defined Reporting Variables |

SUMMARY

The famod function calculates federal Family Allowance benefits based upon the number of children in a family and their ages. The function allows for the Alberta and Quebec variations on family allowances as well as the Quebec supplementation of federal family allowances.

Following 1997 reform, starting in 1998 in the model, the Quebec family allowance, the Quebec new born allocation and the Quebec availability allowance are now calculated only if QFATCOPT is set to 1, otherwise the Quebec Family Allowance Tax Credit is calculated in txqcalc.

Program Description

The federal Family Allowances program was designed to provide taxable benefits to help meet the costs of raising children under the age of 18 who are resident in Canada and are maintained by their parent(s) or guardian. At least one parent or guardian must be either a Canadian citizen or a permanent resident, visitor or holder of a Minister's Permit under the Immigration Act and have been legally admitted into Canada. The parent(s) or guardian must make application for benefits and their income must be subject to Canadian income tax. Benefits cease to be payable with regard to self-supporting children (i.e. children who begin to earn a taxable income).

Family allowance benefits are generally paid at a uniform rate across Canada. However, provinces may, within certain limits, vary the amount of Family Allowances that the federal government pays to their residents according to the age and/or number of children in a family. Alberta and Quebec are the only provinces that vary the rate. Alberta varies payment based on the age of the child while Quebec varies payment based on the number of children in the family and then adds a supplement based on the age of the child.

The province of Quebec maintains a separate but linked program under the Quebec Family Allowances Act which provides for benefits to the parent or guardian of an unmarried child under the age of 18 who is not a ward of the province. The applicant must have resided in Quebec for at least one month or be paying Quebec income tax. In 1984 benefits payable were not subject to Quebec income tax, however benefits paid with respect to children aged 16 and 17 were subject to federal tax. Persons in receipt of federal family allowances automatically receive the provincial benefits without application. This program also has a supplement for handicapped children; however, this is not modeled in the SPSM.

The Quebec Newborn Allowance was implemented in 1988 and is modeled in famod from that year. Benefits are paid per child and rise from \$500.00 for each of the first two children to \$3000.00 for each subsequent child.

An option permit the user to randomly increase the rank of first and second child in order to

reflect the rank distribution of child observed by the RRQ. The program end in October 1997 and is replaced by a Child tax allocation not modeled yet.

SPSM Implementation

The famod function calculates federal and provincial family allowances based on the age of children and number of children in a family. Residency requirements are deemed to have been met in all cases as is the requirement of non self-sufficiency. The function always allocates family allowances as income of the mother unless one is not present in the nuclear family. This temporary allocation is subsequently assigned to the spouse having the higher net income in txinet and txqinet. The function outputs values for federal(imffa) and provincial(impfa) family allowances as well as the value of taxable family allowances(imtfa) for use in other functions. The function loops through each nuclear family in a household.

The function first calculates federal and provincial family allowances for residents of Quebec. Counts of numbers of children by age group are calculated and used to index into two look-up tables for federal and provincial programs as well as to scale the federal age supplement. The values are then aggregated into two local variables, taxable family allowances and federal family allowances. Taxable family allowances are equal to the sum of federal benefits for each child (as determined by that child's rank in the family) plus the federal supplement for each child aged 12-17 plus the portion of Quebec family allowances paid with respect to children aged 16 and 17.

The calculation of Quebec allowances in famod includes the Quebec availability allowance from 1988 forward. It is paid as a supplement to the Quebec family allowances and is represented by the variable imqaafa. Quebec allowances also include the calculation of the Quebec Newborn Allowance, represented by the variable imqnbfa. This benefit is calculated on the following schedule for 1988:

| Child Number | Birth | Age 1 | Age 2 | Total |
|--------------|-------------|-------------|-------|-------|
| 1 | 500 | 0 | | 500 |
| 2 | 500 | 0 | | 500 |
| 3+ | 375/Quarter | 375/Quarter | | 3,000 |

Interpretation

Results obtained from the SPSM with respect to family allowance benefits differ from Health and Welfare Canada administrative data. Overall the SPSM reports 96.7% of the 1984 calendar year average health and welfare total dollars and 97.3% of children for whom benefits are received.

The SPSM has few children in part due to the non-coverage of Yukon, N.W.T., and native reservations, all of which have younger than average populations and larger than average family sizes (approximately 1.5% of children). A second source of underestimation is the special allowances for foster children and children in welfare agencies. The SPSM does not include these children or their benefits which account for .7% of total family allowances. Further, the SPSM does not take into account payments made outside Canada, although the effect of these on the total is insignificant (less than .1%).

The family allowance program requires parents of 'self-supporting' children to notify Health and Welfare Canada and have the benefits with respect to these children suspended. There are about 52,000 of such children aged 16 and 17 on the SPSD with respect to whom benefits are allocated. It is unknown how many of the parents of these children actually report their situation to Health and Welfare Canada. Lastly, no residency check is imposed on the parents and this will have an insignificant effect. It is assumed that the number of children turning age 18 during the calendar year is balanced by the number of new births. That is, full year family allowance benefits paid with respect to children born during 1984 will be overestimates to the same degree that an underestimate arises for benefits not given to 18 year olds who were 17 during calendar 1984.

Relation to Other SPSM Routines

The famod function is called by drv. The function outputs two variables that are used in txinet for deciding which parent will claim the family allowances for tax purposes: taxable family allowances(nftfa) and number of family allowance children(nfnfach).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AFAC1 | Alberta FA benefit per child aged 0 - 6 |
| AFAC2 | Alberta FA benefit per child aged 7 - 11 |
| AFAC3 | Alberta FA benefit per child aged 12- 15 |
| AFAC4 | Alberta FA benefit per child aged 16- 17 |
| FAFLAG | Family allowance flag |
| PFACFLAG | Use provincial configuration flag |
| QAAFA | Quebec availability allowance (supplement) [parity,\$] |
| QAAFAFLAG | Availability Allowance: Supplement to Quebec FA |
| QFAIFLAG | Quebec inclusion of federal family allowance in income flag |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFFSL | Federal family allowance: Quebec Configuration[parity,\$] |
| QFPSL | Quebec provincial family allowance [parity,\$] |
| QFS | Federal supplement per child 12-17 in Quebec configuration |
| QNBFA | Quebec newborn family allowance [parity,age] |
| QNBFAFLAG | Quebec newborn family allowance flag |
| QNBPOFLAG | Quebec newborn family allowance phase out flag |
| QNBPOPYR | Quebec newborn family allowance phase-out year proportion |
| QNBPOYR | Quebec newborn family allowance phase out year |
| QNRFLAG | Quebec newborn family random increase of child rank |
| STDFA | Standard federal family allowance per child |
| TARGETYEAR | Year of analysis |
| INPUT VARIABLES: | |
| hdprov | Province |
| hhnnf | Number of nuclear families in household |

| | |
|----------|---|
| idage | Age |
| idrand | Random numbers [array] |
| idsex | Sex |
| nfinch | First child in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|---------|---|
| imffa | Federal portion of family allowances |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| impfa | Provincial family allowance |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqnbfa | Quebec newborn Allowance |
| imqtfa | Quebec taxable family allowances |
| imtfa | Taxable family allowances |
| nfineld | Eldest person in nuclear family [pointer] |

fmfxopen Routines for reading FAMEX (.fxv) file

SUMMARY

The purpose of this maintenance function is to load the FAMEX variables and to grow them by the corresponding database adjustment parameter.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|---------------|--|
| CTCFALC | FAMEX reporting error adjustment: Alcohol [prov] |
| CTCFGAS | FAMEX reporting error adjustment: Gasoline [prov] |
| CTCFTOB | FAMEX reporting error adjustment: Tobacco [prov] |
| CTTXRM | Base year commodity tax removal factor [com x prov] |
| GFCQP | Adjustment Factor: CPP/QPP contributions |
| GFFABD | Adjustment Factor: Account balancing difference |
| GFFMX | Adjustment Factor: consumer expenditure categories |
| [commodity] | |
| GFFOMR | Adjustment Factor: Other money receipts |
| GFGVPEN | Adjustment Factor: Government pension plan contributions |
| GFINTAX | Adjustment Factor: Income taxes |
| GFIPAC | Adjustment Factor: Life insurance premiums and annuity |
| contributions | |
| GFNCAL | Adjustment Factor: Net change in assets and liabilities |
| GFNES | Adjustment Factor: Not elsewhere stated |

| | |
|------------|---|
| GFPRTAX | Adjustment Factor: Property tax |
| GFPVPEN | Adjustment Factor: Private pension plan contributions |
| GFRECOM | Adjustment Factor: Real estate commissions |
| GFRFEES | Adjustment Factor: Registration and license fees |
| GFRRSPT | Adjustment Factor: Total RRSP contributions (FAMEX) |
| GFTPTAX | Adjustment Factor: Transfer of property taxes |
| GFUIC | Adjustment Factor: UI contributions |
| KEEPNEGEXP | Retain negative expenditures in FAMEX |
| DBVERSION | Version of the database (x100) |
| INPFXXV | Name of FAMEX vector file (in) [string] |
| INPSPD | Name of SPSD file (in) [string] |

INPUT VARIABLES:

| | |
|----------|--|
| fhbfver | SPSD/M binary format version (x100) |
| fhdbver | SPSD/M database/year version (x100) |
| fhfiltyp | File type (extension) [string] |
| fhnum | Number of numbers in the file |
| frclhvh | Cloning factor for FAMEX exp. vector |
| frcpp | Cpp - qpp contributions |
| frfabd | Account balancing difference |
| frfomr | Other money receipts |
| frgvpen | Gvt pension plan contributions |
| frintax | Income taxes |
| frio | Expenditure on the 40 I/O categories [array] |
| fripac | Life ins prems and annuity contributions |
| frncal | Net change in assets and liabilities |
| frnes | Not elsewhere stated |
| frprtax | Property tax |
| frpvpen | Private pension plan contributions |
| frrecom | Real estate commissions |
| frifees | Registration and license fees |
| frrgvlot | Ratio of spending on government lotteries |
| frrrspt | Total RRSP contributions (FAMEX) |
| frtptax | Transfer of Property taxes |
| fruic | UI contributions |
| hdprov | Province |

OUTPUT VARIABLES:

| | |
|----------|---|
| fhhash | Hashed code of header information |
| fxclhvh | FAMEX cloning factor |
| fxcpp | Cpp - qpp contributions |
| xfabd | Account balancing difference |
| xfomr | Other money receipts |
| fxgvpen | Gvt pension plan contributions |
| fxintax | Income taxes |
| fxio | I/O expenditure categories [array] |
| fxipac | Life ins prems and annuity contributions |
| fxncal | Net change in assets and liabilities |
| fxnes | Not elsewhere stated |
| fxnsave | Negative savings |
| fxprtax | Property tax |
| fxpsave | Positive savings |
| fxpvpen | Private pension plan contributions |
| fxrecom | Real estate commissions |
| fxrifees | Registration and license fees |
| fxrgvlot | Ratio of spending on government lotteries |
| fxrrspt | Total RRSP contributions (FAMEX) |

| | |
|----------|---|
| fxsaldur | Sale of durables |
| fxseqhv | FAMEX record sequence number |
| fxtptax | Transfer of Property taxes |
| fxuic | UI contributions |
| hdfrstfx | First household in FAMEX group flag |
| hdlastfx | Last household in FAMEX group flag |
| hdwgtfx | Sum of household weight for FAMEX group |

fmspopen Routines to read SPSD file (.spd)

SUMMARY

The purpose of this maintenance function is to load the SPSD variables and to grow them by the corresponding database adjustment parameter. In addition the method of conversion for converted variables is applied. The logic for differential growth of CPP is also applied in this function. The actual code in this function is proprietary and is not released with the SPSD/M product.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|-----------|--|
| GFADDDDED | Growth Factor: Additional deductions from net income (256) |
| GFALEXP | Growth Factor: Other allowable employment expenses (229) |
| GFCAPGEX | Growth Factor: Capital gains exemptions (254) |
| GFCARRY | Growth Factor: Carrying charges (221) |
| GFC CET | Growth Factor: Child care expenses associated with child |
| GFC CETT | Growth Factor: Child care expenses (Limit A, Form T778) |
| GFCGLESS | Growth Factor: TCG Less Cap Gains Ded on Cap Prop Gifts |
| GFCCHARIT | Growth Factor: Charitable donations (340) |
| GFCLOSS | Growth Factor: Allowable other years capital loss (253) |
| GFCPP65 | Growth Factor: CPP for age 65 |
| GFCPP66 | Growth Factor: CPP for age 66 |
| GFCPP67 | Growth Factor: CPP for age 67 |
| GFCPP68 | Growth Factor: CPP for age 68 |
| GFCPP69 | Growth Factor: CPP for age 69 |
| GFCPP70 | Growth Factor: CPP for age 70 |
| GFCPP71 | Growth Factor: CPP for age 71 |
| GFCPP72 | Growth Factor: CPP for age 72 |
| GFCPP73 | Growth Factor: CPP for age 73 |
| GFCPP74 | Growth Factor: CPP for age 74 |
| GFCPP75 | Growth Factor: CPP for age 75 |
| GFCPPG75 | Growth Factor: CPP for age > 75 |
| GFCPPL65 | Growth Factor: CPP for age < 65 |

GFDALIMO Growth Factor: Alimony paid (220)
 GFDISOTH Growth Factor: Disability amount for dependants (318)
 GFDISSLF Growth Factor: Disability amount for self (316)
 GFDUES Growth Factor: Union and professional dues (212)
 GFEMPLO Growth Factor: Employee home relocation loan dedn (248)
 GFEXPLOR Growth Factor: Exploration and development expenses (224)
 GFFDSFT Growth Factor: Foreign tax credit applied to surtax (511)
 GFFORAVG Growth Factor: Forward averaging amount withdrawal (237)
 GFFORINC Growth Factor: Net foreign income (508)
 GFFORTX Growth Factor: Foreign tax paid (507)
 GFGIFTS Growth Factor: Gifts to Canada/provinces/culture (342)
 GFGSTREB Growth Factor: GST rebate (457)
 GFHOMSTU Growth Factor: College residence/resident homeowner
 assistance (558)
 GFIALIMO Growth Factor: Alimony Income
 GFICAPG Growth Factor: Capital gains (actual) (127 * 1.5)
 GFIDIV Growth Factor: Dividend income (actual) (120 / 1.5)
 GFIEMP Growth Factor: Employment income [province,sex]
 GFIIINT Growth Factor: Interest income (121)
 GFIILOSS Growth Factor: Business investment losses (217)
 GFINOINV Growth Factor: Other government income (non-taxable)
 GFINOTH Growth Factor: Other money income (non-taxable)
 GFIOINV Growth Factor: Other investment income with net rental
 GFIPENS Growth Factor: Pension income (115)
 GFISA Growth Factor: Social assistance income
 GFISEFM Growth Factor: Self-employed income - farming
 GFISENF Growth Factor: Self-employed income - non-farming
 GFITC Growth Factor: Federal investment tax credits (412)
 GFITOGV Growth Factor: Other government income (taxable)
 GFITOTH Growth Factor: Other non-government income (taxable)
 GFITRRSP Growth Factor: Taxable RRSP withdrawals
 GFIVETP Growth Factor: Veterans Pensions
 GFIIWORKC Growth Factor: Worker's compensation
 GFLABTXG Growth Factor: Labour funds tax credit (414)
 GFMEDGRO Growth Factor: Medical expenses, gross (330)
 GFMINCAR Growth Factor: Minimum tax carryover (504)
 GFMOVEXP Growth Factor: Imputed moving expenses (219)
 GFMSCHPD Growth Factor: Manitoba school taxes paid
 GFNCLOS Growth Factor: Allowable other years non-capital loss (252)
 GFNORTH Growth Factor: Northern deductions (255)
 GFOTHDED Growth Factor: Other deductions from total income (232)
 GFOTHPE Growth Factor: Other dependant exemptions (305)
 GFPARTLO Growth Factor: Limited partnership losses (251)
 GFPOLCON Growth Factor: Federal political contributions (409)
 GFPROPTX Growth Factor: Net property taxes paid (556)
 GFPRVFTC Growth Factor: Provincial foreign tax credit (Form T2036)
 GFPRVPOL Growth Factor: Provincial political contributions (565)
 GFRENTPD Growth Factor: Total rental payments (555)
 GFRPP Growth Factor: Registered pension plan contributions (207)
 GFRRSP Growth Factor: RRSP contributions (208)
 GFSAPRED Growth Factor: Predicted benefits from Social Assistance
 GFSCFCQP Growth Factor: SCF CPP
 GFSCFCTC Growth Factor: Child tax credit
 GFSCFFTC Growth Factor: Federal tax credit
 GFSCFINT Growth Factor: SCF interest income
 GFSCFOAS Growth Factor: Old age security
 GFSCFPTC Growth Factor: SCF provincial tax credits

GFSCFSA Growth Factor: SCF social assistance
 GFSCFUIB Growth Factor: Unemployment insurance benefits
 GFSTKDED Growth Factor: Stock option deduction (249)
 GFTUITN Growth Factor: Tuition fees (320)
 GFUIPRED Growth Factor: Predicted benefits from UI
 IEMPADJ Adjustment Factor: Employment income [employment income
 breaks,province]
 IEMPBRK Adjustment Factor: Income breaks for income
 adjustment[employment income breaks]
 IMPCQPOPT Imputation method, CQP [1=none 2=rank]
 IMPINTOPT Imputation method, Interest [1=none 2=imputed]
 IMPSAOPT Imputation method, SA [1=none 2=rank]
 IMPUIBOPT Imputation method, UI [1=none 2=rank]
 PURR Ratio current:base unemployment rate [prov]
 UIBASEYRMAX Maximum insurable earnings for base year
 UITARGYRMAX Maximum insurable earnings for target year
 FXVFLAG Read FAMEX expenditure vector file
 INSPSD Name of SPSD file (in) [string]
 WGTFLAG Read weight file

INPUT VARIABLES:

fhbfver SPSD/M binary format version (x100)
 fhdbver SPSD/M database/year version (x100)
 fhfiltyp File type (extension) [string]
 fhnhh Number of households in the file
 hrclohh Number of SCF clones
 hrevmv Expenditure vector matching variable
 hrprov Province
 hrtenur Tenure
 hrurb Size of urban area
 idage Age
 idccqp Converted CPP/CQP benefit
 idcintim Converted interest income (imputed)
 idcsa Converted social assistance
 idsex Sex
 irage Age
 irccqp Converted CPP/CQP
 ircfpub SCF CF publication flag
 ircfrh Relation to census family head
 ircfseq Census family sub-sequence number
 ircintim Converted interest income (imputed)
 ircluflg Common law union flag
 ircsa Converted social assistance
 ircuib Converted UI benefit
 iredlev Educational level
 irefpub SCF EF publication flag
 irefrh Relation to economic family head
 irefseq Economic family sub-sequence number
 irestat Educational status
 irhhrh Relation to household head
 irieflag Institutionalized elderly flag
 irimmi Years since immigrant arrival
 irind Industry
 irinseq Individual sub-sequence number
 irlfst Labour force status
 irlyfp Full or part-time last year
 irlystr Stretches of unemployment last year

| | |
|------------|-------------------------------------|
| irlyun | Weeks unemployed last year |
| irlyww | Weeks worked last year |
| irmarst | Marital status |
| irnonlf | Main activity for non-lf persons |
| irocc | Occupation |
| irrklyun | Raking foundation: weeks worked |
| irrklyww | Raking foundation: weeks unemployed |
| irscfflg | SCF high-income preservation flag |
| irschtp | School type |
| irsex | Sex |
| irsynthi | Synthetic high income person |
| m0val | Money item value |
| m1val | Money item value |
| m2val | Money item value |
| m3val | Money item value |
| urbtyp | Claim type |
| urdivwk | New EI Variable |
| ureff | Base year effective weekly benefit |
| urern | Base year insurable weekly earnings |
| urexhas | Exhaustee flag |
| urgotpa | |
| urhrwk | New EI Variable |
| urmtyp | Claim type |
| urnere | New EI Variable |
| urothbr | New EI Variable |
| urothwk | New EI Variable |
| urrpeat | Repeat claim flag |
| urstart | Week claim established |
| urtpcng | Type change flag |
| urtrnbr | Training benefit weekly rate |
| urtrnwk | Weeks of training benefits |
| uruer | Local unemployment rate (x10) |
| urweeks | Claim weeks of benefits |
| urwork | Weeks of work prior to claim |
| ury1 | |
| ury2 | |
| ury3 | |
| ury4 | |
| ury5 | |
| wrwgt | Household weight (float) |
| CANCELFLAG | Cancellation request flag |
| DBVERSION | Version of the database (x100) |
| WGTTOT | Sum of weights on tax file |

OUTPUT VARIABLES:

| | |
|---------|---|
| fhash | Hashed code of header information |
| hdclohh | Number of SCF clones |
| hdevmv | Expenditure Vector Matching Variable |
| hdnpers | Number of persons in household |
| hdprov | Province |
| hdseqhh | Household sequence number |
| hdtenur | Tenure |
| hdurb | Size of urban area |
| hdwgthh | Household weight |
| hhnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idalexp | Other allowable employment expenses (229) |
| idcapgex | Capital gains exemptions (254) |
| idcarry | Carrying charges (221) |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idccqp | Converted CPP/CQP benefit |
| idcfpub | SCF CF publication flag |
| idcfrh | Relationship to census family head |
| idcfseq | Census family sub-sequence number |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idcintim | Converted interest income (imputed) |
| idcross | Allowable other years capital loss (253) |
| idcluflg | Common-Law union flag |
| idcsa | Converted social assistance |
| idcuib | Converted UI benefit |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idedlev | Educational level |
| ideducm | Eligible months of education allowance |
| idefpub | SCF EF publication flag |
| idefrh | Relationship to economic family head |
| idefseq | Economic family sub-sequence number |
| idemplo | Employee home relocation loan dedn (248) |
| idestat | Educational status |
| idexplor | Exploration and development expenses (224) |
| idext | Extra numbers [array] |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idgstreb | GST rebate (457) |
| idhhrh | Relationship to head of household |
| idhomstu | College res/resdnt homeowner assist (558) |
| idialimo | Alimony income received |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idimmi | Years since immigration |
| idind | Industry |
| idinogv | Other government income (non-taxable) |
| idinoth | Other money income (non-taxable) |
| idinseq | Individual sub-sequence number |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisa | Social assistance income |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| iditogv | Other government income (taxable) |

| | |
|-----------|--|
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idivetp | Veterans pensions and allowances |
| idiworkc | Workers compensation benefits |
| idlabtxg | Gross Labour funds bought (413) |
| idlfst | Labour force status |
| idlyfp | Last year full/Part time |
| idlystr | Last year stretches unemployed |
| idlyun | Weeks unemployed |
| idlyww | Weeks worked |
| idmarst | Marital status |
| idmedgro | Medical expenses, gross (330) |
| idmincar | Minimum tax carryover (504) |
| idmovexp | Imputed moving expenses (219) |
| idmschpd | Manitoba school taxes paid |
| idnage | Age |
| idnclos | Allowable other years non-capital loss (252) |
| idninco | No income flag (SPSD variables) |
| idnonlf | Major non-LF activity |
| idnorth | Northern deductions (255) |
| idocc | Occupation |
| idothded | Other deductions from total income (232) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idproptx | Net property taxes paid (556) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrentpd | Total rental payments (555) |
| idrkllyun | Raking foundation: weeks unemployed |
| idrkllyww | Raking foundation: weeks worked |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| idscfcqp | CPP/QPP income (SCF) |
| idscfctc | Child tax credit |
| idscfflg | SCF high-income preservation flag |
| idscfftc | Federal tax credit |
| idscfint | Interest income (SCF) |
| idscfoas | Old age security |
| idscfptc | Provincial tax credits as reported on SCF |
| idscfsa | Social assistance income (SCF) |
| idscfuib | Unemployment insurance benefits |
| idschtp | School type |
| idsex | Sex |
| idstkded | Stock option deduction (249) |
| idsynthi | Synthetic high income person |
| idtuitn | Tuition fees (320) |
| iduipred | Predicted amount of UI received |
| iduirank | Predicted ranked likelihood of getting UI |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucexhas | Exhaustee flag |
| ucgotpa | Received paternity benefits |

| | |
|---------|--|
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucuero | Local unemployment rate (x10)-original value |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucy1 | Weeks on UI in first year before claim |
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

gai Compute new refundable credits or guarantees

SUMMARY

This is a stub function for use by glass-box users who wish to incorporate a new program that does not affect current programs in the tax system (i.e. a new refundable tax credit). It is called by drv after all taxes have been calculated.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|-------|------------------------------------|
| hhnin | Number of individuals in household |
|-------|------------------------------------|

OUTPUT VARIABLES:

| | |
|--------|------------------------|
| imiosa | Other SA or guarantees |
|--------|------------------------|

SUMMARY

The Guaranteed Income Supplementation and Spouse's Allowance programs provide non-taxable monthly benefits to all Canadians age 65 and over who apply and meet the Canadian residency requirements. The program is income tested. The SPSM gis function is based on the age of the individual and the years since immigration as well as family net income and family type. The function can calculate GIS, SPA, Extended SPA, and Widowed SPA benefits. The functions contain one sub-function, gissub, which calculates the income on which GIS/SPA benefits are tested.

The GIS/SPA benefits are zeroed out if the Seniors Benefit is turned on. When activated, the Seniors Benefit takes precedence over OAS/GIS. Persons age 60 or over in May 1996 may elect to receive OAS/GIS rather than the seniors benefits if their benefits are higher.

Program Description

The Guaranteed Income Supplement is a monthly, non-taxable, income tested benefit paid to residents of Canada who are in receipt of a basic Old Age Security pension. Recipients must re-apply annually. The Guaranteed Income Supplement is not payable outside of Canada for periods of longer than six months. Income testing is based on net income as defined for income tax purposes with the exception of Old Age Security benefits. In the case of a married couple, including common-law, the combined income of the pensioner and his or her spouse is taken into account. Where the individual or couple have an income above a specified amount, the Guaranteed Income Supplement is reduced at a rate of either \$1 for every \$2 of income, or \$1 for every \$4 of income, dependent upon the individuals' marital status and the benefit status of their spouses (if present).

The Guaranteed Income Supplement was established in 1966 to provide monthly benefits to OAS pensioners born on or before December 31, 1910, whose income is below a specified amount. For 1967, the monthly benefit was \$40 and set at 40 percent of the OAS pension thereafter. The Guaranteed Income Supplement has been changed on various occasions, the most important of which were as follows: 1970, which extended GIS to all OAS beneficiaries who met the income criterion; 1972, provided for annual indexation of GIS based on the CPI; 1973, changed indexation to quarterly from annual; 1977, provided the payment of GIS to partial OAS recipients; 1984, provided an increase in maximum GIS benefits to recipients of partial OAS pensions in the amount of the difference between full and partial OAS benefits.

The Spouse's Allowance is a monthly benefit designed to recognize the difficult circumstances faced by those couples living on the pension of only one spouse, and by many widowed persons. The Allowance is payable to the 60 to 64 year old spouse of an Old Age Security pensioner as well as to any low-income widow or widower age 60 to 64, providing the potential recipient has been a resident of Canada for at least 10 years after reaching age 18. This benefit is income-tested based upon the combined income of both the beneficiary

and his/her spouse and must be re-applied for annually. Benefits are not considered as income for income tax purposes and are not payable outside Canada for periods of more than six months.

The Spouse's Allowance came into effect October 1, 1975 and provided for the payment of benefits to persons aged 60 to 64 inclusive who are married to and living with an OAS pensioner. The amount was set at a sum equal to the monthly OAS pension plus the maximum monthly GIS at the married rate. Significant changes to the Spouse's Allowance were made in 1977 with the provision for partial Spouse's Allowance using the same criterion as for OAS; 1979, the extension of the Spouse's Allowance to include surviving spouses of deceased Old Age Security pensioners; 1985, with the provision for Spouse's Allowance to be paid to all widows/widowers age 60 to 64 regardless of deceased spouse's prior pension status.

The GIS, and SPA programs have been designed with the overall income of elderly Canadians in mind and ensure that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. Because the programs are interrelated, a better understanding is facilitated by discussing them together across the five different family types listed below and discussed in turn. These categories define the basic structure of the SPSM implementation of these programs. In these descriptions pensioner is understood to mean a recipient of either full or partial OAS benefits.

| GIS/SPA Type | Family Status |
|---|---|
| 1. Single Pensioner: | Unattached Individual, OAS Pensioner |
| 2. Widowed Pensioner: | Unattached Individual, Age 60-64, Widowed |
| 3. Married 2 Pensioner: | Married Couple, Both OAS pensioners |
| 4. Married pensioner with SPA spouse: | Married Couple, OAS Pensioner with SPA recipient |
| 5. Married pensioner with non-pensioner spouse: | Married couple, 1 OAS pensioner, spouse ineligible for OAS or SPA |

Single Pensioner

If an individual is receiving a full Old Age Security Pension he or she may be eligible for the federal Guaranteed Income Supplement (GIS). GIS is an income tested benefit payable to OAS beneficiaries with little or no income beyond to the basic OAS benefit. In the case where a beneficiary of a full OAS pension has no additional income or income of up to a maximum of \$24 per year, his/her GIS benefit will be the maximum. For every two dollars of income in excess of \$24 annually, the GIS benefit is reduced by one dollar until the benefit is reduced to zero.

In the case where the beneficiary is eligible for only partial OAS benefits, but has little or no other income (again, to a maximum of \$24 per year), supplementary GIS is available. Supplementary GIS makes up the difference between the partial OAS benefit that the beneficiary is receiving and full OAS benefits. Thus, a beneficiary with 20 years of residence in Canada would receive 30/40 of a full OAS pension and supplementary GIS benefits up to an amount equivalent to 10/40 of a full OAS pension. This ensures that no OAS pensioner, full or partial, will receive benefits less than the equivalent of a full OAS pension. In addition to the partial OAS pension and the supplementary GIS benefits, an individual may also receive the regular GIS benefit. Both the regular and the supplementary GIS benefits are income tested and reduced at a rate of one dollar for every two dollars of income in excess of \$24 per year.

Widowed pensioner

The Spouse's Allowance is an income-tested benefit payable to individuals who are between 60 and 65 years of age and are spouses of Old Age Security beneficiaries. In order to qualify for this benefit, the applicant must meet the same residence requirements set out for the basic Old Age Security Pension. The guarantee for the benefit is equivalent to the sum of the full basic Old Age Security Pension plus the Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of the beneficiary's monthly income or the couple's combined monthly income until the OAS-equivalent is reduced to zero. At that point the GIS portion reduces at the rate of \$1 for every \$4 of combined income until benefits are reduced to zero.

If an individual receiving Spouse's Allowance becomes a widow or widower, they are then eligible for an Extended Spouse's Allowance until they reach the age of 65 at which time they will become eligible for a basic Old Age Security Pension and the Guaranteed Income Supplement. The amount of the Extended Spouse's Allowance is somewhat higher than the regular Spouse's Allowance to account for the fact that the beneficiary is now in a single income family.

In addition to the regular and Extended Spouse's Allowances, benefits exist for widows and widowers between 60 and 65 years of age whose spouse died prior to becoming a pensioner. The Widowed Spouse's Allowance pays benefits at the same rate as the Extended Spouse's Allowance. Both the Extended and Widowed Spouse's Allowances are reduced by \$3 for every \$4 of monthly income until the OAS-equivalent portion is reduced to zero and then by \$1 for every additional \$2 of monthly income until the GIS-equivalent portion is reduced to

zero.

The Spouse's Allowance is not considered as income for income tax purposes but may, however, affect taxes indirectly via the spousal exemption amount.

Married Couple, Both Pensioners

GIS eligibility for couples is first based upon receipt of OAS. If the applicant is not eligible for OAS, then he or she is not eligible for GIS. Once eligibility for GIS has been established, then the rate of recovery or rate at which GIS is reduced because of additional income, must be established. For two pensioner couples, where both are OAS beneficiaries, GIS is reduced by one dollar for every four dollars of the couple's combined monthly income in excess of \$48 per year. In 1984, the maximum regular GIS payable to a married beneficiary was less than that payable to a single beneficiary. As in the case of a single beneficiary receiving only partial OAS benefits, a supplementary GIS benefit is available which makes up the difference between partial and full OAS benefits.

Married Pensioner with SPA Spouse

GIS is payable to the pensioner at the same rate as is paid to an individual in married couple where both spouses are pensioners. The amount of SPA benefit is equivalent to the combination of the full basic Old Age Security Pension and Guaranteed Income Supplement at the married rate. This benefit is reduced by \$3 for every \$4 of combined monthly income (75%) until the OAS-equivalent is reduced to zero. At that point both the remaining portion of the Spouse's Allowance, and the pensioner's Guaranteed Income Supplement are each reduced by \$1 for every additional \$4 (50%) of the couple's combined monthly income.

The benefits payable to a pensioner with a given income could vary depending on whether the couple had applied for SPA; the benefit being higher for single pensioner couples. To ensure benefits are equal in these cases the SPA couple's benefits begin to be reduced at the effective rate of 25%, \$1 for each \$4 of family income after the crossover point. This is done by holding the pensioner's benefits fixed from the crossover point until the SPA benefits are reduced to zero; then the pensioners benefits continue to be reduced at the same married rate (see following figure).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

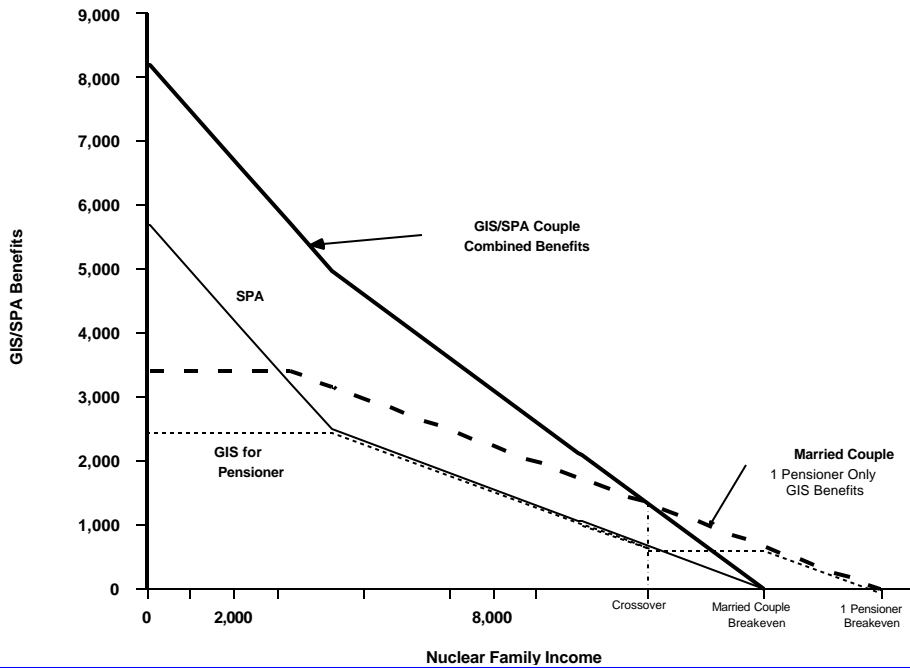


Figure 2 GIS/SPA Benefits for Married Pensioner with Non-Pensioner Spouse

Married Pensioner with Non-Pensioner Spouse

In the case of a pensioner whose spouse is under 60 years of age or is a recent immigrant, and therefore not eligible for OAS, GIS or SPA, the pensioner receives GIS at the higher single rate and benefits are reduced \$1 for every \$4 of the couple's combined monthly income with the first reduction being made only when their combined monthly income exceeds an amount equivalent to basic OAS plus \$4 per month. (see figure above)

SPSM Implementation

The gis function determines benefits based on the age of the individual, the years since immigration as reported at the time of the SCF survey in April 1985, combined family income, and family type. The function makes use of the imoasres, imoaspar variables created in the oas function to determine residential eligibility.

The function initially performs some screenings and pointer assignments for efficiency, and then makes a call to the gissub function to determine the previous years income, which will be used when calculating GIS/SPA benefits. This sub-function adds together all the components of total income listed below and multiplies them by a deflator PYINC to estimate the value of the previous year's income.

| | |
|----------------------|--|
| Net Income = PYINC * | Deflator To Simulate Previous Years Income |
| imicapgt | Taxable Capital Gains |
| + imidivt | Dividends Received |
| + idiint | Investment Income |

| | |
|-----------|--------------------------------------|
| + idiemp | Employment Income |
| + idisenf | Non-Farm Self Employment Income |
| + idisefm | Farm Self Employment Income |
| + idioinv | Other Investment Income |
| + iditoh | Other Income |
| + idicqp | CPP/QPP Benefits |
| + idipens | Private Pension Income |
| + iditogv | Other Taxable Government Transfers |
| + imiuib | Unemployment Insurance Benefits |
| - imalexp | Other allowable Employment Expenses |
| - imcqpc | CPP/QPP Contributions |
| - imuic | Unemployment Insurance Contributions |

Benefits are then calculated in each of the five groups discussed above. Every individual is assigned a value for the variables imoldtyp and ingistyp which define the type of pensioner couple and are used in the gist function.

The GIS supplement for the OAS shortfall for immigrants is calculated conditional on the setting of GISOASFLAG in all cases except the SPA recipient in a married couple. This should be set to one in years 1984 and later. No adjustment is made to account for the first quarter in 1984 for which no shortfall adjustment was made.

Take-up rates for GIS and SPA benefits are optionally applied depending on the value of the GISTURFLAG parameter. The rates are applied to individuals and to one spouse of a married couple. The algorithm assumes that the take-up rate look-up table margins are all dollar denominated GIS or SPA benefit levels.

Relation to Other SPSM Routines

GIS and SPA depends on the input parameters for basic GIS/SPA benefits and various variables calculated in the oas function. The function also makes use of parameters derived in the mpc function. The mpc function also ensures that GIS is not calculated without OAS being calculated first. The calculation of OAS and other modeled variables occurs prior to and effects the calculation of GIS and related GIS 'top-up' programs in the gist function. The gist function is called after txprov (calculation of provincial income taxes) by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|-------|-----------------------------------|
| BESPA | Basic GIS portion of extended SPA |
| BGISM | Basic GIS - married |

| | |
|----------------|---|
| BGISS | Basic GIS - single |
| BOAS | Basic OAS |
| ESPAT | Extended SPA take-up rate by benefit level [benefit,rate] |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISCT | GIS take-up rate: pensioner couple by benefit level |
| [benefit,rate] | |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISOASFLAG | 1984 GIS top-up to OAS residence shortfall flag |
| GISOT | GIS take-up rate: one pensioner couple by benefit level |
| [benefit,rate] | |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| GISRRS | Basic GIS reduction rate: single pensioners |
| GISST | GIS take-up rate: single pensioner by benefit level |
| [benefit,rate] | |
| GISTURFLAG | GIS take-up flag: apply 5 take-up tables |
| PYINC | Deflator to calculate previous year income |
| SPAOSRR | OAS portion of SPA taxback rate |
| SPARL | SPA reduction point: one married/ widowed |
| SPAT | SPA take-up rate by benefit level [benefit,rate] |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |

INPUT VARIABLES:

| | |
|----------|--|
| hhnfnf | Number of nuclear families in household |
| idage | Age |
| idicqp | CPP/QPP income (114) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmarst | Marital status |
| idrand | Random numbers [array] |
| imalexp | Allowable employment expenses |
| imcqpcc | CPP/QPP contributions |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imioas | OAS benefits |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |
| imuic | UIC contributions |
| nfageeld | Age of eldest in nuclear family |
| nfnield | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imigis | GIS benefits |

| | |
|----------|--------------------------------|
| imispa | Spouse's allowance |
| imninc | No income flag |
| imoldtyp | Type of GIS/SPA nuclear family |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |

gist Compute Provincial GIS top-ups for elderly

SUMMARY

The gist function calculates benefits for eight provincial GIS supplementation programs in eight provinces; Newfoundland, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. The function requires that both OAS and GIS be calculated first. All provincial senior's programs within SPSM are in this function. Please note that the provincial programs here are not exhaustive, but all major benefits are covered.

Program Description

Eight provinces provide cash benefits to pensioners in receipt of federal OAS, GIS, and in some cases, SPA benefits. The eight programs differ in terms of the level of benefits payable, eligibility requirements, etc. Each program listed below is modeled and documented independently.

| | |
|------------------|--|
| Newfoundland | Low-income Seniors Benefit |
| Nova Scotia | Special Social Assistance |
| New Brunswick | Low-income Seniors Benefit |
| Ontario | Guaranteed Annual Income System (GAINS-A) |
| Ontario | Sales Tax Grant Program |
| Ontario | Property Tax Grant Program |
| Manitoba | Supplement for Pensioners (55+) |
| Saskatchewan | Income Plan (SIP) |
| Alberta | Assured Income Plan AAIP |
| Alberta | Alberta Seniors Benefit |
| Alberta | Widow's Pension |
| British Columbia | GAIN for Seniors Supplement (Guaranteed Available Income for Need) |

Newfoundland Low-Income Seniors Benefit

A benefit is given to seniors (aged 65 and over) with annual family income less than NFSBTD. The maximum benefit NFSBBAS is reduced by NFSBRR for each dollar of family income over NFSBTD.

Nova Scotia Special Social Assistance

Up to 1991, all residents of the province of Nova Scotia who are in receipt of GIS in March

of a given year were eligible for Special Social Assistance. Application for benefits had to be made each year. SPA recipients were not eligible. One lump-sum payment was made yearly in one of four amounts scaled to the proportional GIS of the recipient as follows:

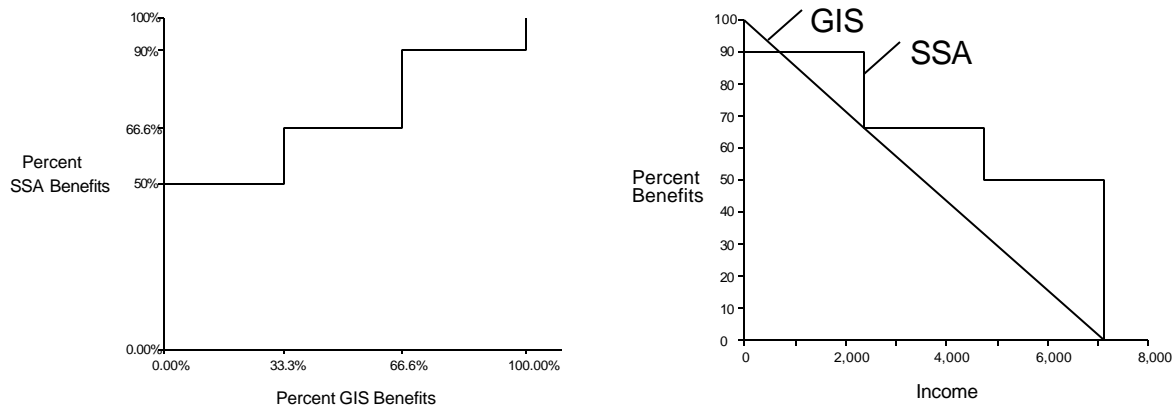


Figure 3. Nova Scotia Special Social Assistance

So, for example, a pensioner receiving maximum GIS benefits would have received maximum SSA benefits and a pensioner receiving 80% of maximum GIS benefits would have received 90% of maximum SSA benefits.

New Brunswick Low-Income Seniors Benefit

A benefit is given to seniors who receive GIS. If both spouses received GIS, the benefit is given to the spouse with the lower net income.

Ontario Guaranteed Annual Income System (GAINS-A)

GAINS-A provides a monthly benefit to Ontario residents in receipt of GIS who meet certain income and residence requirements. A person must have lived in Ontario for the year prior to applying for GAINS-A or for at least 20 years after turning 18 years of age. GIS recipients need not apply since their eligibility is reviewed automatically. SPA recipients are not eligible. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

Ontario Sales Tax Grant Program

The sales tax grant has been a flat \$50 per person over age 65 from 1984 to 1989. The maximum value of the sales tax grant is stored in the ONTSTG parameter. The variable impstg is used to store individual sales tax grants calculated by the model.

Ontario Property Tax Grant Program

The property tax grant is payable to seniors who are head of their household. The amount of the grant varies by tenure and actual costs. For years 1984 to 1989 renters receive 20% of their rental costs up to a maximum of \$500. Homeowners receive the maximum benefit. The fraction of rental costs allowed is contained in the ONTFPTG parameter while the

maximum benefit is stored in the parameter ONTPPTG. Calculated benefits are stored in the variable impptg.

Calculated benefits for both the sales tax grants and the property tax grants are also added to the variable imigist.

Manitoba Supplement for Pensioners (MSP, 55+)

The MSP provides quarterly benefits to Manitoba residents who are in receipt of certain levels of GIS and SPA benefits, including extended and widowed SPA recipients. MSP also provides benefits to persons aged 55 and over who are not in receipt of OAS benefits but whose income falls in a specified range and is derived at least 50% from pension sources. Eligibility is renewed automatically for GIS and SPA recipients, but non-GIS/SPA pensioners 55 years of age and over must apply.

In the case of GIS/SPA recipients there are two levels of benefits, single and married. An SPA recipient is treated as a single pensioner. Benefits are reduced at the same rate as GIS based on family income. Non GIS/SPA pensioners are treated in exactly the same manner except for couples benefits are reduced based on individual annual income.

Saskatchewan Income Plan

SIP provides monthly benefits to Saskatchewan residents in receipt of GIS and whose incomes don't exceed specified levels. SPA recipients are not eligible for SIP benefits. There are two levels of benefits, single and married. There are three different reduction rates. Unattached Individuals and Married Couples where both are GIS pensioners SIP benefits are reduced by \$1 for each \$1 reduction in GIS. For a pensioner whose spouse is not eligible for OAS/GIS/SPA the benefit is reduced by \$3 for each \$1 reduction in GIS benefits. The pensioner spouse of an SPA recipient has their benefit reduced by \$1 for each \$3 reduction in their spouse's SPA. There are monthly minimum benefits at both single and married levels.

Alberta Assured Income Plan

AAIP benefits are payable monthly to all Alberta residents who are in receipt of GIS benefits or who became eligible for the extended SPA prior to May 1983. Regular SPA recipients are ineligible. Since May 1983 all extended SPA recipients are referred to the Alberta Widow's pension. Application is not required. There is one individual benefit which is reduced by 50¢ for each \$1 reduction in GIS benefits to a minimum of \$10 monthly.

Alberta Seniors Benefit

Starting in 1994, the AAIP was replaced by the Alberta Seniors Benefit. When ALTASOPT is set to 2, the Alberta Seniors Benefit is calculated. Seniors are split into six categories:

- single seniors who rent their home,
- single seniors who own their home,
- seniors married to non-seniors who rent their home,
- seniors married to non-seniors who own their home,
- two senior couples who rent their home,

and two senior couples who own their home

When ASBSSOPT is set to 2, seniors married to non-seniors are treated in the same manner as two senior couples. Benefits and reduction rates vary by these categories (ASBBASIC, ASBRENT, ASBSS, ASBNSS, ASBRR). Maximum benefits are phased out using non-deductible income which is defined as last year's total income (imitot) minus OAS benefits (imioas), registered pension plan contributions (idrpp), RRSP contributions (idrrsp), and ASBEMP times idiemp.

For persons who do not qualify for OAS because of residency requirements, a proportion of the total benefit is assigned depending on marital status and household tenure (ASBNOAS). For these persons, BOAS is deducted from their non-deductible income. When ASBSSOPT is set to 1, a two senior couple in which one of the seniors does not meet the OAS eligibility requirement is treated as 1 senior couple.

Alberta Widowed Pension

The Alberta Widow's pension provides monthly benefits to widows and widowers aged 55 to 64 years who reside in Alberta. Yearly Application must be made. Maximum benefits are reduced by \$1 for each \$1 of previous year's non-exempt annual income. Extended SPA recipients may apply however their SPA benefits are included in their income when calculating entitlement.

British Columbia GAIN for Seniors Supplement

GAIN provides a monthly benefit to British Columbia residents in receipt of GIS or SPA who meet certain income and residence requirements. GIS/SPA recipients need not apply since their eligibility is reviewed automatically. There are two levels of benefits, single and married. Benefits are reduced at the same rate as GIS.

SPSM Implementation

The user is invited to read the source code in order to examine the implementation of these programs. A subsequent update will include a written description of the implementation of these programs.

Interpretation

In general the problems of coverage, including take-up, discussed in the interpretation of OAS and GIS are also present here. Specifically there are no tests made for residential eligibility applied on Ontario GAINS-A. Currently double counting occurs for the benefits for Manitoba residents under the age of 65. This is because the calculated income is reported in one variable (imigist) and reported income from the survey is reported in another (imisa). There are plans to fix the problem; however, the dollar amounts are small in any case.

Relation to Other SPSM Routines

Provincial GIS supplement programs depend on various program specific input parameters as

well as variables calculated in the oas and gis functions. The mpc function ensures that provincial GIS supplements are not calculated without GIS being calculated first. The calculation of OAS and GIS occurs prior to and effects the calculation GIS 'top-up' programs in the gist function. The gist function is called after gis by drv and as such has no impact on the personal income tax system.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALTAMIN | Alberta GIS supplement minimum annual benefit |
| ALTASC | Alberta GIS supplement maximum annual benefit |
| ALTASOPT | Alberta seniors option [1=GIST,2=new seniors benefit 1994] |
| ALTAWP | Alberta widow's pension maximum annual benefit |
| ASBBASIC | Alberta seniors benefit annual basic benefit |
| ASBEMP | Alberta seniors benefit employment inclusion rate |
| ASBNOAS | Alberta seniors benefit reduction if no OAS [senior type] |
| ASBNSS | Alberta seniors benefit non-senior spouse supplement |
| ASBRENT | Alberta seniors benefit renter supplement |
| ASBRR | Alberta seniors benefit reduction rate [senior type] |
| ASBSS | Alberta seniors benefit senior spouse supplement |
| ASBSSOPT | Alberta seniors benefit 1 senior couple option [1=model separately,2=model as senior couples] |
| BCC | British Columbia GIS supplement: married pensioners |
| BCS | British Columbia GIS supplement: single pensioners |
| BOAS | Basic OAS |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISTFLAG | Provincial GIS top-up flag |
| MANC | Manitoba GIS supplement: married pensioners |
| MANCNPF | Manitoba GIS supplement reduction point: married |
| MANS | Manitoba GIS supplement: single pensioners |
| MANSNPF | Manitoba GIS supplement reduction point: single |
| NBSB | New Brunswick Low-Income Seniors' Benefit |
| NBSBSPA | N.B. Low-Income Seniors' Benefit - SPA eligibility |
| NFSBBAS | NFLD Low-Income Seniors' Benefit base amount |
| NFSBRR | NFLD Low-Income Seniors' Benefit reduction rate |
| NFSBTD | NFLD Low-Income Seniors' Benefit turndown |
| NS13 | Nova Scotia GIS supplement for 1/3 GIS |
| NS23 | Nova Scotia GIS supplement for 2/3 GIS |
| NSLT13 | Nova Scotia GIS supplement for less than 1/3 GIS |
| NSMAX | Nova Scotia maximum GIS supplement level |
| ONTC | Ontario GIS supplement: married pensioners |
| ONTFPTG | Ontario property tax grant (fraction of rent) |
| ONTPTG | Ontario property tax grant for seniors |
| ONTS | Ontario GIS supplement: single pensioners |
| ONTSTG | Ontario sales tax grant for seniors |
| PYINC | Deflator to calculate previous year income |
| SASKC | Saskatchewan GIS supplement: married pensioners |
| SASKMINC | Saskatchewan GIS supplement minimum benefits: married |

| | |
|------------|--|
| SASKMINS | Saskatchewan GIS supplement minimum benefits: single |
| SASKRR1 | Saskatchewan GIS supplement reduction rate: regular |
| SASKRR2 | Saskatchewan GIS supplement reduction rate: 1 GIS |
| SASKRR3 | Saskatchewan GIS supplement reduction rate: SPA |
| SASKS | Saskatchewan GIS supplement: single pensioners |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|--|
| hdageeld | Age of eldest in household |
| hdprov | Province |
| hdtenur | Tenure |
| hhnin | Number of individuals in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idieflag | Cloned institutionalized elderly person |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawls |
| idmarst | Marital status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imalexp | Allowable employment expenses |
| imcqqpc | CPP/QPP contributions |
| imgisinc | Individual's income for GIS/SPA reduction |
| imgismax | Maximum amount of GIS |
| imgistyp | Type of GIS entitlement |
| imicapgt | Capital gains (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imoasres | Partial OAS fraction |
| imrentpd | Imputed rent paid |
| imspamax | Maximum amount of SPA |
| imspatyp | Type of SPA entitlement |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|---------|---|
| imiasb | Alberta seniors benefit |
| imigist | GIS provincial top-up |
| imninc | No income flag |
| impptg | Provincial property tax grant for seniors |
| impstg | Provincial sales tax grant for seniors |

isneg Is argument negative ?

SUMMARY

```
int isneg(var);
```

```
NUMBER var
```

The `isneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a negative value. If the argument is zero or positive, a value of zero is returned. Note that, unlike a function, the `isneg` macro cannot take an expression as an argument. The expression `isneg(var)` is functionally equivalent to an expression of the form `(var < 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnneg Is argument non-negative?

SUMMARY

```
int isnneg(var);
```

```
NUMBER var;
```

The `isnneg` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-negative value. If the argument is negative, a value of zero is returned. Note that, unlike a function, the `isnneg` macro cannot take an expression as an argument. The expression `isnneg(var)` is functionally equivalent to an expression of the form `(var > 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

isnzero Is argument non-zero?

SUMMARY

```
int isnzero(var);
```

```
NUMBER var;
```

The `isnzero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains a non-zero value. If the argument is zero, a value of zero is returned. Note that, unlike a function, the `isnzero` macro cannot take an expression as an argument.

The expression `iszero(var)` is functionally equivalent to an expression of the form `(var != 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

iszero Is argument zero?

SUMMARY

```
int iszero(var);
```

```
NUMBER var;
```

The `iszero` function (actually a C-language macro) takes as argument a floating point variable name (i.e. something declared as a `NUMBER`), and returns a non-zero value if the argument contains the value zero. If the argument is non-zero, a value of zero is returned. Note that, unlike a function, the `iszero` macro cannot take an expression as an argument. The expression `iszero(var)` is functionally equivalent to an expression of the form `(var == 0)` but for reasons that are beyond the scope of this manual, the macro is considerably more efficient than the corresponding expression.

lkup1 Table look-up with interpolation/extrapolation

SUMMARY

```
NUMBER lkup1(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The `lkup1` function is used to perform table look-ups with interpolation. Expressed another way, `lkup1` evaluates continuous piecewise linear functions.

The first argument (`tbl`) is the address of an SPSM look-up table, which is an $n \times 3$ array of floating point numbers. The first two columns of `tbl` contain the (X,Y) pairs that define the piece-wise linear function. The third column of `tbl` contains the slope of the segment that starts at the (X,Y) pair. SPSM look-up tables are defined in parameter input files, and come in two varieties, as perceived by the user. One variety allows the user to specify the (X,Y) pairs, and computes the slopes automatically. The other variety allows the user to specify all the X values, the first Y value, and the slopes, and computes the remaining Y values automatically. In both cases the internal representation of the lookup table is identical and is the same as that expected by the `lkup1` function.

The second argument of `lkup1` is an integer giving the number of rows in `tbl`. Generally this value is another member of the same parameter structure in which the `tbl` is defined.

The third argument of lkup1 is the X value whose corresponding Y value is to be determined. lkup1 returns the corresponding Y value.

lkup2 Table look-up without interpolation

SUMMARY

```
NUMBER lkup2(tbl, tblnum, input);
```

```
NUMBER tbl[][3];  
int tblnum;  
NUMBER input;
```

The lkup2 function is used to perform table look-ups without interpolation. Expressed another way, lkup2 evaluates step functions.

The first argument (tbl) is the address of an SPSM look-up table, which is an n x 3 array of floating point numbers. The first two columns of tbl contain the (X,Y) pairs that define the left-most point of each step in the step function. The third column of tbl contains the slope of the segment that starts at the (X,Y) pair, but the lkup2 function only makes use of the (X,Y) pairs in the look-up table. The slopes, though always present in look-up tables, are not used.

The second argument of lkup2 is an integer giving the number of rows in tbl. Generally this value is another member of the same parameter structure in which the tbl is defined.

The third argument of lkup2 is the X value whose corresponding Y value is to be determined. lkup2 returns the corresponding Y value.

maxn Find the maximum of two numbers

SUMMARY

```
NUMBER maxn(x, y);
```

```
NUMBER x;  
NUMBER y;
```

The maxn function returns the value of the larger of its two input arguments.

memo1 Compute memo items for reporting

SUMMARY

The memo1 function is used to calculate several reporting variables as aggregates of other

modeled variables. The function calculates all dollar denominated reporting variables up to the level of disposable income. In addition taxable filer status is determined.

SPSM Implementation

The `memo1` function operates at the individual level of analysis and skips individuals with no income. The algorithm first assigns filer status as relevant/non-relevant and taxable/non-taxable based on taxes paid and credits received. The function then calculates several reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|---|
| <code>imiemp =</code> | <code>idiemp;</code> |
| <code>imiself =</code> | <code>idisenf + idisefm;</code> |
| <code>imfoth =</code> | <code>iditogv + idinogv;</code> |
| <code>impoth =</code> | <code>ZERO;</code> |
| <code>imicqp =</code> | <code>idicqp;</code> |
| <code>immemp =</code> | <code>idiemp + idisenf + idisefm;</code> |
| <code>imminv =</code> | <code>idiint + ididiv + idicapg + idioinv;</code> |
| <code>immoth =</code> | <code>idipens + iditoth + idinoth;</code> |
| <code>immmkt =</code> | <code>immemp + imminv + immoth;</code> |
| <code>imftran =</code> | <code>imffa + imioas + imiotg + imigis + imispa + imctc + imfcben + imicqp + imfoth + imiuib + imfstc + imqtar + imfsa + imiosa + imfortc;</code> |
| <code>imctcben =</code> | <code>imctc + imfcben;</code> |
| <code>imfothtr =</code> | <code>imfoth + imfortc;</code> |
| <code>imfnewpg =</code> | <code>imiotg + imiosa;</code> |
| <code>imigispa =</code> | <code>imigis + imispa;</code> |
| <code>impfp =</code> | <code>impfa + imqaafa + imqnbfa + imiafetc + imnbcben + imibcfb + imoccea + imqfatc + imscb + imses + imnscb + imibceib;</code> |
| <code>imptran =</code> | <code>impfp + imigist + imptc + impsa + importc + iminsda;</code> |
| <code>immtran =</code> | <code>imptran + imftran;</code> |
| <code>immtot =</code> | <code>immmkt + immtran;</code> |
| <code>imftax =</code> | <code>imuic + imcqppc + imrepay + imtxf;</code> |
| <code>imptax =</code> | <code>imtxp;</code> |
| <code>immtax =</code> | <code>imftax + imptax;</code> |
| <code>immdisp =</code> | <code>immtot - immtax;</code> |
| <code>immicons =</code> | <code>immdisp; (initial assignment, may be re-assigned in memo2)</code> |

Relation to Other SPSM Routines

The `memo1` function is called by `drv` immediately after the income tax and cash transfer algorithms have executed. It is called just before the execution of the commodity tax model (`ctmod`) which makes use of some of the aggregated output variables. The `memo2` function follows `ctmod` to add information to the reporting variables calculated in the `memo1` function.

CROSS REFERENCE

| Function | Description |
|-----------------------|---|
| INPUT VARIABLES: | |
| <code>hhnin</code> | Number of individuals in household |
| <code>idialimo</code> | Alimony income received |
| <code>idicapg</code> | Capital gains (actual) |
| <code>idicqp</code> | CPP/QPP income (114) |
| <code>ididiv</code> | Dividend income (actual) |
| <code>idiemp</code> | Wages & salaries |
| <code>idiint</code> | Interest income (121) |
| <code>idinogv</code> | Other government income (non-taxable) |
| <code>idinoth</code> | Other money income (non-taxable) |
| <code>idioinv</code> | Other investment income with net rental |
| <code>idipens</code> | Pension income (115) |
| <code>idisefm</code> | Self-employed income - farming |
| <code>idisenf</code> | Self-employed income - non-farming |
| <code>iditogv</code> | Other government income (taxable) |
| <code>iditoth</code> | Other non-government income (taxable) |
| <code>idivetp</code> | Veterans pensions and allowances |
| <code>idiworkc</code> | Workers compensation benefits |
| <code>imbft</code> | Basic federal tax |
| <code>imcqqpc</code> | CPP/QPP contributions |
| <code>imctc</code> | Child tax credit |
| <code>imfcben</code> | Total Federal Child Benefits |
| <code>imffa</code> | Federal portion of family allowances |
| <code>imfortc</code> | Federal other refundable tax credits |
| <code>imfsa</code> | Federal social assistance |
| <code>imfstc</code> | Federal sales tax credit |
| <code>imheatrl</code> | Federal relief for heating expenses |
| <code>imiafetc</code> | Alberta Family Employment Tax Credit Benefits |
| <code>imibceib</code> | B.C. Earned Income Benefit |
| <code>imibcfb</code> | B.C. Family Bonus |
| <code>imigis</code> | GIS benefits |
| <code>imigist</code> | GIS provincial top-up |
| <code>iminet</code> | Net income |
| <code>iminsda</code> | NS Direct Assistance Program |
| <code>imioas</code> | OAS benefits |
| <code>imiosa</code> | Other SA or guarantees |
| <code>imiotg</code> | Other taxable demogrants |
| <code>imispa</code> | Spouse's allowance |

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imnbcben | Total NB child tax Benefits |
| imnccb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnscb | Nova Scotia Child Benefit |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| impfa | Provincial family allowance |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| importc | Other refundable provincial tax credits |
| impsa | Provincial social assistance |
| imptc | Refundable provincial tax credits |
| imqaafa | Quebec Availability Allowance FA Supplement |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqnbfa | Quebec newborn Allowance |
| imqtar | Quebec tax abatement (refundable) |
| imrepay | Social Benefits Repayments |
| imscb | Saskatchewan Child Benefit |
| imses | Saskatchewan Employment Supplement |
| imtxf | Federal income tax payable |
| imtxp | Provincial income tax payable |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|---|
| imctcben | Federal child tax credit and child benefits |
| imfiler | Taxable filer status |
| imfnewpg | Federal new programs |
| imfoth | Federal other government income |
| imfothtr | Federal other trans income and ref. credits |
| imftax | Federal taxes |
| imftran | Federal transfer income |
| imicqp | CPP/QPP payable |
| imiemp | Wages and salaries |
| imigispa | GIS and spouse's allowance |
| imiself | Total self-employment income |
| immdisp | Disposable income |
| immemp | All employment income |
| immicons | Consumable income |
| imminv | Investment income |
| immmkt | Market income |
| immoth | Other income |
| immtax | All taxes |
| immtot | Total income |
| immtran | All transfer income |
| impalltc | All refundable provincial tax credits |
| impfp | Provincial family programs |
| impoth | Provincial other government income |
| imptax | Provincial taxes |
| imptran | Provincial transfer income |

SUMMARY

The `memo2` function is used to calculate several reporting variables as aggregates of other modeled variables. The function calculates all dollar denominated reporting variables up to the level of consumable income.

SPSM Implementation

The `memo2` function operates at the individual level of analysis and skips individuals with no income. Aspects of the function are not executed if the commodity tax model has not been run (`CTMOD=0`). The function first adjusts several reporting variables calculated in `memo1` as follows.

| Reporting Variable | Formula |
|-------------------------|--|
| <code>imftax =</code> | <code>imftax + imtxfc</code> |
| <code>imptax =</code> | <code>imptax + imtxpc</code> |
| <code>immtax =</code> | <code>immtax + imtxfc + imtxpc</code> |
| <code>immicons =</code> | <code>immdisp - imtxfc - imtxpc</code> |

The function next calculates additional reporting variables as follows.

| Reporting Variable | Formula |
|-------------------------|--------------------------------------|
| <code>imnettr =</code> | <code>immtran - immtax</code> |
| <code>imothrep =</code> | <code>imrepay - imuibr</code> |
| <code>imqta =</code> | <code>imqtaa + imqtar</code> |
| <code>imfedbal =</code> | <code>imftax - imftran</code> |
| <code>imprvbal =</code> | <code>imptax - imptran</code> |
| <code>impovinc =</code> | <code>immtot - imctc - imfstc</code> |

Relation to Other SPSM Routines

The `memo2` function is called by `drv` immediately after the commodity tax algorithms (`ctmod`) have executed. The function adds information to the reporting variables calculated in the `memo1` function.

Please refer to the [Variable Guide](#) for detailed descriptions of the variables listed above.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

CTFLAG Commodity tax activation flag

INPUT VARIABLES:

hhnin Number of individuals in household
imftran Federal transfer income
immdisp Disposable income
immtot Total income
immtran All transfer income
imninc No income flag
imptran Provincial transfer income
imqtaa Quebec tax abatement (applied)
imqtar Quebec tax abatement (refundable)
imrepay Social Benefits Repayments
imtxfc Federal commodity taxes
imtxpc Provincial commodity taxes
imuibr UI benefit recovery

OUTPUT VARIABLES:

efin First person in economic family [pointer]
idef Person's economic family [pointer]
imfedbal Federal taxes less transfers
imftax Federal taxes
immicons Consumable income
immtax All taxes
imnettr Net transfers to person
imothrep Other federal repayments
impovinc Income for low income measurement
imprvbal Provincial taxes less transfers
imptax Provincial taxes
imqta Quebec tax abatement (total)

minn Find the minimum of two numbers

SUMMARY

NUMBER minn(x,y);

NUMBER x;

NUMBER y;

The minn function returns the value of the smaller of its two input arguments.

mpc Calculate derived model parameters and do edits

SUMMARY

The mpc function calculates derived model parameters and performs edit checks on input tax/transfer algorithm parameters. The function currently calculates derived parameters for

use in the commodity tax (`ctmod`) function, the Guaranteed Income Supplement (`gis`) function, and the head/spouse transfer (`txhstr`) function. Performing the calculations in `mpc` increases the efficiency of the program by avoiding multiple calculations for every household. Edit checks are performed for aspects of the commodity tax model and the old age income system. Please refer to the appropriate section in the [Algorithm Guide](#) for details of the specific social and tax programs.

SPSM Implementation

Calculation of Derived Parameters

Two derived parameters for use in the `ctmod` are calculated: a total federal government effective commodity tax rate (CTFTOT) and a total provincial government effective rate (CTPTOT). The federal rate is calculated by adding together the six detailed federal rates produced by the Input/Output model: CTFCID, CTFEXT, CTFMFG, CTFEXT, CTFOEN, and CTFGST. The aggregate provincial rate is calculated in the identical fashion, summing up the 6 provincial rates: CTPRST, CTPLGL, CTPPLQ, CTPTOB, CTPGAS, and CTPAMU.

These parameters are used to ensure equivalent results between the detailed and non-detailed commodity tax model options. When the detailed option is turned off (i.e. the `CTDFLAG` parameter is set to zero), commodity tax revenues are produced by multiplying the two aggregate rates by the total expenditure of each household. This requires a fraction of the operations for each household when compared to the detailed method.

A single derived parameter, `UIBRA`, is calculated for use in the `txitax` function. This parameter contains the individual's UIC repayment base amount and is derived from two further parameters: `UIBAF`, the UI benefit recovery base amount factor, and `UIERNMAX`, the dollar value of maximum insurable earnings. Please refer to section in this manual for further information on the `txitax` function.

Three derived parameters are calculated for use in the `gis` function. The income breakeven points for GIS/SPA couples and married 1 pensioner couples are calculated here as `GISBE1` and `GISBE2` respectively. The breakeven points represent the level of family income at which combined GIS/SPA benefits are reduced to zero based on combined family income. They in turn are used to calculate an income crossover point (`SPAXO`) for the two types of pensioner couples (see following Chart).

GIS and SPA For Married Couples, 1 is not an OAS Pensioner

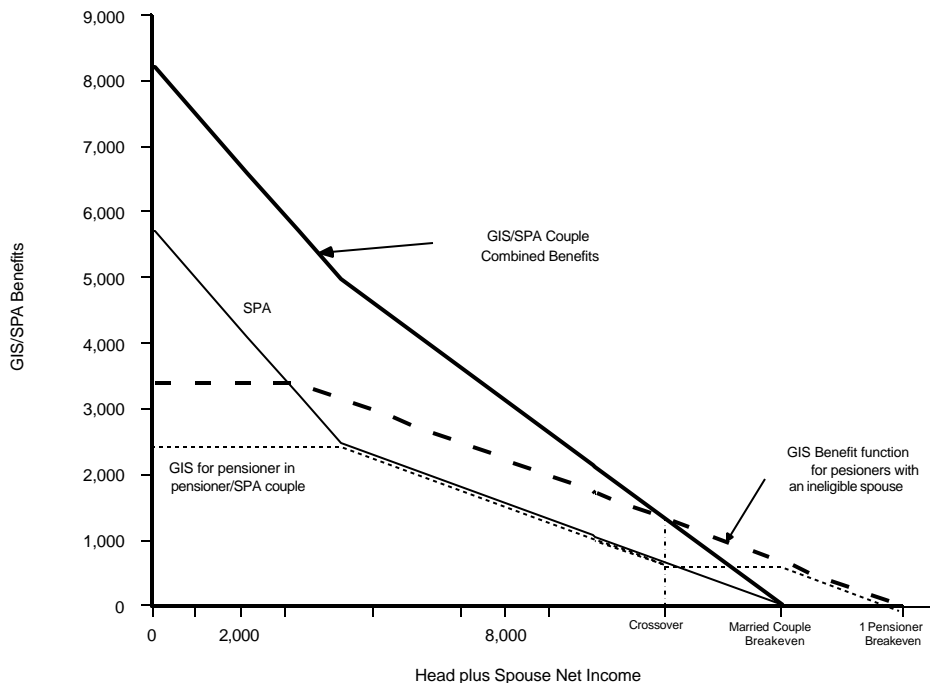


Figure 1 GIS/SPA Benefits for One OAS Pensioner Couples

GISBE1 represents the level of family income at which the GIS benefits of a pensioner married to a non pensioner have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "1 Pensioner Breakeven". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{GISBE1} = \text{BGISS}/\text{GISRRM} + \text{BOAS} + \text{GISRLS}$$

GISBE2 represents the level of family income at which the combined GIS and SPA benefits of a pensioner married to a SPA recipient have been reduced to exactly zero. On the figure above this is the point on the X axis labelled "Married Couple Breakeven".

$$\text{GISBE2} = (\text{BGISM} * 2) / (\text{GISRRM} * 2) + \text{BOAS} / \text{SPA OASRR} + \text{GISRLM}$$

SPAXO represents the level of family income at which the dollar benefits for GIS to a single pensioner married to a non-pensioner spouse exactly equal the combined GIS/SPA dollar benefits payable to a GIS/SPA married couple. On the figure above this is the point on the X axis labelled "Crossover". The value is calculated as a fixed relationship to other input parameters as follows.

$$\text{SPAXO} = 2 * \text{GISBE2} - \text{GISBE1}$$

Please refer to the Guaranteed Income Supplement Section of this guide for further details on the use of these derived parameters.

For all of the parameters described above users may refer to the [Parameter Guide](#) for further information.

Edit Checks

Three parameter edit checks are currently implemented in the `mpc` function.

- A check is made to ensure that the tax credit rate parameter `FNTCR` is non-zero. If zero, an error message is issued but processing continues.
- A similar check is made to ensure that the tax credit rate is non-zero. Error handling is also the same as above.
- If the `CTFLAG` parameter is set to 1 (thereby specifying that commodity taxes will be calculated) and the `FXVFLAG` parameter is set to 0 (indicating no FAMEX expenditure data is to be read) then an error message will result and `CTFLAG` will be reset to 0 and no commodity taxes will be calculated.
- If the OAS algorithm is switched off (`OASFLAG=0`) and the GIS algorithm is switched on (`GISFLAG=1`) GIS benefits will be incorrectly calculated as they depend on variables calculated in the `oas` function. If this condition is met an error message will result and `GISFLAG` will be set to 0 and consequently no GIS benefits will be calculated.
- If the GIS algorithm is switched off (`GISFLAG=0`) and the provincial GIS supplement algorithm is switched on (`GISTFLAG=1`) provincial GIS supplement benefits will be incorrectly calculated as they depend on variables calculated in the `gis` function. If this condition is met an error message will result and `GISTFLAG` will be set to 0 and consequently no provincial GIS supplement benefits will be calculated.

Relation to Other SPSM Routines

The `mpc` function is called before `drv` and as such is only executed once for every program run. The function currently calculates parameters and performs edits which can effect a number of functions directly; the `ctmod` function, the `gis` function, the `gist` function, the `txitax` function, and the head/spouse transfer `txhstr` function.

CROSS REFERENCE

| Function | Description |
|----------------------|------------------------------------|
| INPUT PARAMETERS: | |
| <code>FXVFLAG</code> | Read FAMEX expenditure vector file |
| <code>BGISM</code> | Basic GIS - married |
| <code>BGISS</code> | Basic GIS - single |
| <code>BOAS</code> | Basic OAS |
| <code>CTFCID</code> | Federal custom import duties [com] |
| <code>CTFEXD</code> | Federal excise duties [com] |
| <code>CTFEXT</code> | Federal excise taxes [com] |
| <code>CTFGST</code> | Federal GST [com] |
| <code>CTFMFG</code> | Federal manufacturer's sales [com] |

| | |
|-----------|---|
| CTFOEN | Federal other energy taxes [com] |
| CTPAMU | Provincial amusement tax [prov] |
| CTPGAS | Provincial gasoline tax [prov] |
| CTPLGL | Provincial liquor gallonage tax [prov] |
| CTPPLQ | Provincial profits on liquor commissions [prov] |
| CTPRST | Provincial retail sales tax [com x prov] |
| CTPTOB | Provincial tobacco tax [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| GISRLM | Basic GIS reduction level: married pensioners |
| GISRLS | Basic GIS reduction level: single pensioners |
| GISRRM | Basic GIS reduction rate: married pensioners |
| OASFLAG | Old age security flag |
| QNTCR | Quebec nominal tax credit rate |
| SPAOSRR | OAS portion of SPA taxback rate |
| UIBAF | UI benefit recovery base amount factor (UI and EI) |
| UIBAFNR | UI EI benefit recovery base amount factor for non-repeaters |
| (EI only) | |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIERNMAX | Maximum insurable earnings (UI and EI) |

OUTPUT PARAMETERS:

| | |
|----------|--|
| CTFLAG | Commodity tax activation flag |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| GISBE1 | Breakeven for GIS one pensioner couple |
| GISBE2 | Breakeven for GIS/SPA couple |
| GISFLAG | Federal GIS/SPA/ESPA flag |
| GISTFLAG | Provincial GIS top-up flag |
| SPAXO | Benefit Cross-over GIS/SPA vs GIS one pensioner couple |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |

nneg Change negative numbers to zero

SUMMARY

NUMBER nneg(arg);

NUMBER arg;

The nneg function returns either zero or the value of arg, whichever is larger. In other words, nneg changes negative values to zero, leaving positive values unchanged.

SUMMARY

The Old Age Security program provides taxable monthly benefits to all Canadians age 65 and over who meet the Canadian residency requirements. Benefits are either full or partial depending on a person's history of residency in Canada. The program is not income tested. The SPSM oas function is based on the age of the individual and, for immigrants, the years since immigration as reported at the time of the SCF survey in April 1985.

The Seniors Benefit program was added to the model based on the description provided with the 1996 Federal Budget. The Seniors Benefit will replace the OAS/GIS benefits in 2001. It will be a tax-free; income tested benefit which will be determined on the basis of the incomes from both spouses. The maximum benefits will be \$120 more than the maximum OAS/GIS for 2001. These rates are fully indexed for inflation.

People aged 60 or over on December 31, 1995 will be able to choose to move to the Seniors Benefit or keep the existing OAS/GIS payments. The SPA program remains in place but is enriched by \$120.

Program Description

As amended in 1957 and 1965 the OAS program provides full benefits to persons born in Canada or those having immigrated to Canada more than 10 years before their 65th birthday with no provisions for partial benefits. In June 1977 the program was modified to provide partial benefits to immigrants having resided in Canada for between 10 to 39 years at the time of their 65th birthday. These individuals are eligible for benefits in proportion to the number of years in Canada at age 65 divided by 40. Note that years of eligibility do not increase after the year of the beneficiary's 65th birthday. Thus an immigrant of twenty years at his/her 65th birthday would be eligible for 20/40 or 50% of full OAS benefits. Persons having immigrated to Canada less than ten years prior to their 65th birthday were ineligible for OAS until 1987. In that year the OAS program was modified to allow for immigrants from certain countries having reciprocal arrangements with Canada to use years of residency in the country of emigration to count towards meeting the minimum 10 years residency requirement. However, in these cases it is only the years of residence in Canada which are used to determine the rate of partial benefits.

SPSM Implementation

The oas function determines benefits based on the age of the individual and the years since immigration as reported at the time of the SCF survey in April 1985. Because OAS provides an individually determined benefit the simulation operates at the level of a household assigning benefits to all eligible individuals. The model first adjusts years since immigration in two ways:

1. It determines the years since immigration at the time of the potential beneficiary's 65th

birthday. This is done by subtracting the difference between the individual's age and 65 years from the reported years since immigration. [immi = immi - (idage-65)]

2. It adjusts the immigration status of persons who were eligible for Full OAS under the original program specifications but would qualify for only partial benefits since 1977. This is done by setting the years since immigration to 40 for persons having 10 or more years since immigration at the time of their 65th birthday if that birthday was in 1977 or earlier. [immi =40 if(immi >=10 and TARGETYEAR- idage <= 12)]

Notice that the years since immigration for any given individual after adjustment number 1 will remain the same regardless of the year for which the simulation is being run. For example an immigrant of 38 years, age 73, would have an adjusted years since immigration of 30 years, (immi = (38-(73-65)=30). Because of adjustment 2 above that individual would receive full OAS benefits in simulations run for 1984 but would receive 75% partial benefits in simulations run for 1988. In other words, a pensioner who is 73 years old in 1984 would have been 65 years old in 1976; the year before partial benefits were introduced. However a 73 year old in 1988 would have been age 65 in 1980; after partial benefits were introduced.

The model next determines if full eligibility requirements have been met for benefits and if so the full year equivalent of maximum OAS benefits are assigned (see BOAS in the *Parameter Guide*). Next, persons ineligible for OAS are screened out. Lastly, the model assigns partial benefits to persons with an adjusted years since immigration of between 10 and 39 years.

With the new Senior Benefit program, first, the seniors benefit (senben.c) is calculated. Then ccept calls drv again, and the benefit is zeroed out and OAS/GIS is calculated instead. For persons who lost under this change, drv is called a third time with the seniors benefit package.

Interpretation

The results of the model are not directly comparable with and thus will not match administrative OAS expenditure figures. The discrepancy arises due to administrative irregularities as well as survey data deficiencies.

There are five major sources of underestimation by the oas function. The benefits of persons having received benefits during 1984, yet who had died before the date of the survey, will not be accounted for in the SPSD/M. The survey coverage excludes native Canadians on reservations as well as persons living in the Yukon and North West Territories; thus the OAS benefits of these persons are excluded from SPSM totals. Published figures include payments to persons not residing in Canada as well as retroactive lump-sum payments for late applicants. A further provision not accounted for in this algorithm is the use of years of residence in another country to meet minimum residency requirements. This will not affect the model results if run in years before 1988. The effect is small in any case.

Due to the discrepancy between reported age on the SCF and actual age in 1984 overestimation of aggregate OAS benefits for persons aged 65 and 66 arises. For example 25% of those reporting their age as 65 in March of 1985, and thus receiving full OAS

Benefits in SPSM, would actually have been born between January and March 1985 (assuming births are distributed approximately evenly by month). As such they would have actually received no OAS. Furthermore, the other 75% of the 65 year olds and 17% of 66 year olds would have actually received OAS for only part of 1984. Currently, the SPSM makes no stochastic adjustments for such cases.

Relation to Other SPSM Routines

OAS depends on the input parameters for basic OAS benefits and years since immigration. The calculation of OAS and other modeled variables occurs prior to and affects the calculation of net income and related GIS and GIS 'top-up' programs. The modeled benefits are reported in net income, elderly income, disposable income, transfer income, total income, consumable income. The oas function is called before txinet (calculation of individual net income) by drv.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT PARAMETERS:

| | |
|------------|-----------------------|
| BOAS | Basic OAS |
| OASFLAG | Old age security flag |
| TARGETYEAR | Year of analysis |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| hdageeld | Age of eldest in household |
| hdseqhh | Household sequence number |
| hhnin | Number of individuals in household |
| idage | Age |
| idimmi | Years since immigration |

OUTPUT VARIABLES:

| | |
|----------|----------------------------|
| imioas | OAS benefits |
| imninc | No income flag |
| imoaspar | Partial OAS residency flag |
| imoasres | Partial OAS fraction |

| | |
|-----------------|----------------------------|
| pmaddent | Define and add a parameter |
|-----------------|----------------------------|

SUMMARY

The pmaddent function is used to define a new parameter to the SPSM parameter manipulation facilities. Please see the [Programmer's Guide](#) for more information.

randrnd Randomly round a floating point number to an integer

SUMMARY

The `randrnd()` function can be used to round fractional quantities to integer values in such a way that the sum of the values will remain (virtually) unchanged. Conventional rounding techniques do not have this property. For example, say that we have a set of 1000 numbers, each of which has the value 0.1. The sum of this set of numbers is 100.0. If we round each member of this set to the nearest integer, the sum of values would become 0.0. If we rounded randomly up or down, the sum would be 500. Neither of these rounding processes preserve the original sum. What we wish to do is to round 100 of the values up to 1.0 and 900 of the numbers down to 0.0. The `randrnd()` function simplifies this process.

The first argument to `randrnd()` is the value which is to be integerized, while the second is a uniformly distributed random number between 0.0 and 1.0 used to perform the rounding. The second argument is normally one of the built-in random number streams created by the SPSM Random Number Facility (see the [Users' Guide](#) for more details on this facility). The result of `randrnd()` is an unbiased, randomly rounded integerized value. In the following example, the variable `intval` has the value 2.0 for 30% of the time and 3.0 for 70% of the time.

```
intval = randrnd(2.7, idrand0);
```

The `randrnd()` function can be used to simplify operations such as the production of alternate weight files. For a specific example, see the description of the `bldwgt.exe` utility found in the *SPSM Tools Users Manual*.

The `vardef` function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.

round Round to nearest integer

SUMMARY

```
NUMBER round(arg);
```

```
NUMBER arg;
```

The `round` function converts its argument to the nearest whole number.

SUMMARY

Social assistance payments are not currently calculated by the SPSM. Data requirements are too great for a detailed micro-simulation. For example, the database contains no information on the holding or recent sale of liquid or fixed assets. This function is currently used to create a variable for social assistance by manipulating social assistance payments reported by the elderly (idisa) and GIS supplementation programs and other forms of social assistance (imigist). In addition, the splitting of Social Assistance payments between the federal and provincial governments is performed here. It is also intended as a function in which algorithms for social assistance or other guarantees can be developed by glass box users.

Program Description

There are a number of federal, provincial and municipal programs which provide some form of social assistance payments to various target groups. The SPSM simulates six GIS supplementation programs (see the description of the gist function) which are classified with the other social assistance programs by the SCF. In fact the SCF records benefits received from over 30 provincial and municipal social assistance programs under one title of which six are simulated by the SPSM. This algorithm is designed to ensure no double counting of provincial GIS supplement program benefits occurs between simulated social assistance (imisa) and the provincial GIS supplement programs (imigist).

SPSM Implementation

If the function is deactivated with SAFLAG, no social assistance benefits are reported for any individual. If the function is turned on the database values of reported Social Assistance payments is used as the reported value of social assistance for all persons under the age of 65. For persons aged 65 and over there are three possible means of calculating social assistance which are controlled by the SAELDOPT parameter. These options are as follows.

- Social assistance is set to zero for all persons aged 65 and over.
- For individuals over age 64 who received simulated Provincial GIS supplementation benefits Social Assistance benefits are set to zero. If no Provincial GIS supplement is assigned to an individual over age 64, the simulated social assistance reported by the SPSM is the same as the reported value on the database.
- For all individuals over the age of 64 the value of simulated social assistance is set to the positive difference between reported and simulated social assistance.

In addition to performing the calculations for Social Assistance, samod computes the splitting of payments between the Federal and Provincial governments. This splitting corresponds to the federal/provincial cost sharing agreements in the Canada Assistance Plan.

The payment splitting is controlled by the parameter SAFS which is the federal proportional share of SA benefits. This parameter is available to be changed in black box mode and will determine the value of the variable imfsa which represents the value of the federal share. The provincial share of SA benefits is calculated as the difference between total SA benefits and the calculated federal amount and is represented by the variable impsa.

Relation to Other SPSM Routines

The samod function is called by drv after the calculation of provincial GIS supplements in gist.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|--|
| SAELDOPT | SA for elderly calculation method [1=~SA,2=GIST->~SA,3=diff] |
| SAFLAG | Social assistance flag |
| SAFS | Federal share of social assistance [prov] |
| SAPFLAG | Social assistance predicted value flag |
| SATARGET | Social assistance target for predicted SA |
| SFAOUT | Proportion of social assistance to eliminate |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hhncf | Number of census families in household |
| idage | Age |
| idisa | Social assistance income |
| idsapred | Predicted amount of SA received |
| idsarank | Predicted ranked likelihood of getting SA |
| imigist | GIS provincial top-up |

OUTPUT VARIABLES:

| | |
|--------|--|
| imfsa | Federal social assistance |
| imisa | Social assistance (or replacement program) |
| imninc | No income flag |
| impsa | Provincial social assistance |

SUMMARY

The strn function is used by the SPSM to print prompts and error messages in a language-independent way. The argument to the function identifies which string is to be retrieved. strn retrieves the string from a language-specific database of strings into an internally-maintained buffer and returns a pointer to the retrieved string. This function is not intended to be used by the SPSM user, and is documented here for reference purposes only.

taxbk1

One level tax-back function

SUMMARY

```
NUMBER taxbk1(inc, exmpt, lvl1, rr1);

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back      */
NUMBER *lvl1;        /* level of benefit                       */
NUMBER rr1;          /* reduction rate for tax-back           */
```

The taxbk1 function is used to reduce a benefit at a fixed rate based on income in excess of a specified exemption level. If the benefit (*lvl1) is reduced to zero, taxbk1 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the income in excess of the break-even income for the benefit.

taxbk2

Two level tax-back function

SUMMARY

```
NUMBER taxbk2(inc, exmpt, lvl1, rr1, lvl2, rr2)

NUMBER inc;          /* income subject to tax back          */
NUMBER exmpt;        /* exemption on income for tax back     */
NUMBER *lvl1;        /* level (#1) of benefit                */
NUMBER rr1;          /* reduction rate (#1) for tax-back     */
NUMBER *lvl2;        /* level (#2) of benefit                */
NUMBER rr2;          /* reduction rate (#2) for tax-back     */
```

The taxbk2 function is used to reduce a two-tiered benefit at a fixed rates based on income in excess of a specified exemption level. The first tier benefit (*lvl1) is first reduced at rate rr1 based on income (inc) in excess of the specified threshold (exmpt). If the first tier benefit is reduced to zero, the second tier of benefit (*lvl2) is reduced at rate rr2 based on remaining income. If the second tier benefit (*lvl2) is reduced to zero, taxbk2 returns the amount of income 'unused' in the reduction process. In other words, the return value represents the

income in excess of the break-even income for the benefit.

SUMMARY

Program Description

Calculation of the Alberta taxes.

When ATXFLG is off, Basic Alberta Tax (imbpt) is a proportion (APTF) of Basic Federal Tax (imbft). A tax reduction is calculated as a basic amount (ATRBC) minus a proportion (ATRF) of Basic Alberta Tax (imbpt). Alberta Tax Payable (imtxp) is calculated as Basic Alberta Tax (imbpt) minus the tax reductions.

The 2000 budget stated that Alberta would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (ATXFLG), a provincial tax table (APTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (APNTRC) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (ABXM) |
| impatxc | Age amount tax credit | (AAXM, AAXRR, AAXTD, AAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (AMXM, AMXMT, AEMXM, AEMXMT) |
| impcgtc | Caregiver tax credit | (ACGTC, ACGTCFLG, ACGTCTC, ACGTCTD, ACGTCTK) |
| impchrtc | Charitable donations | (ACHATL1, ACHATR1, ACHATR2) |
| impcppte | CPP/QPP contribution | |
| impdistc | Disability tax credit | (AMAXDX) |
| impdtxc | Dividend tax credit | (ADTCR) |
| impedtxc | Education tax credit | (AEDXPM, AMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (AYPNDL) |
| imptutxc | Tuition Tax credit | (AMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using AAMTOPT.

Calculation of the Alberta Family Employment Tax Credit.

When the parameter AFETCFLAG is set to 1, the value of imiafetc variable is calculated as a percentage (AFETCBR) of nuclear family employment income above a threshold (AFETCCI) to a maximum dollar level which is calculated as AFETCBPC times the number of eligible children (nfnkids) up to a maximum number of children of AFETCNC. The maximum benefit is reduced by a percentage (AFETCRR) of nuclear family net income in excess of the threshold AFETCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AAMTOPT | Alta alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| AAMTPCTF | Alta amt rate as pct of additional fed tax due to minimum tax |
| AAMTPCTM | Alta amt rate as pct of federal minimum tax amount |
| AAMTTX | Alta amt rate as tax on adjusted income |
| AAXM | Alta Age Amount |
| AAXPI | Alta Age Amount phase in rate for 1994 and beyond |
| AAXRR | Alta Age Amount credit reduction rate |
| AAXTD | Alta Age Amount net income turndown |
| ABXM | Alta Basic Personal Exemption/amount |
| ACGTC | Alta Caregiver Tax Credit |
| ACGTCFLG | Alta Caregiver Tax Credit activation flag |
| ACGTCTC | Alta Caregiver tax credit take-up rate by age of elderly [age,rate] |
| ACGTCTD | Alta Caregiver Tax Credit Turn Down Income |
| ACGTCTK | Alta Caregiver tax credit take-up rate by income level [employment income,rate] |
| ACHATL1 | Alta Charitable Donations amount level 1 |
| ACHATR1 | Alta Charitable Donations tax credit rate 1 |
| ACHATR2 | Alta Charitable Donations tax credit rate 2 |
| ADTCR | Alta dividend tax credit rate |
| AEDXPM | Alta Education Amount per month |
| AEMXM | Alta equivalent to married amount |
| AEMXMT | Alta equivalent to married turndown level |
| AFETCBPC | Alberta Family Employment Tax Credit Benefit Per Child |
| AFETCBR | Alberta Family Employment Tax Credit Benefit Rate |
| AFETCCI | Alberta Family Employment Tax Credit Benefit Cut-in Level |
| AFETCFLG | Alberta Family Employment Tax Credit Activation Flag |
| AFETCNC | Alberta Family Employment Tax Credit Maximum Number of Children |
| AFETCRR | Alberta Family Employment Tax Credit Reduction Rate |
| AFETCTD | Alberta Family Employment Tax Credit Turndown Level |
| AFTAX | Alberta flat surtax rate on taxable income |
| AHEATFLG | Alberta Energy Tax Refund activation flag |
| AHEATREB | Alberta Energy Tax Refund amount |

| | |
|---------|--|
| AMAXDX | Alta Maximum Disability deduction/amount |
| AMAXET | Alta maximum on transfer of education and tuition amount |
| AMXM | Alta married amount |
| AMXMT | Alta married amount turndown level |
| APNTCR | Alta provincial non-refundable tax credit rate |
| APTC | Alberta political contribution table [total donations, donation allowed] |
| APTCBEN | Maximum Alberta political tax credit allowed |
| APTF | Alberta provincial tax fraction |
| APTX | Alta tax table [taxable income, basic provincial tax] |
| ASCI | Alberta surtax cut-in |
| ASF | Alberta surtax fraction |
| ATRBC | Alberta tax reduction basic claim |
| ATRF | Alberta tax reduction fraction |
| ATXFLG | Alta tax on taxable income activation flag |
| AYPNDL | Alta Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |

| | |
|-----------|--|
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| imiafetc | Alberta Family Employment Tax Credit Benefits |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrct | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txbc Compute provincial taxes for British Columbia

SUMMARY

When CTXFLG is turned off, the Basic British Columbia Tax (imbpt) is a proportion (CPTF)

of Basic Federal Tax (imbft). British Columbia Tax Payable (imtxp) is the Basic Tax plus the BC Surtax plus the BC Health Care Maintenance Surtax.

The BC Surtax is a proportion (CSF) of Basic BC Tax (imbpt) exceeding the surtax level (CSCI).

The 2000 budget announced that British Columbia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (CTXFLG), a provincial tax table (CPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (CPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (CBXM) |
| impatxc | Age amount tax credit | (CAXM, CAXRR, CAXTD, CAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (CMXM, CMXMT, CEMXM, CEMXMT) |
| impcgtc | Caregiver tax credit | (CCGTC, CCGTCFLG, CCGTCTC, CCGTCTD, CCGTCTK) |
| impchrctc | Charitable donations | (CCHATL1, CCHATR1, CCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (CMAXDX) |
| impdtxc | Dividend tax credit | (CDTCR) |
| impedtxc | Education tax credit | (CEDXPM, CMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (CYPNDL) |
| imptutxc | Tuition Tax credit | (CMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using CAMTOPT.

The British Columbia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The BC provincial credit is modelled as CLVCRT times the gross amount up to CLVCMAX. The credit cannot be more than provincial taxes (imtxp).

B.C. Family Bonus

Total benefits received under the British Columbia Family Bonus program commencing in July 1996.

When the parameter BCFBFLAG is set to one the value of this variable is calculated as BCFBBAS times the number of children in the nuclear family (nfnkids) reduced by a proportion of head plus spouse net income (iminet + imisa) above the turndown of BCFBTD. This proportion for families with one child is BCFBRRS and for multiple child families is BCFBRR. The value calculated in this manner is multiplied times the parameter BCFBPI.

B.C. Family Bonus benefits (imibcfb) are assigned to the mother if present, or if not to the head of the nuclear family.

The calculation of the B.C. Family Bonus was changed to include the level of the National Child Supplement beginning in 1998. The flag BCFBIFS was added to turn on or off the inclusion of the National Child Supplement in the calculation of the B.C. Family Bonus.

The British Columbia Earned Income Benefit which was also introduced in 1998, was added to the code. When BCEIBFLG is assigned a value of 1, the calculation of the British Columbia Earned Income Benefit is activated, depending on the presence of children in the family. For families with lower incomes, the benefit starts to be phased in at BCEIBPI, and reaches its maximum at incomes of BCBEMX. The slope of the phase in is therefore calculated as the maximum working income supplement a family can receive divided by (BCBEMX – BCEIBPI).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BCBEIS1 | B.C. Earned Income Benefit for first child |
| BCBEIS2 | B.C. Earned Income Benefit for second child |
| BCBEIS3 | B.C. Earned Income Benefit for each additional child |
| BCBEITD | B.C. Earned Income Benefit Turndown |
| BCBEMX | B.C. Earned Income Benefit Income Reduction |
| BCBERR1 | B.C. EIB reduction rate for families with 1 child |
| BCBERR2 | B.C. EIB reduction rate for families with 2 children |
| BCBERR3 | B.C. EIB reduction rate for families with 3+ children |
| BCEIBFLG | Activate B.C. Earned Income Benefit Program |
| BCEIBPI | B.C. Earned Income Benefit Income Phase In |
| BCFBBAS | B.C. Family Bonus amount per child |
| BCFBFLAG | Activate B.C. Family Bonus Program |
| BCFBIFS | Activate B.C. Family Bonus to include Federal NCS |
| BCFBNCS1 | B.C. Family Bonus National Child Supplement for first child |
| BCFBNCS2 | B.C. Family Bonus National Child Supplement for second child |
| BCFBNCS3 | B.C. Family Bonus National Child Supplement for each additional child |

| | |
|-------------------------------------|---|
| BCFBNCSSRR1 child | B.C. Family Bonus NCS reduction rate for families with 1 child |
| BCFBNCSSRR2 children | B.C. Family Bonus NCS reduction rate for families with 2 children |
| BCFBNCSSRR3 children | B.C. Family Bonus NCS reduction rate for families with 3+ children |
| BCFBNCSTD | B.C. Family Bonus National Child Supplement Turndown |
| BCFBPI | B.C. Family Bonus phase-in |
| BCFBRR | B.C. Family Bonus multiple child reduction rate |
| BCFBRRS | B.C. Family Bonus single child reduction rate |
| BCFBTD | B.C. Family Bonus Turndown |
| CAMTOPT adj inc, 4=% min amt) | B.C. alternative minimum tax option (1=none, 2=% fed, 3=fed) |
| CAMTPCTF tax | B.C. amt rate as pct of additional fed tax due to minimum tax |
| CAMTPCTM | B.C. amt rate as pct of federal minimum tax amount |
| CAMTTX | B.C. amt rate as tax on adjusted income |
| CAXM | B.C. Age Amount |
| CAXPI | B.C. Age Amount phase in rate for 1994 and beyond |
| CAXRR | B.C. Age Amount credit reduction rate |
| CAXTD | B.C. Age Amount net income turndown |
| CBXM | B.C. Basic Personal Exemption/amount |
| CCGTC | B.C. Caregiver Tax Credit |
| CCGTCFLG | B.C. Caregiver Tax Credit activation flag |
| CCGTCTC [age,rate] | B.C. Caregiver tax credit take-up rate by age of elderly |
| CCGTCTD | B.C. Caregiver Tax Credit Turn Down Income |
| CCGTCTK [employment income,rate] | B.C. Caregiver tax credit take-up rate by income level |
| CCHATL1 | B.C. Charitable Donations amount level 1 |
| CCHATR1 | B.C. Charitable Donations tax credit rate 1 |
| CCHATR2 | B.C. Charitable Donations tax credit rate 2 |
| CDTCR | B.C. dividend tax credit rate |
| CEDXPM | B.C. Education Amount per month |
| CEMXM | B.C. equivalent to married amount |
| CEMXMT | B.C. equivalent to married turndown level |
| CHEATFAM | British Columbia Refundable Energy Credit for families |
| CHEATFLG | British Columbia Refundable Energy Credit activation flag |
| CHEATSNG | British Columbia Refundable Energy Credit for singles |
| CLVCMAX | Maximum B.C. labour-sponsored funds tax credit allowed |
| CLVCRT credit | Percent of B.C. labour-sponsored funds cost allowed as credit |
| CMAXDX | B.C. Maximum Disability deduction/amount |
| CMAXET | B.C. maximum on transfer of education and tuition amount |
| CMXM | B.C. married amount |
| CMXMT | B.C. married amount turndown level |
| CPNTRC | B.C. provincial non-refundable tax credit rate |
| CPTCBEN | Maximum B.C. political tax credit allowed |
| CPTCT allowed] | B.C. political contribution table [total donations, donation allowed] |
| CPTF | British Columbia provincial tax fraction |
| CPTX | B.C. tax table [taxable income,basic provincial tax] |
| CRFLAG | British Columbia rental reduction flag |
| CRTRB | British Columbia renter tax reduction basic credit |
| CRTRD dependants | British Columbia renter tax reduction credit for other dependants |

| | |
|----------|---|
| CRTRP | British Columbia renter tax reduction proportion of rent allowed |
| CRTRPN | British Columbia renter tax reduction proportion of net income |
| CRTRS | British Columbia renter tax reduction credit for spouse |
| CRTRT | B.C. renter tax reduction base amount turndown [dependants, amount] |
| CSCI | British Columbia surtax first cut-in level |
| CSCI2 | British Columbia surtax second cut-in level |
| CSDC | British Columbia provincial surtax dependant credit |
| CSF | British Columbia surtax first level rate |
| CSF2 | British Columbia surtax second level rate |
| CSTC | British Columbia stc amount |
| CSTCFLAG | British Columbia sales tax credit flag |
| CSTCR | British Columbia stc reduction rate |
| CSTHINC | British Columbia family head income threshold (stc) |
| CSTKINC | British Columbia kid income threshold top-up (stc) |
| CSTSINC | British Columbia spousal income threshold top-up (stc) |
| CTCINC | CTC family income scaling factor |
| CTXFLG | B.C. tax on taxable income activation flag |
| CYPNDL | B.C. Pension Income Deduction Amount |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |

| | |
|----------|---|
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchclm | Number of dependent children claimed |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imibceib | B.C. Earned Income Benefit |
| imibcfb | B.C. Family Bonus |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |

| | |
|----------|--|
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txcalc Calculate federal income tax

SUMMARY

This function incorporates algorithms for the following tax measures to complete the calculation of federal taxes payable:

- Federal Dividend Tax Credit
- Federal Labour Sponsored Venture Capital Tax credit
- Basic Federal Tax (including tax credits transfers from dependants or spouse)
- Federal Tax Reduction (including transfer to spouse)
- Federal Surtax
- Federal Taxes Payable
- Alternate Minimum Tax
- Quebec Tax Abatement
- Federal refundable medical expense supplement
- Caregiver Tax Credit

Federal Dividend Tax Credit

If the filer declared dividends from taxable Canadian corporations, he or she is eligible to claim the Dividend Tax Credit which amounts to a fixed proportion of taxable dividends. This credit is non-refundable, i.e., it may be used to reduce Basic Federal Tax, but an unused portion is not refunded.

SPSM Implementation

The Federal Dividend Tax Credit (imfdtxc) is calculated as a proportion (FDTCR) of Net Taxable Dividends (imidivt). The amount is added to Total Non-transferable Tax Credits (imtaxcr) which is applied to reduce Basic Federal Tax (imbft).

Federal Dividend Tax Credit

The Labour-sponsored venture capital funds tax credit is modeled from the imputed gross amount purchased (idlbtxg). The credit (imlbtxc) is equal to FLVCRT times the gross

amount (idlabt_{xg}) up to a maximum (FLVCMAX). The rate is provincially based.

Basic Federal Tax

Basic Federal Tax is defined as Federal Tax Payable on Taxable Income minus certain tax credits.

SPSM Implementation

Basic Federal Tax (imbft) is calculated the same way whether or not the tax credits proposed by the White Paper are applied. First, Federal Tax Payable on Taxable Income (imfedtax) is calculated using the interpolating lookup function lkup1 to determine taxes payable on Taxable Income (imitax) from the table FTX.

Dependants are treated separately from the head and spouse since the rules applying to the transfer of deductions from dependant to parent differ from those applying to the transfer of deductions from the spouse.

Transfers from Dependant to Parent

In calculating the dependant's Basic Federal Tax, the following nontransferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Age Tax Credit (imatxc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Federal Dividend Tax Credit (imfdtxc)
- Medical Expense Tax Credit (immedatc)
- Pension Income Tax Credit (impentxc)
- UI Contributions Tax Credit (imuictc)

A dependant may transfer an unused portion of certain tax credits to a supporting parent. Since a limit may be imposed on the amount of the combined Education Tax Credit and Tuition Tax Credit, these are treated separately from the Disability Tax Credit.

If a dependant requires all transferable tax credits to further reduce Basic Federal Tax, i.e., Basic Federal Tax (imbft) exceeds Total Transferable Tax Credits, then the tax credits are subtracted from imbft and no transfer occurs.

If the dependant's Total Transferable Tax Credits (txcrt) exceeds Basic Federal Tax, imbft is reduced to zero and the amount potentially transferable to a supporting parent is calculated as the amount of Disability Tax Credit (imdisatc) not required to reduce Basic Federal Tax plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imttxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

The total amount of tax credits transferable from all dependants is accumulated in the variable ctxcrt which is subsequently used to reduce Basic Federal Tax for the parent with the higher Net Income (iminet).

These algorithms do not allow the partitioning of the dependant's tax credits between both supporting parents and, therefore, in some cases, the total taxes paid by the family may not be minimized.

Transfers From Spouse

In calculating the Basic Federal Tax of the head and spouse, the following non-transferable credits are subtracted from imbft:

- Basic Personal Tax Credit (imbtc)
- Charitable Donations Tax Credit (imchartc)
- CPP/QPP Contributions Tax Credit (imcppctc)
- Tax Credit for Dependant Children (imctxcs)
- Federal Dividend Tax Credit (imfdtxc)
- Married Tax Credit (immartxc)
- Medical Expense Tax Credit (immedatc)
- UI Contributions Tax Credit (imuictc)

An unused portion of certain transferable tax credits may be transferred from the spouse. The transferable tax credits are:

- Age Tax Credit (imatxc)
- Disability Tax Credit (imdisatc)
- Pension Income Tax Credit (impentxc)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)

Since a limit may be imposed on the amount of the combined Education and Tuition Tax Credits, these are treated separately from the others.

If the filer requires all Transferable Tax Credits (txcrt) to reduce Basic Federal Tax (i.e., imbft exceeds txcrt) then the tax credits are subtracted from Basic Federal Tax and no transfer occurs.

If the filer's Transferable Tax Credits (txcrt) exceed Basic Federal Tax, then imbft is reduced to zero and the remainder of the Potentially Transferable Tax Credits (ttxcrt) is calculated as the sum of:

- Disability Tax Credit (imdisatc)
- Age Tax Credit (imatxc)
- Pension Income Tax Credit (impentxc)

which is not required to reduce Basic Federal Tax to zero plus the lesser of:

- a) the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
- b) the maximum transferable of the combined Education and Tuition amount (MAXET)

The actual amount transferred (imtxcrt) is calculated by reducing the amount potentially transferred (ttxcrt) by a proportion (FNTCR) of Net Income (iminet) exceeding the Tax Credit Transfer Reduction Level (BXM).

Although this value is calculated for both head and spouse, the one with the higher Net Income (iminet) actually receives the transfer. The amount transferred from the spouse is stored in the variable imstxcrt. The amount transferred from all dependants is stored in imctxcrt.

Federal Surtax

In 1985 a Federal Surtax was introduced as an additional tax based on Basic Federal Tax payable.

SPSM Implementation

The model allows for two surtax levels and two surtax rates. The total Federal Surtax (imfsur) is calculated as:

- a proportion (FSURR1) of Basic Federal Tax exceeding Surtax Level 1 (FSURL1), plus
- a proportion (FSURR2) of Basic Federal Tax exceeding Surtax Level 2 (FSURL2), minus
- the amount of the additional Federal Foreign Tax Credit from 1986 forward (represented by variable (idfdsft)).

The result is then added to Federal Taxes (imftax) (minus certain federal tax credits) to derive Federal Taxes Payable (imtxf).

Federal Surtax Reduction

The Federal Surtax reduction (imfsurtr) announced in the 1998 federal budget is calculated. The maximum value that the reduction may reach is FSURTRMX. The reduction is reduced by a proportion (FSURTRRR) of basic federal tax (imbft) which exceeds a certain level (FSURTRRL). This reduction is then subtracted from the federal surtax (imfsur).

Federal Taxes Payable

Federal Taxes Payable (imtxf) is defined as Federal Tax (imftax) plus the Federal Surtax (see above) minus the following tax credits:

- Federal Other Tax Credits
- Federal Political Contribution Tax Credit (imfptc), and

Alternate Minimum Tax

In 1986, a minimum tax on individuals was introduced with the intention of increasing the tax liability of those high income individuals who use the tax incentives provided by the current law to structure their affairs so as to pay little or no tax.

The Alternative Minimum Tax requires the calculation of an adjusted taxable income disallowing certain deductions, a list of which follows, which are added back to taxable income.

- Pension Income Deduction
- Interest and Dividend Income Deduction
- Disability Deduction Transferred from Dependant
- Education Deduction Transferred from Dependant
- Deductions Transferred from Spouse
- Employee Home Relocation Loan Deduction
- Stock Option and Shares Deduction
- Contribution to Deferred Income Plans (RPP and RRSP contributions)
- non-taxable portion of capital gains
- capital cost allowance on MURBS and Canadian Films

The grossed-up portion of taxable dividends and Allowable Business Investment Loss are subtracted from taxable income.

The minimum tax is then calculated as a proportion of this adjusted taxable income exceeding the exemption level.

SPSM Implementation

If the Minimum Tax Rate (AMTTX) is not set to zero, the minimum tax algorithms are executed.

The first step recalculates an adjusted taxable income for minimum tax purposes (imamtinc) by adding the following items to imitax:

- RPP Contributions (idrpp) when AMTRPFLG is set to 1
- RRSP Contributions (idrrsp) when AMTRPFLG is set to 1
- Other Deductions from Total Income (idothded, representing Capital Cost Allowances)
- the non-taxable portion of Capital Gains (idicapg * (AMTINCRT - CAPGIR))
- exploration and development expenses (idexplor)
- employee home relocation loan deduction (idemplo)
- stock option and shares deduction when AMTSTK is set to 1
- limited partnership losses (idpartlo)
- allowable other years non-capital losses (idnclos)

The taxable portion of dividends (imidivt) times AMTDIV, net non-deductible capital losses, the allowable portion of business investment losses (imiloss) times the applicable rates defined as $((AMTINCRT - CAPGIR)/CAPGIR)$ and the basic exemption (AMTEX) are subtracted from this value.

The Basic Minimum Tax (ambft) is calculated as a proportion (AMTTX) of Adjusted Taxable Income (imamtinc).

The second step in this process adjusts the Basic Minimum Tax (ambft) to account for allowable tax credits. This requires subtracting the following tax credits from Basic Minimum Tax:

- Basic Tax Credit (imbtc)
- Spouse or Equivalent Tax Credit (immartxc)
- Age Tax Credit (imatxc)
- Tax Credit for Dependant Children (imctxcs)
- Education Tax Credit (imedtxc)
- Tuition Tax Credit (imtutxc)
- Medical Expense Tax Credit (immedatc)
- Charitable Donations Tax Credit (imchartc)
- Disability Tax Credit (imdisatc) for self
- Other Dependent Tax Credit (imothpe)
- CPP/QPP Contribution Tax Credit (imcppctc)
- UI Contribution Tax Credit (imuictc)
- Basic Personal Amount Supplement (imbts)
- Caregiver Tax Credit (imcgtc)

If the value of the Basic Minimum Tax (ambft) exceeds Basic Federal Tax (imbft), Federal Tax Payable (imtxf) is recalculated as Basic Minimum Tax (ambft) plus any federal surtaxes on ambft. The federal surtax is calculated in the same manner as on Basic Federal Tax, previously described.

The database does not contain sufficient detail to accurately represent some of the deductions specified in the regulations concerning the calculation of the Minimum Tax. The Disability Deduction and Education Deduction transferred from dependants are not differentiable from those deductions claimed on behalf of the filer. The variable idothded (Other Deduction's from Total Income) includes Capital Cost Allowances on MURBS and Canadian Films but it also contains amounts for moving expenses and alimony payments. It is difficult to estimate the impact of these inaccuracies except to say that they are likely small compared to the large amounts of income and other deductions for the high income persons for whom the Minimum Tax is intended.

Quebec Tax Abatement

The Quebec Tax Abatement is a refundable credit on federal taxes provided to Quebec residents in lieu of direct cost-sharing by the federal government under the federal-provincial fiscal arrangements. It reduces the federal income tax payable by Quebec residents and may provide a refund. The abatement amounts to 16.5% of Basic Federal Tax.

SPSM Implementation

If the filer resides in Quebec, the full Quebec Tax Abatement (qta) is calculated as a proportion (QTAP) of Basic Federal Tax (imbft). This is divided into two portions for

accounting purposes:

- imqtaa is the Quebec Tax Abatement Applied to reduce federal taxes
- imqtar is the Quebec Tax Abatement Refunded

If the Quebec Tax abatement exceeds the Federal Tax payable then a refund is made for the balance of the abatement (imqtar) and the amount of Federal tax payable is reduced by the amount of the abatement. Users may wish to note that this abatement refund was an interesting side effect of the Federal Tax reduction in effect prior to 1986 (see notes in this section).

Federal Refundable Medical Expense Supplement

SPSM Implementation

The refundable medical expense supplement (immedref) was added to imfortc. The program is only available to persons aged 18 and over who have earnings over MEDREMIN and who had allowable medical expenses (immeda). The maximum supplement is calculated as the minimum of MEDRRATE times the allowable medical expenses and MEDRMAX. The benefit is reduced by MEDRRR times the family income over the turndown which is the sum of the basic exemption (BXM), the married exemption (MXM) and the maximum disability amount (MAXDX).

Caregiver Tax Credit

The calculation of the Caregiver Tax Credit (imcgtc) is activated by the flag CGTCFLG. The credit reduces federal taxes and started in 1998. The base level of the credit is CGTC. A take-up rate CGTCTC based on age of the potential parent assigns individuals with idefrh =3 as a parent according to SCF 1994 data. Users have access to a take-up rate CGTCTK based on employment income to select the appropriate number of beneficiaries.

The benefit, imcgtc, is reduced for each dollar of net income, iminet, in excess of CGTCTD.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AMTDIV | Alternative minimum tax: percentage of taxable dividends |
| AMTEX | Alternate minimum tax: exemption level |
| AMTFORTX | Alternative minimum tax: Foreign Income Tax Rate |
| AMTINCRT | Alternative minimum tax: Inclusion Rate |
| AMTNEGTI | Alternative minimum tax: Allow Negative Taxable Income Flag |
| AMTPRVDF | Alternative minimum tax: prov. tax difference |
| definition[prov] | |
| AMTRPFLG | RRSP/RPP included in Alternate minimum tax (1=included) |
| AMTSTK | Alternative minimum tax: Stock Option Proportion |

| | |
|------------|---|
| AMTTX | Alternate minimum tax rate |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CGTC | Caregiver Tax Credit |
| CGTCFLG | Caregiver Tax Credit activation flag |
| CGTCTC | Caregiver tax credit take-up rate by age of elderly [age,rate] |
| CGTCTD | Caregiver Tax Credit Turn Down Income |
| CGTCTK | Caregiver tax credit take-up rate by income level [employment income,rate] |
| FDTCR | Federal dividend tax credit rate |
| FLVCMAX | Maximum labour-sponsored funds tax credit allowed |
| FLVCRT | Percent of labour-sponsored funds cost allowed as credit [prov] |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| FPTC | Federal political contribution table [total donations,donation allowed] |
| FPTCBEN | Maximum federal political tax credit allowed |
| FSURL1 | Federal surtax level 1 |
| FSURL2 | Federal surtax level 2 |
| FSURR1 | Federal surtax rate 1 |
| FSURR2 | Federal surtax rate 2 |
| FSURTRMX | Maximum federal surtax reduction |
| FSURTRRL | Federal surtax reduction reduction level |
| FSURTRRR | Federal surtax reduction reduction rate |
| FTX | Federal tax table [taxable income,basic federal tax] |
| GSTREBFLAG | Database variable(gstreb) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MAXET | Maximum on transfer of education and tuition amount |
| MEDREMIN | Minimum earnings for refundable medical expense supplement |
| MEDRMX | Maximum expenses allowed for medical expense supplement |
| MEDRRATE | Proportion of expenses allowed for medical expense supplement |
| MEDRRR | Reduction rate for the medical expense supplement |
| MXM | Married exemption/amount |
| QTAP | Quebec tax abatement proportion of basic federal tax |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcfrh | Relationship to census family head |
| idcloss | Allowable other years capital loss (253) |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |

| | |
|----------|--|
| idefrh | Relationship to economic family head |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idfdsft | Foreign tax credit applied to surtax (511) |
| idforavg | Forward averaging amount withdrawal (237) |
| idforinc | Net foreign income (508) |
| idfortx | Foreign tax paid (507) |
| idgstreb | GST rebate (457) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditc | Federal investment tax credits (412) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnclos | Allowable other years non-capital loss (252) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idpolcon | Federal political contributions (409) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imbtcs | Basic personal tax credit supplement |
| imcagex | Modelled capital gains deduction (254) |
| imchartc | Charitable donations tax credit |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imctxcs | Dependent children tax credits |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |
| imtutxc | Tuition tax credit |
| imuic | UIC contributions |
| imuictc | UIC contributions tax credit |

OUTPUT VARIABLES:

| | |
|----------|---|
| imamtdf | Difference due to minimum tax |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |

| | |
|----------|---|
| imatxcrt | Total tax credits applied |
| imbft | Basic federal tax |
| imcgtc | Caregiver Tax Credit Level |
| imcgtcp | Dependant caregiver tax credit amount |
| imctxcrt | Tax credits transferred from children |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imfdtxc | Federal dividend tax credit |
| imfedtax | Federal tax before tax credits |
| imfortc | Federal other refundable tax credits |
| imfortxc | Federal foreign tax credit (509) |
| imfptc | Federal Political Contribution Tax Credit |
| imfsur | Federal surtax |
| imfsurtr | Federal surtax reduction |
| imlabtxc | Federal labour-sponsored funds tax credit |
| immedref | Refundable medical expense supplement (452) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imoftca | Other federal tax credits applied (416) |
| imqtaa | Quebec tax abatement (applied) |
| imqtar | Quebec tax abatement (refundable) |
| imstxcrt | Tax credits transferred from spouse |
| imtaxcr | Total tax credits |
| imttxcrt | Total tax credits transferred |
| imtxf | Federal income tax payable |

txccea Compute child care expense allowance

SUMMARY

The txccea function calculates the value of the child care expense deduction.

Description of tax measure

Child care expenses are amounts paid for child care services to allow the parent or "supporting person" to:

- a) earn income from employment or self-employment, (this does not include a period of unemployment) or
- b) take an occupational training course for which the person received an adult training allowance, or
- c) carry on research or similar work for which the person received a grant.
- d) go to school full-time

A filer is eligible to claim child care expenses if:

- a) there is no other supporting person
- b) there is a supporting person with a higher net income (excluding child care expenses) than the filer
- c) there is a supporting person with a net income lower than the filer but
 - i. the filer and supporting person were separated for at least 3 months, or

- ii. the supporting person was in full-time attendance at a designated educational institution, or
- iii. the supporting person was infirm or in prison for at least 2 weeks.

A combination of limitations is applied to the amount claimable:

1. Two-thirds of earned income, and
2. a fixed amount per eligible child up to a fixed maximum is applied if the net income of the filer is less than that of a supporting person (conditions (a) and (b) above).

Under condition (c) above, i.e., the income of the supporting person is lower than that of the filer, the following additional limitation applies:

3. fixed weekly amount per child up to a maximum, multiplied by the number of weeks of separation, attendance at an educational institution, infirmity or imprisonment.

In 1982, the Child Care Expense Deduction was always taken by the mother of the child if she was present. Since then, the deduction or tax credit is normally allocated to the spouse with the lower net income, exclusive of the child care expense deduction, unless that person is separated, in school, infirm or in prison.

SPSM Implementation

The amount of Child Care Expenses Allowed is derived from income tax records during the database creation process (see the *Database Creation Guide*). This value represents the amount allowed according to the base year regulations. Though this amount may be grown or diminished by a fixed factor (GFC CET), the rules described above cannot be easily altered in the current version of SPSM.

The parameter CCEROPT determines which spouse in a two-parent family claims the Child Care Expense Deduction. If CCEROPT is given a value of 1, the deduction is always taken by the mother. With a value of 2, the deduction is taken by the parent with the lower Net Income (iminet).

The condition for a temporarily absent, lower income spouse (condition c. above) is not checked.

On the database, only one spouse of a two-parent family will have been attributed a value for Child Care Expense Deduction Allowed. The assignment of this value is done before we have complete information about the relative net incomes and may therefore be given to an inappropriate person. The model uses the current value of Net Income (iminet) to re-allocate the deduction if necessary.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| CCEAEMPF | CCEA fraction of employment income (Limit `B') |
| CCEALIM | CCEA overall limit |
| CCEAOAGE | CCEA Maximum eligible age for oldest child |
| CCEAOLD | CCEA old child limit |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| CCEAYNG | CCEA young child limit |
| CCEROPT | Child care expense deduction recipient [1=mother,2=lower income] |
| CCESFLAG | CCE full-time student flag |
| CCESOLD | CCEA old child limit for full-time students |
| CCESYNG | CCEA young child limit for full-time students |
| CCEZOPT | CCE young kid optimization rules [1=use, 2=zero, 3=optimize] |
| INPUT VARIABLES: | |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| ideducm | Eligible months of education allowance |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idsex | Sex |
| imccez | Is CCE zeroed? |
| imisa | Social assistance (or replacement program) |
| OUTPUT VARIABLES: | |
| imcce | Child care expenses allowed |
| imcce | Child care expenses claimed on behalf of child |
| imdedft | Deductions from total income |
| iminet | Net income |
| imninc | No income flag |

SUMMARY

The federal Child Tax Credit and the Child Tax Benefit provide benefits to help low and middle income families meet the costs of raising children under the age of 18. The txctc function calculates benefits from the federal Child Tax Credit (CTC) program based upon the number of children in a family and the net income of the family. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

The level of benefits varies with the number of children.

Program Description

The federal Child Tax Credit provides benefits to help low and middle income families meet the costs of raising children under the age of 18. It was implemented in 1979 and is administered by Revenue Canada, Taxation, through the income tax system.

Any person who receives Family Allowances is eligible to apply for the Child Tax Credit. The credit is available on behalf of a child for whom Family Allowances were paid for in the month of January following a given taxation year. An eligible person who voluntarily refrains from receiving Family Allowances may still claim the Child Tax Credit. The CTC must be applied for by filing an income tax return regardless of the income of the eligible parent or guardian. A foster parent in receipt of Special Allowances is not eligible for the CTC. Canadian residents living outside Canada, but paying Canadian taxes may apply for the credit.

The amount of the CTC is determined by the number of eligible children and the family's income. Family income is defined as the net income (as defined for income tax purposes) of both parents, whether married or not (provided they are living together), or the net income of a single parent. The net income of any other person who is claiming a personal exemption for a dependent child (whether or not the person lives with the claimant of the CTC) must also be included in family income. For families with taxable incomes the refundable credit to which they are entitled reduces the tax which must be paid; families whose taxes are less than the credit, or who pay no taxes at all receive a non-taxable lump sum payment.

The maximum annual credit is payable if net family annual income is less than a specified level of income called a benefit reduction level or turndown. Families with net incomes above this turndown are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum CTC for eligible parent(s) is zero. In 1993, the CTC was replaced by the Child Tax Benefit. This program is comprised of two parts: the basic Child Tax Benefit, and the Earnings supplement (also called the Working income supplement). The basic child tax benefit consists of \$1,020 per child, plus \$75 for the third child and subsequent children. There is an additional \$213

for each child under 7 with no child care expenses. The benefit is reduced at family incomes over \$25,921 at a 5% rate (or 2.5% if only 1 child).

The Working Income Supplement was a maximum of \$500 per family. It started at earnings of \$3,750, reached the maximum at earnings of \$10,000, and was then reduced, reaching \$0 at family incomes of \$25,921.

In 1997, the Working Income Supplement was enriched. Instead of \$500 per family, the benefit was \$605 for the first child, \$405 for the second child, and \$330 for the third and subsequent children. It was phased in at family earnings of \$3,750, reached a maximum at \$10,000, and was phased out starting at family incomes of \$20,921. The reduction rates were 12.1% for families with 1 child, 20.2% for families with 2 children, and 26.8% for families with 3 or more children.

In 1998, the program was renamed the Canada Child Tax Benefit (CCTB). The basic benefit has the same level and structure of the Child Tax Benefit. The Working Income Supplement was replaced by the CCTB National Child Benefit Supplement. It is no longer dependent on earnings, and therefore is not phased in. Otherwise, it follows the same rules as the 1997 Working Income Supplement.

SPSM Implementation

The `txctc` function calculates the federal Child Tax Credit based on the number of children in a family and the net income of the family. Residency requirements are deemed to have been met in all cases. The function always allocates the Child Tax Credit to the mother unless one is not present in the nuclear family. The function only outputs a value for the federal child tax credit and this reflects the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txctc` function operates at the nuclear family level. It first calculates a local variable for the family's net income by adding the eldest member's net income and that of their spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are then obtained by multiplying the number of children in the nuclear family by the maximum benefit per child (`nfkids * CTCPC`). The maximum CTC is then reduced at the specified reduction rate (`CTCRR`) applied to family net income in excess of the CTC turndown (`CTCTD`). This reduction is performed using the `taxbak1` function. Finally the federal Child Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

When the `FCBEIE` flag is turned on, the Working Income Supplement has a different rate according to the number of children in the household, `FCBEIS1`, `FCBEIS2`, `FCBEIS3` and is also reduced at varying rates, `FCBERR1`, `FCBERR2`, `FCBERR3`. The enriched WIS is phased in starting at family incomes `FCBECI` and reaches its maximum at `FCBEMX`. The phase in rate is linear and depends again on the number of children in the family.

There was also a fix for the Quebec child tax benefits. The benefits (`QCBC3`) are now being assigned to the third and each additional child in a family.

Interpretation

Results obtained from the SPSM with respect to Child Tax Credit benefits differ from Revenue Canada administrative data. Overall the SPSM reports 101.9% more 1984 tax year benefits than does Revenue Canada for provincial Canada. However, the number of children for which the credit is paid is 99.6% of Revenue Canada's figures. One would expect the number of children on the SPSD to be low due to the non-coverage of persons residing on reservations and outside Canada. Thus there would seem to be a small deficit on the SPSD in the net income of families with eligible children.

Relation to Other SPSM Routines

The txctc function is called by drv. The function outputs one dollar value variable that is used in memo1 for reporting purposes.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| ACBC1 | Alberta Child benefit per child aged 0 - 6 |
| ACBC2 | Alberta Child benefit per child aged 7 - 11 |
| ACBC3 | Alberta Child benefit per child aged 12- 15 |
| ACBC4 | Alberta Child benefit per child aged 16- 17 |
| CTCERF | CTC child care expense reduction fraction |
| CTCINC | CTC family income scaling factor |
| CTCOPT | Child tax credit option |
| CTCPC | Child tax credit per child |
| CTCREF | CTC post-reform rules flag |
| CTCRR | Child tax credit reduction rate |
| CTCSUP | CTC young child supplement |
| CTCTD | Family income child tax credit turndown |
| CTCTUR | CTC take up rate table [benefit,rate] |
| FCBBAS | Basic child benefit (per child) |
| FCBECE | Child benefits earning supplement cut-in level |
| FCBEIE | Flag for WIS dependent on number of children |
| FCBEIS | Child benefits earned income supplement |
| FCBEIS1 | Enriched WIS for first child |
| FCBEIS2 | Enriched WIS for second child |
| FCBEIS3 | Enriched WIS for each additional child |
| FCBEMX | Earnings where WIS phase-in is at maximum |
| FCBERR | Child benefits earning supplement reduction rate |
| FCBERR1 | WIS reduction rate for families with 1 child |
| FCBERR2 | WIS reduction rate for families with 2 children |
| FCBERR3 | WIS reduction rate for families with 3+ children |
| FCBESR | Child benefits earned income supplement rate |
| FCBETD | Child benefits earning supplement turndown level |
| FCBLRG | Supplement for 3rd and subsequent kids |
| FCBRR | Multi-children family income reduction rate |

| | |
|-------------|---|
| FCBRRS | Single-child family income reduction rate |
| FCBTD | Federal child benefits family income turndown |
| FCBYNG | Supplement for children under age 7 |
| FCBYNGR | Child care expense reduction rate |
| PYINC | Deflator to calculate previous year income |
| QCBC1 | Quebec Child benefit for 1st child |
| QCBC2 | Quebec Child benefit for 2nd child |
| QCBC3 | Quebec Child benefit for 3rd child |
| QCBCFLG | Quebec Child benefit flag for Quebec calculation |
| methodology | |
| QCBCS | Quebec Child benefit supplement child aged 12- 17 |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hdprov | Province |
| hhncf | Number of census families in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idrand | Random numbers [array] |
| idsex | Sex |
| imcce | Child care expenses claimed on behalf of child |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--|
| imctc | Child tax credit |
| imfcben | Total Federal Child Benefits |
| imfcbenb | Total Federal Child Benefits Base |
| imfcbene | Total Federal Child Benefits Earning suppl |
| imninc | No income flag |

txfstc Compute federal sales tax credit

SUMMARY

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. The txfstc function calculates benefits from the federal Sales

Tax Credit (STC) program based upon the number and type of persons in a family and the net income of the head and spouse. The function has a parameterized option for including GIS/SPA and social assistance benefits in the definition of net income.

Program Description

The refundable federal Sales Tax Credit provides benefits to help low income families offset the costs of federal sales taxes. It was implemented for the 1986 and subsequent tax years and is administered by Revenue Canada, Taxation, through the income tax system.

Upon application, through the filing of an income tax return, the federal sales tax credit is available to any individual who at the end of the year was married, had a child, or was over 18 years of age. Eligible individuals may claim the credit for themselves, their qualified relations, and one spouse. Individuals who are not subject to tax in Canada or who were confined to a prison or similar institution for a period of over six months in the year for which a claim is made may not claim the credit. A married couple may make only one claim.

Maximum family benefits are a function of the type and number of individuals in the family as well as the net income of the family. There are three individual credit maximums; one for the filer; one for a spouse with whom the filer resided at the end of the year; and one for any other person under the age of 18 at the end of the year who was a child of the individual or their spouse or was a person in respect of whom the individual or his spouse has claimed a personal deduction. Family net income is the net income, for tax purposes, of the head of the family and their spouse if present.

The maximum annual credit is payable if net family annual income is less than a specified level of income (called turndowns, exemptions, or benefit reduction levels). Families with net incomes above this reduction point are entitled to the maximum credit minus a specified percentage (reduction rate) of their net income in excess of the reduction point. The minimum STC is zero. In 1986 the maximum credit was \$50 per adult and \$25 per dependent child, the reduction point was \$15,000 and the reduction rate was 5%. So, for example, a family with a spouse and two eligible children and a net income of \$17,000 would receive a tax credit of \$100.00. (The 1986 credit becomes zero for families of this type with a net income at or above \$18,000.)

SPSM Implementation

The `txfstc` function calculates the federal Sales Tax Credit based on the number, age, and type of persons in a family and the net income of the family. The function always allocates the Sales Tax Credit to the spouse with the higher net income in the nuclear family. The function outputs values for the federal Sales Tax Credit and these reflect the total value of the credit, whether used to reduce taxes, or received as a cash lump sum amount, or some mix of the two.

The `txfstc` function operates at the nuclear family level. It first increments two local variables based on information on the eldest member of the nuclear family; one for the family's net income by adding the eldest member's net income; and one for the maximum family benefits by adding the maximum entitlement for a filer. The program next increments both local

variables for the spouse (married or common-law) if present. The function also adds GIS, SPA, and Social Assistance benefits to family net income. The maximum benefits for the family are incremented last by multiplying the number of children in the nuclear family by the maximum benefit per child ($nfnkids * FSTCC$). The maximum STC is then reduced at the specified reduction rate (FSTCR) applied to family net income in excess of the STC reduction point (FSTCL). This reduction is performed using the `taxbak1` function. Finally the federal Sales Tax Credit is assigned to the mother if present and otherwise to the eldest member of the nuclear family.

The federal sales tax credit is claimable at age 19. Parents may claim additional amounts for children aged 18 and younger. When calculating the GST credit, the income concept used is the previous year's incomes. The GST credit for a given year, say 1992, would represent the amounts paid from July 1992 to July 1993.

Interpretation

Results obtained from the SPSM with respect to Sales Tax Credit benefits have no valid Revenue Canada administrative data with which to compare the results. In general, the SPSM should be slightly low due to certain coverage issues. Further analysis will be required to correctly estimate who in a married couple is claiming the benefit. Take-up issues may also be relevant.

Relief for Heating Expenses

When `HEATRLFLG` is turned on, persons will receive a transfer from the federal government for the relief of heating expenses (`imheatrl`). In order to receive it, a person has to have received a GST credit (`imfstc`). Qualifying persons who live with a spouse or children receive `HEATFAM` and others receive `HEATSNG`.

Note that, as indicated in the federal economic statement 2000, in order to receive a check in 2001 a person had to qualify for the GST credit in January 2001 or June 2000. In the SPSM this is the modeled GST credit for 2000 (we assume that the entire check is given in June), based on 1999 income. In order to simplify the code, we used receipt of the 2001 GST credit as a proxy for receipt of the 2000 GST credit. Given the fact that there was no change in the rules governing the GST credit in these two years, this should have a small effect.

Relation to Other SPSM Routines

The `txfstc` function is called by `drv`. The function outputs one variable that is used in `memo1` for reporting purposes. The function makes use of (calls) the `taxbak1` function.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| FSTCC | Federal sales tax credit amount for dependant |
| FSTCF | Federal sales tax credit amount for filer |
| FSTCL | Federal sales tax credit reduction level |
| FSTCR | Federal sales tax credit reduction rate |
| FSTCS | Federal sales tax credit amount for spouse |
| GSTAC | GST additional credit amount |
| GSTAR | GST additional credit rate of net income |
| GSTASPFLAG | Maximum GST additional credit for single parents flag |
| GSTAXM | GST additional credit exemption |
| GSTCTUNC | GST credit take up by number of children |
| GSTFLAG | GST credit activation flag |
| HEATFAM | Federal relief for heating expenses for families |
| HEATRLFLG | Federal relief for heating expenses activation flag |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| INPUT VARIABLES: | |
| cfageeld | Age of eldest in census family |
| cfinch | First child in census family [pointer] |
| cfinel | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idrand | Random numbers [array] |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| OUTPUT VARIABLES: | |
| imfstc | Federal sales tax credit |
| imheatrl | Federal relief for heating expenses |
| imninc | No income flag |

SUMMARY

When IMSHTOPT is set to 1, imputation of provincial paid rents and property taxes are calculated based on Greenbook data, when set to .2 they are based on FAMEX. The rent and property tax are imputed to head's of census families and census family spouses reporting positive net income.

CROSS REFERENCE**Function Description**

INPUT PARAMETERS:

| | |
|----------|---|
| CTFAMSNA | FAMEX->SNA conceptual conversion factor [com] |
| CTFTOT | Federal total retail tax equivalent |
| CTPTOT | Provincial total retail tax equivalent |
| IMSHTOPT | Paid rent and property tax imputation option |

INPUT VARIABLES:

| | |
|----------|------------------------------------|
| fxio | I/O expenditure categories [array] |
| fxprtax | Property tax |
| fxtptax | Transfer of Property taxes |
| hdprov | Province |
| hnnin | Number of individuals in household |
| idcfrh | Relationship to census family head |
| idhhrh | Relationship to head of household |
| idproptx | Net property taxes paid (556) |
| idrentpd | Total rental payments (555) |

OUTPUT VARIABLES:

| | |
|----------|---------------------------|
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |

SUMMARY

This function calculates exemptions or tax credits for dependants as well as performing transfers of deductions between spouses. The algorithms included in this function are:

- calculate and allocate Tax Credits for Wholly Dependant Children
- calculate and allocate Spouse (or Married) Tax Credit
- calculate Spouse (or Married) Equivalent Tax Credit
- calculate Deductions Transferred from Spouse

Calculate and Allocate Tax Credits for Wholly Dependant Children

Before 1988, filers with dependant children were eligible to claim a personal exemption based upon the age and net income of the child. The exemption was calculated as a fixed amount (adjusted annually) minus a proportion of the child's income exceeding the reduction level. The amounts varied with the age of the child. Children under 18 years of age were treated differently from children 18 and over. This claim could be split between supporting parents or grandparents.

The June 1987 White Paper on Tax Reform proposed the conversion of the exemption on behalf of children under 18 into a tax credit and the elimination of the exemption for children 18 and over.

SPSM Implementation

(Note: this paragraph needs to be rewritten.) The amount of the tax credit on behalf of dependants under 18 is calculated by subtracting a proportion (YCTCR) of the child's Net Income (iminet) which exceeds the Reduction Level (YCTCT) from the Maximum Young Child Tax Credit (YCTC).

The amounts for all children are accumulated in ctxct which may later be adjusted by the calculation of the Spouse Equivalent Tax Credit. If a spouse is present, the one with the higher Net Income iminet receives the full amount of the tax credit for all dependent children (imctxcs) which is used to reduce Basic Federal Tax imbft in the function txcalc.

There is no tax credit for dependent children 18 and over. The model has no provision for a tax credit for infirm dependants aged 18 and over.

The model does not partition exemptions for wholly dependant children between spouses as is allowed in tax regulations. If it were partitioned, certain families would pay slightly lower taxes.

Spouse Tax Credit

Persons legally married during the taxation year are eligible to claim a non-refundable Spouse Tax Credit. The tax credit amounts to a fixed amount reduced by a proportion of the spouse's net income exceeding a specified level. Net income for this purpose includes the spouse's GIS/SPA benefits.

SPSM Implementation

The Spouse Tax Credit (immartxc) amounts to a fixed value (MXM) reduced by the amount of the spouse's Net Income (imdepni) exceeding the reduction level (MXMT). This is

calculated only for the spouse with the higher Net Income.

The Spouse Tax Credit (`immartxc`) is used to reduce Basic Federal Tax in the function `txcalc`.

Although the regulations allow special considerations for persons who changed marital status during the taxation year, they are not implemented in the model.

Equivalent-to- Spouse Tax Credit

Filers who are single, divorced, separated or widowed and supported a relative related by blood, marriage or adoption are eligible to claim that relative for the Equivalent-to-Spouse Tax Credit, amounting to a fixed value reduced by a proportion of the relative's net income exceeding a reduction level.

SPSM Implementation

The SPSM calculates the Equivalent-to-Spouse Tax Credit on behalf of dependant children, not other relatives who may be eligible. If a non-claimable dependant is present, he or she is chosen to be claimed for the credit. If there is no such dependant, then the one with the lowest Net Income (`iminet`) is claimed.

The credit is calculated as a fixed amount (`EMXM`) reduced by the amount of the dependant's Net Income (`imdepni`) exceeding the reduction level (`EMXMT`). If the credit is being claimed on behalf of a dependant who is also eligible for the Wholly Dependant Child Tax Credit, the amount claimed for that dependant is subtracted from the total Wholly Dependant Child Tax Credit and the total number of children claimed is reduced by one.

The Spouse Equivalent Tax Credit is added to Total Nontransferable Tax Credits (`imtaxcr`) which is subtracted from Basic Federal Tax (`imbft`) in the function `txcalc`.

Calculate supplement to the basic personal tax credit

The supplement to the basic personal tax credit announced in the 1998 federal budget is calculated by reducing the maximum supplement (`BXMS`) by a proportion (`BXMSRR`) of taxable income above the level of the basic exemption (`BXM`) plus the maximum supplement (`BXMS`). The supplement is added to the basic personal tax credit (`imbtc`). Persons who claim the married amount or equivalent-to-spouse amount get an additional supplement. This program was cancelled in the 1999 federal budget.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|------------------|---------------------------------|
| <code>BXM</code> | Basic personal exemption/amount |
|------------------|---------------------------------|

| | |
|--------|--|
| BXMS | Basic personal exemption supplement |
| BXMSPI | Basic personal exemption supplement phase in |
| BXMSRR | Basic personal exemption supplement reduction rate |
| EMXM | Married equivalent exemption/amount |
| EMXMT | Married equivalent exemption/amount turndown level |
| FNTCR | Federal non-refundable tax credit rate |
| MXM | Married exemption/amount |
| MXMT | Married exemption/amount turndown level |
| YCXM1 | Dependent child amount (1st child) |
| YCXM2 | Dependent child amount (2nd child) |
| YCXM3 | Dependent child amount (3rd ,etc.) |
| YCXMT | Dependent child exemption/amount turndown level |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imbtcs | Basic personal tax credit supplement |
| imcchc | Child's non-refundable credit |
| imcemc | Child's equivalent to married credit |
| imchclm | Number of dependent children claimed |
| imctxcs | Dependent children tax credits |
| imdepni | Dependant's net income |
| immartxc | Married tax credit claimed |

txinet Compute net income

SUMMARY

The txinet function contains several algorithms which are required to calculate net income. The algorithms calculate the following specific tax measures which are discussed in order in terms of the description of the tax measure and its SPSM implementation.

- Employment Expense Deduction
- Other Allowable Employment Expenses
- Calculate Taxable Dividends
- Calculate Taxable Capital Gains
- Calculate Total Income
- CPP/QPP Contributions Tax Credit

- Unemployment Insurance Contributions Tax Credit
- Tuition Fees Tax Credit
- Calculate all deductions from total income
- Assign Taxable portion of Family Allowance to head or spouse
- Calculate Net Income

Program Description

Other Allowable Employment Expenses

Certain special employment expenses not claimable elsewhere are allowed.

According to the 1984 definition, these expenses include:

- employee's expenses for travel, office and wages to assistants,
- commission sales employees may claim certain expenses paid to earn their income,
- transport employees may deduct the cost of meals and lodging while away from home, and
- power saw operators may claim expenses incurred in operating the power saw.

This is a special deduction from employment income and is not available to most employees.

SPSM Implementation

The value for Other Allowable Employment Expenses (idalexp) already exists on the database. This value is derived from actual taxation statistics. For more details, please see the [Database Creation Guide](#). This value is multiplied by the parameter ALEXPP (Proportion of Other Allowable Expenses to Use as a Deduction) to obtain imalexp, the modeled amount for Other Allowable Expenses.

Calculate Taxable Capital Gains

Capital Gains arise when an individual sells a property for more than it originally cost. If a property is sold for less than it cost, a capital loss may be claimable.

Only a portion of Capital Gains received are considered taxable. Similarly only a portion of capital losses may be claimed as a loss. The value of idicapg represents the actual amount of the Capital Gain or Loss Allowed. Losses, in 1984, were limited to \$2,000. This represents the lower limit of the variable idicapg. Modeled Taxable Capital Gains or Losses imicapgt are calculated by multiplying idicapg by the Capital Gains Inclusion Rate (CAPGIR).

Calculate Taxable Dividends

To avoid double taxation of dividends earned in Canadian business, the dividends from taxable Canadian corporations are treated differently from other sources of income. Before taxation, these dividends are "grossed-up" or increased to an amount which approximates the underlying corporate tax already paid on these earnings. A Dividend Tax Credit is paid based on the grossed-up amount and approximated the corporate taxes already paid.

The gross-up tax credit system ensures that income earned by Canadian corporations and then distributed in the form of dividends bears the same amount of total tax as if the income were earned directly by the shareholders.

SPSM Implementation

Total Dividends Received is represented on the database by the variable `idivid`. The taxable amount (`imidivt`) which is added to total income is calculated by multiplying `idivid` by the Federal Dividend Gross-up Rate (FDGUR).

Calculation of Total Income

At this point, the SPSM is able to calculate a first approximation of total income for tax purposes. This is not a final value since Family Allowances cannot be allocated to the mother or father until the Net Income of both is known. This temporary value of Total Income (`itot`) is the sum of:

| | |
|------------------------|--|
| <code>idiemp:</code> | Earnings From Employment |
| <code>idisenf:</code> | Self-employment Earnings (Non-farm), optionally scaled by the parameter <code>FACTISENF</code> |
| <code>idisefm:</code> | Self-employment Earnings (Farm) |
| <code>idiint:</code> | Interest Income |
| <code>idioinv:</code> | Other Investment Income |
| <code>idicqp:</code> | CPP/QPP Benefits Received |
| <code>iditogv:</code> | Other Taxable Government Income |
| <code>idipens:</code> | Pension Income |
| <code>iditoth:</code> | Other Taxable Income |
| <code>imiuib:</code> | Modeled Unemployment Insurance Benefits Received |
| <code>imiotg:</code> | Modeled New Taxable Demogrants |
| <code>imioas:</code> | Modeled OAS Benefits |
| <code>imidivt:</code> | Modeled Taxable Amount of Dividends |
| <code>imicapgt:</code> | Modeled Taxable Capital Gains and Losses |

Calculate CPP/QPP Contribution Tax Credit

All Canadians aged 18 to 64 and in the labour force are covered by either the Canada Pension Plan (CPP) or the Quebec Pension Plan (QPP). The pension plans provide retirement benefits as well as survivor benefits for a widow or dependant when the contributor dies prematurely, a death benefit and disability benefits. The plans are publicly funded, based on contributions from all employed persons aged 18 to 70 with pensionable earnings.

Contributions to the Canada and Quebec Pension Plans are based on employment income and are usually made through payroll deductions. Self-employed persons make their contribution through the tax system, the amount of the contribution is added to federal taxes payable.

The amount contributed is not subject to taxation and is therefore either deducted from total income or treated as a tax credit.

In most cases, an employee and his or her employer will contribute the same amount to the employee's pension plan. Self-employed persons contribute a twice the rate of employees.

Although employees have their CPP/QPP contribution deducted from their paycheck, refunds for overpayment are made through the personal income tax system.

SPSM Implementation

CPP/QPP Contributions are calculated separately on employment and self-employment earnings. Employment earnings subject to contribution are calculated by subtracting the amount of exemptable earnings (CPPXM) from Earnings from Employment (*idiemp*). This amount cannot exceed the Maximum Earnings Subject to Contribution (YMPE minus CPPXM). Earnings Subject to Contribution are then multiplied by the CPP/QPP contribution rate (WSCF) to derive the amount of the contribution (*wscon*).

Contributions from self-employment earnings (*secon*) is a proportion (SECF) of Earnings from Employment (*idiemp*) plus Earnings from Self-employment (*idisenf* + *idisefm*) that are in excess of the Annual Exemption Level (CPPXM) and less than the year's Maximum Pensionable Earnings Level, less a multiple (WSCM) of contributions made on Earnings from Employment (*wscon*). WSCM is the ratio of the contribution rate on earnings from self-employment to the rate on earnings from employment.

The total CPP/QPP Contribution is the sum of the Contribution Payable on Earnings from Employment (*wscon*) plus the Contribution Payable on Earnings from Self-employment (*secon*).

There is no information in the database concerning the actual amount deducted through payroll deductions; therefore, refunds for overpayment cannot be calculated.

The CPP/QPP Contribution tax credit (*imcppctc*) is calculated as a proportion (FNTCR) of the total contributions (*imcqqpc*). The tax credit is applied in the function *txcalc*.

When CPPSEDEDFLG is turned on, a fraction (CPPSEDFRC) of a person's contributions to

the CPP/QPP in regards to their self employment earnings are treated as an exemption (imcppse) and is added to imdedft. The rest, along with the contributions on wages and salaries, can still be claimed as a tax credit (imcppct).

Unemployment Insurance Contributions

Unemployment Insurance is intended to provide short-term financial support to the unemployed. It also provides benefits for those suffering from extended sickness, for women leaving the labour force temporarily because of pregnancy and childbirth, and supplementary benefits to unemployed fishermen and to persons undertaking manpower training courses. The program is given its mandate by the Unemployment Insurance Act (1971). The act covers nearly all members of the labour force except self-employed persons and those who earn less than the minimum insurable earnings. The program is funded by employee and employer contributions as well as additional revenue from the consolidated revenue fund.

Contributions are calculated as a proportion of weekly earnings. Only earnings above the minimum insurable earnings and less than the maximum insurable earnings are subject to contribution.

Unemployment Insurance premiums are deducted from the employee's paycheck by the employer. Reimbursements for overpayment are made through the tax system. The amount contributed is not subject to tax. Before 1988, UI contributions were deducted from total income. The June 1987 White Paper on Tax Reform proposed the conversion of this deduction into a non-refundable tax credit.

Two major Employment Insurance Reforms were added, the difference in contributions, and the benefits repayable.

SPSM Implementation

The database contains no detail on an individual's weekly distribution of earnings throughout the year. Weekly earnings are estimated by dividing the annual Earnings from Employment (idiemp) by the Number of Weeks Worked (idlyww). This assumes that the earnings were evenly distributed throughout the year. It also assumes that the earner worked at least 20 hours during each week.

If average weekly earnings are less than $UIMINPCT * UIERNMAX$, no UI contributions are made. Otherwise, the annual UI Contribution (imuic) are calculated as a proportion (UIPF) of average weekly earnings not exceeding the Maximum Weekly Earnings Subject to Contribution (UIERNMAX), multiplied by the number of weeks worked.

The UI Contribution Tax Credit (imuictc) is calculated as a proportion (FNTCR) of the contributions. This tax credit is later applied to reduce Basic Federal Tax in the function txcalc.

When Employment Insurance is activated (UIEIOPT = 2), then the EI contributions (imuic) are calculated using the UI contribution rate on earnings (UIPF) with no weekly maximums and no exemptions for low income. The EI contribution refund (imuicrf) is then calculated

and subtracted from the contributions.

The method of calculating UI/EI benefit recovery (imuiobr) is also changed when UIEIOPT is activated. When UIEIREPOPT is set to 1, it now depends on the amount of previous weeks of EI received. If employment insurance benefits (imiuib) have been received and net income is in excess of: (a) UIBRA for persons with previous EI receipt, or (b) UIBRANR for persons with little previous benefits or for persons not on regular EI claims; UIEIRPR is applied to the lower of (a) total EI benefits and (b) the excess net income up to a maximum percent of their total benefits (UIEIBRP), to calculate the repayment.

When UIEIREPOPT is set to 2, sickness, maternity, and parental benefits are exempt from benefit repayment. Persons who claim EI for the first time are also exempt from benefit repayments. For the rest, the repayment is equal to the UIEIRPR times the minimum of net income in excess of UIBRANR and EI benefits.

See UIEIRPR, UIBRANR, UIEIBRP, UIBRA, and UIEINRT for more details.

Tuition Fees

Tuition fees paid to an educational institution may be claimed as a tax credit by the student or may be transferred to a spouse or supporting parent.

SPSM Implementation

A value for Tuition Deduction Allowed in the base year (idtuitn) exists on the database. This value is imputed from income tax records (see the [*Database Creation Guide*](#)). To calculate the Tuition Tax Credit, idtuitn, is multiplied by the Federal Non-Refundable Tax Credit Rate FNTCR and the result (imtutxc) is later applied as a tax credit in the function txcalc.

Assign Taxable Family Allowance

For tax purposes, Family Allowances are attributed to the person who claims a personal exemption (or post-reform, a tax credit) for the child. The model assumes that the exemptions are allocated to the spouse with the higher net income (iminet, excluding FA) if present. This is the spouse who would benefit most from claiming the children and, therefore, this is the one who also must claim Taxable Family Allowances.

Calculate Net Income

Net Income (iminet) is calculated as Total Income (imitot) minus All Deductions from Total Income (imdedft). imdedft is the sum of:

| | |
|----------|--|
| idrpp: | Registered Pension Plan Contributions |
| idrrsp: | Registered Retirement Savings Plan Contributions |
| iddues: | Union and Professional Dues |
| imiloss: | Allowable Business Investment Loss |

idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions
imuic: optionally, UI Contributions
idtuin: optionally, Tuition Fees
imcceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txceca)

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| ALEXPP | Proportion of other allowable employment expenses to use as deduction |
| CAPGIR | Capital gains inclusion rate |
| CPP60T64 | CPP/QPP Contributions Take up (60 - 64) by earnings with CPP income |
| CPPGT64 | CPP/QPP Contributions Take up (over 64) by earnings with CPP income |
| CPPLT60 | CPP/QPP Contributions Take up (under 60) by earnings with CPP income |
| CPPSEDEDFLG | CPP/QPP contribution deduction for self-employed earnings flag |
| CPPSEDFRC | CPP/QPP contribution deduction fraction for self-employed earnings |
| CPPXM | CPP/QPP exemptible earnings |
| FACTISENF | Scale-up factor for non-farm self-employment income |
| FARR | Family allowance repayment rate |
| FATBPI | Family allowance take-back phase in |
| FATD | Family allowance turndown income |
| FDGUR | Federal dividend gross-up rate |
| FNTCR | Federal non-refundable tax credit rate |
| NETOASFLG | Net the clawback from Old Age Security |
| OASRR | OAS reduction rate |
| OASTBPI | OAS take-back phase in |
| OASTD | OAS turndown income |
| REPNETFLAG | Social program repayments reduce net income flag |
| SECF | CPP/QPP contribution rate on self-employment earnings |
| UIBRA | UI repayment base amount (UI and EI) |
| UIBRANR | EI repayment base amount for non-repeaters (EI only) |
| UIBRP | UI benefit recovery portion (UI only) |

| | |
|------------|--|
| UIEIBRP | Maximum clawback under EI reform [Past Wks ben][Rate] (EI only) |
| UIEINRT | UI EI Non repeater level for higher clawback turndown (EI only) |
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIREF | EI contribution refund cut-in (EI only) |
| UIEIREFTK | EI contribution refund take up |
| UIEIREPOPT | EI Benefit repayment option (1=repeaters have higher rate,2=one rate)(EI only) |
| UIEIRPR | UI EI benefit clawback rate (EI only) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIMINPCT | Exemption limit (percent of maximum insurable earnings) (UI only) |
| UIPF | UI contribution rate on earnings (UI and EI) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| WSCF | CPP/QPP contribution rate on employment earnings |
| WSCM | Ratio of self-employed to employed contribution fraction |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|----------|--|
| hdprov | Province |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idalexp | Other allowable employment expenses (229) |
| idcarry | Carrying charges (221) |
| iddalimo | Alimony paid (220) |
| iddues | Union and professional dues (212) |
| idexplr | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idlyww | Weeks worked |
| idmovexp | Imputed moving expenses (219) |
| idothded | Other deductions from total income (232) |
| idrand | Random numbers [array] |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idtuitn | Tuition fees (320) |
| iduirank | Predicted ranked likelihood of getting UI |
| imiotg | Other taxable demogrants |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| nfineld | Eldest person in nuclear family [pointer] |
| nfnspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |
| ubcalpd | Benefits paid in calendar year |

| | |
|---------|---------------------------|
| ubeiwbp | Weeks of past EI benefits |
| ucbtyp | Claim type |
| ucstat | Claim status flag |

OUTPUT VARIABLES:

| | |
|----------|---|
| imalexp | Allowable employment expenses |
| imcppctc | CPP contributions tax credit |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedft | Deductions from total income |
| imfar | Family allowance recovery |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imiloss | Modelled Business investment losses (217) |
| iminet | Net income |
| imioas | OAS benefits |
| imitot | Total income |
| imnfach | Number of family allowance children claimed |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imtfa | Taxable family allowances |
| imtutxc | Tuition tax credit |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |
| imuicrf | UI EI contribution refund |
| imuictc | UIC contributions tax credit |

txitax Compute taxable income and individual credits

SUMMARY

The process of computing taxable income is divided into two separate routines. Deductions and tax credits which are not dependent upon information from other members of the family (e.g., Basic Personal Tax Credit) are collected together in txitax. Algorithms which require information on the age, income or deductions of a spouse or dependant are in txhstr. txitax calculates a provisional value for taxable income (imitax) which may be further adjusted by txhstr.

The algorithms contained in txitax are:

- Basic Personal Tax Credit
- Age Tax Credit
- Pension Income Deduction
- Medical Expense Tax Credit, Charitable Donations Tax Credit
- Disability Tax Credit
- Education Tax Credit
- Capital Gains Deduction

- UI Benefit Repayment Payable
- Family Allowance and OAS Repayment Payable (optional)
- Employee Home Relocation Loan Deduction
- Stock Option Deduction

Basic Personal Tax Credit

The non-refundable Basic Personal Tax Credit is calculated by assigning the value of the parameter BXM (Basic Personal Tax Credit) to the variable imbtc (Modeled Basic Personal Tax Credit) which is applied to reduce Basic Federal Tax in the function txcalc.

Age Tax Credit

All Canadians who were 65 years of age or older on December 31st of the taxation year would be eligible to claim the Age Tax Credit.

When the Age Tax Credit is calculated, imatxc (Modeled Age Tax Credit) receives the value assigned to the parameter AXM. The function txcalc performs any applicable transfer of the tax credit from the spouse and applies the tax credit to reduce Basic Federal Tax.

Pension Income Tax Credit

Certain pension income from a pension plan or upon the death of a spouse qualifies for a Pension Income Tax Credit. The deduction amounted to the lesser of the maximum deduction (fixed at \$1,000) and eligible income. Any amount of this deduction not required to reduce taxable income to zero is transferable to the spouse.

The June, 1987 White Paper on Tax Reform proposed the conversion of this deduction into a tax credit amounting to a proportion of eligible income up to a maximum of \$170. This tax credit would also be transferable.

SPSM Implementation

The Modeled Pension Income Tax Credit (impentxc) is assigned the minimum of:

- a) qualified pension income (idipens) and
- b) the Maximum Allowable Tax Credit (YPNDL),
times the Tax Credit Rate (FNTCR).

Any portion of the Pension Income Tax Credit not required to reduce a filer's Basic Federal Tax to zero is transferable to the spouse. The transfer is calculated in the function txcalc.

Medical Expense Tax Credit

The filer is allowed a non-refundable tax credit for certain medical expenses paid on behalf of the filer, spouse or dependants. All medical expenses claimed require supporting proof to be allowed as a tax credit and only medical expenses in excess of 3% of net income are claimable.

SPSM Implementation

The value of Medical Expenses Allowed (immeda) is calculated as the value of the gross medical expenses from the database (idmedgro) less either MEDANF percent of net income or MEDALL, whichever is less. The Medical Expense Tax Credit (immedatc) is calculated as a proportion (FNTCR) of the value of Medical Expenses Allowed (immeda). The Medical Expense Tax Credit is applied to reduce Basic Federal Tax in the function txcalc.

Although medical expenses paid on behalf of dependants are claimable by either spouse, no transfers between spouses are made for this tax credit.

Charitable Donations Tax Credit

The filer is allowed a non-refundable tax credit on behalf of charitable donations and gifts to Canada or a province. SPSM Implementation

The database contains a value for gross charitable donations (idcharit). The allowable charitable donations (imchara) are calculated as the lesser of idcharit and CHATNF percent of net income. The value of gifts or donations to Canada, a province or a cultural institution are then added to imchara.

A two-tier, non-refundable Charitable Donation Tax Credit (imchartc) is calculated. Allowable Donations (imchara) up to a set amount (CHATL1) are converted at the first tax credit rate (CHATR1) and the remainder is converted at the second rate (CHATR2).

The Charitable Donations Tax Credit is a component of the total non-refundable tax credits used to calculate Basic Federal Tax in the function txcalc.

Disability Tax Credit

Disabled persons whose impairment has markedly restricted or is expected to restrict their activities of daily living for a continuous period of at least 12 months are eligible to claim a special Disability Tax Credit. SPSM Implementation

The Disability Tax Credit (imdisatc) is assigned the value of the parameter MAXDX (Maximum Disability Tax Credit) for filers with reported disability amounts for self (iddisslf) or other dependents (iddisoht). Any portion of the tax credit not required to reduce Basic Federal Tax to zero may be transferred to the spouse or a supporting parent in the function txcalc.

Education Tax Credit

The Education Tax Credit represents the amount that students with full-time attendance at a designated post-secondary institution may claim. The number of eligible months is multiplied by a maximum allowable amount per month. The filer may transfer to a spouse, parent or grandparent the part of the education tax credit that is not needed to reduce the federal income tax to zero.

SPSM Implementation

The Education Tax Credit (*imedtxc*) is calculated as the number of eligible months of education amount (*ideducm*) multiplied by the Education Tax Credit per Month (*EDXPM*). The function *txcalc* may transfer unused amounts of the tax credit to a parent or spouse.

Capital Gains Deduction

Since 1985, a deduction has been allowed on behalf of capital gains income. The Capital Gains Deduction is being phased in with an increasing annual deduction limit amounting to \$10,000 in 1985 and \$25,000 in 1986. The amount an individual may claim during his or her lifetime is limited to a fixed amount. These measures were introduced in the May, 1985 Budget Papers and subsequently modified in the June, 1987 White Paper on Tax Reform.

SPSM Implementation

The Capital Gains Deduction is calculated as the minimum of:

- a) the Annual Capital Gains Deduction Limit (The Annual Limit based on gross Capital Gains, *CAPGAL*, times the Capital Gains Inclusion Rate, *CAPGIR*, and
- b) Taxable Capital Gains (*imicapgt*) minus:
 - Allowable Business Investment Loss (*idcloss*)
 - Net Capital Losses of Other Years (*imiloss*)

The resultant deduction is added to Total Deductions from Net Income (*imdedfn*).

The database contains no information on the filer's previous Capital Gains Deduction and therefore, the lifetime limit cannot be applied.

Unemployment Insurance Benefit Repayment Payable

If an individual has received Unemployment Insurance Benefits and his or her Net Income exceeds a fixed amount (\$38,610 in 1986), a portion of the benefits must be repaid. This repayment is added to Federal Taxes Payable. The amount repaid becomes a deduction from Net Income.

SPSM Implementation

The amount repayable is a proportion (*UIBRP*) of the UI Benefits received (*imiuib*) or a proportion of Net Income exceeding the Repayment Level (*UIBRA*) whichever is less. The Repayment Amount (*imuibr*) is a proportion (*UIBRP*) of the lesser of:

- (a) *imiuib*: Modeled UI Benefits
- (b) *iminet*: *UIBRA*: the amount by which Net Income exceeds the Repayment Level

The value of *imuibr* is added into the variable *imrepay* which accumulates modeled repayment amounts. *imrepay* is added to Total Deductions from Net Income (*imdedfn*).

Family Allowance and OAS Repayments

The SPSM includes optional algorithms which allow the analysis of certain modifications to Family Allowances and the Old Age Supplement. These algorithms are presented with the SPSD/M for illustrating a glass box application. Users may consult the *Programmer's Guide* for further details.

The Family Allowance Repayment is calculated if the parameter FARR (Family Allowance Repayment Rate) is non-zero. The repayment is calculated as the lesser of:

- a) a proportion (FARR) of family net income (the net income of the head plus the net income of the spouse) exceeding the Family Allowance Reduction Level (FATD), and
- b) Taxable Family Allowances Received (imtfa).

The OAS repayment is based on the filer's own Net Income and is computed as the lesser of:

- a) OAS Received (imioas), and
- b) a proportion (OASRR) of Net Income (iminet) exceeding the OAS Repayment Reduction Level (OASTD).

Neither the FA nor the OAS repayments are stored in separate variables. They are accumulated into the variable imrepay which is applied as a deduction from Net Income in the function txitax and is added to Taxes Payable in the function memo1.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| AXM | Age amount |
| AXPI | Age amount phase in rate for 1994 and beyond |
| AXRR | Age amount credit reduction rate |
| AXTD | Age amount net income turndown |
| BXM | Basic personal exemption/amount |
| CAPGIR | Capital gains inclusion rate |
| CHATL1 | Charitable donations amount level 1 |
| CHATNF | Charitable donations maximum net income fraction |
| CHATR1 | Charitable donations tax credit rate 1 |
| CHATR2 | Charitable donations tax credit rate 2 |
| EDXPM | Education amount per month |
| FNTCR | Federal non-refundable tax credit rate |
| FORAVGFLAG | Database variable(foravg) activation flag |
| MAXDX | Maximum disability deduction/amount |
| MEDALL | Medical allowance maximum lower limit |
| MEDANF | Medical allowance lower limit net income fraction |
| REPNETFLAG | Social program repayments reduce net income flag |
| YPNDL | Maximum pension income deduction/amount |
| INPUT VARIABLES: | |
| hnnin | Number of individuals in household |
| idadded | Additional deductions from net income (256) |
| idage | Age |

| | |
|----------|--|
| idcapgex | Capital gains exemptions (254) |
| idcgless | Taxable capital gains on gifts (339) |
| idcharit | Charitable donations (340) |
| idclose | Allowable other years capital loss (253) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idemplo | Employee home relocation loan dedn (248) |
| idforavg | Forward averaging amount withdrawal (237) |
| idgifts | Gifts to Canada/provinces/culture (342) |
| idipens | Pension income (115) |
| idmedgro | Medical expenses, gross (330) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothpe | Other dependant exemptions (305) |
| idpartlo | Limited partnership losses (251) |
| idstkded | Stock option deduction (249) |
| imicapgt | Capital gains (taxable) |
| iminet | Net income |
| imninc | No income flag |
| imrepay | Social Benefits Repayments |

OUTPUT VARIABLES:

| | |
|----------|---|
| imatxc | Age tax credit |
| imbtc | Basic personal tax credit |
| imcapgex | Modelled capital gains deduction (254) |
| imchara | Allowable charitable donations and gifts (calculated) |
| imchartc | Charitable donations tax credit |
| imdedfn | All deductions from net income |
| imdisatc | Disability tax credit |
| imedtxc | Education allowance tax credit |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| immedatc | Medical expenses allowed tax credit |
| imothpe | Other dependant tax credit (306) |
| impentxc | Pension income tax credit |
| imstkded | Modelled Stock option deduction (249) |

txman Compute provincial taxes for Manitoba

SUMMARY

When MTXFLG is turned off, Manitoba Basic Provincial Tax (imbpt) is calculated as a proportion (MPTF) of Basic Federal Tax (imbft).

The Manitoba Surtax is calculated based on a series of family credits. The surtax is added to Basic Provincial Tax to derive Manitoba Tax (imtxp).

When the tax on taxable income flag is turned on (MTXFLG), a provincial tax table (MPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax).

Non-refundable tax credits are calculated using the non-refundable tax credit rate (MPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (MBXM) |
| impatxc | Age amount tax credit | (MAXM, MAXRR, MAXTD, MAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (MMXM, MMXMT, MEMXM, MEMXMT) |
| impcgtc | Caregiver tax credit | (MCGTC, MCGTCFLG, MCGTCTC, MCGTCTD, MCGTCTK) |
| impchrctc | Charitable donations | (MCHATL1, MCHATR1, MCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (MMAXDX) |
| impdtxc | Dividend tax credit | (MDTCR) |
| impedtxc | Education tax credit | (MEDXPM, MMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (MYPNDL) |
| imptutxc | Tuition Tax credit | (MMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using MAMTOPT.

The refundable learning tax credit (immanltc) is equal to MANLTCF times (the tuition amount (idtuitn) plus the education amount (imeducm * EDXPM) plus the education amounts transferred from a spouse or kids (imedrcv) minus the education amounts which have been transferred to a spouse or parents (imedtrf)). It is included in the refundable tax credits (imptc). Beginning in 1998, the credit is limited to MANLTMAX for each student.

The Manitoba labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Manitoba provincial credit is modelled as MLVCRT times the gross amount up to MLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Manitoba homeowner's school tax assistance was introduced in 1993 and is part of the total property tax credit (impptxtc). MSCHFLAG turns it on or off. In order to qualify for assistance, Manitoba residents must be homeowners and be older than MSCHAGE. The basic credit is MSCHBXM which is reduced by income over the turndown MSCHTD by a rate MSCHRR. The value of the benefit is also rounded (see MSCHRND). The benefit may not exceed school taxes paid (idmschpd) less the minimum threshold of MSCHMNTH. The school tax assistance is added to the basic property tax credit and applied against occupancy

costs in order to derive the total property tax credit (impptxtc).

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| EDXPM | Education amount per month |
| MAMTOPT | Man. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| MAMTPCTF | Man. amt rate as pct of additional fed tax due to minimum tax |
| MAMTPCTM | Man. amt rate as pct of federal minimum tax amount |
| MAMTTX | Man. amt rate as tax on adjusted income |
| MANLTCF | Manitoba learning tax credit factor |
| MANLTMAX | Manitoba learning tax credit maximum amount per student |
| MAXM | Man. Age Amount |
| MAXPI | Man. Age Amount phase in rate for 1994 and beyond |
| MAXRR | Man. Age Amount credit reduction rate |
| MAXTD | Man. Age Amount net income turndown |
| MBXM | Man. Basic Personal Exemption/amount |
| MCAXM | Manitoba cost-of-living age credit |
| MCBXM | Manitoba cost-of-living basic credit |
| MCDISEX | Manitoba cost-of-living disability credit |
| MCEMXM | Manitoba cost-of-living married equivalent credit |
| MCFINCR | Manitoba cost-of-living family income reduction rate |
| MCGTC | Man. Caregiver Tax Credit |
| MCGTCFLG | Man. Caregiver Tax Credit activation flag |
| MCGTCTC | Man. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| MCGTCTD | Man. Caregiver Tax Credit Turn Down Income |
| MCGTCTK | Man. Caregiver tax credit take-up rate by income level [employment income,rate] |
| MCHATL1 | Man. Charitable Donations amount level 1 |
| MCHATR1 | Man. Charitable Donations tax credit rate 1 |
| MCHATR2 | Man. Charitable Donations tax credit rate 2 |
| MCMXM | Manitoba cost-of-living married credit |
| MCODISEX | Manitoba cost-of-living old disabled dependant credit |
| MCSAXM | Manitoba cost-of-living spouse age credit |
| MCSDISEX | Manitoba cost-of-living spouse disabled credit |
| MCYCXM | Manitoba cost-of-living young dependants credit |
| MDTCR | Man. dividend tax credit rate |
| MEDXPM | Man. Education Amount per month |
| MEMXM | Man. equivalent to married amount |
| MEMXMT | Man. equivalent to married turndown level |
| MHMASOPT | Manitoba homeowner assistance option (1=Model 2=database) |
| MLVCMAX | Maximum Man. labour-sponsored funds tax credit allowed |
| MLVCRT | Percent of Man. labour-sponsored funds cost allowed as credit |
| MMAXDX | Man. Maximum Disability deduction/amount |
| MMAXET | Man. maximum on transfer of education and tuition amount |

| | |
|----------|---|
| MMXM | Man. married amount |
| MMXMT | Man. married amount turndown level |
| MNITR | Manitoba net income tax rate |
| MPAXM | Manitoba property tax credit senior citizen credit |
| MPBXM | Manitoba property tax credit basic credit |
| MPFINCRR | Manitoba property tax credit family income reduction rate |
| MPMINC | Manitoba property tax credit minimum credit |
| MPMNTH | Manitoba property tax minimum threshold |
| MPNTCR | Man. provincial non-refundable tax credit rate |
| MPRIR | Manitoba property tax credit rental inclusion rate |
| MPTC | Manitoba political contribution table [total donations,donation allowed] |
| MPTCBEN | Maximum Manitoba political tax credit allowed |
| MPTF | Manitoba provincial tax fraction |
| MPTX | Man. tax table [taxable income,basic provincial tax] |
| MRAXM | Manitoba tax reduction age credit |
| MRBXM | Manitoba tax reduction basic credit |
| MRDISEX | Manitoba tax reduction disability credit |
| MREMXM | Manitoba tax reduction married equivalent credit |
| MRMXM | Manitoba tax reduction married credit |
| MRODISEX | Manitoba tax reduction old disabled dependant credit |
| MRSAXM | Manitoba tax reduction spouse age credit |
| MRYCXM | Manitoba tax reduction young dependants credit |
| MSAXM | Manitoba surtax age credit |
| MSBXM | Manitoba surtax basic credit |
| MSCHAGE | Manitoba school tax minimum age |
| MSCHBXM | Manitoba school tax basic amount |
| MSCHFLAG | Manitoba school tax assistance activation flag |
| MSCHMNTH | Manitoba school tax minimum threshold |
| MSCHRND | Manitoba school tax assistance rounding unit |
| MSCHRR | Manitoba school tax reduction rate |
| MSCHTD | Manitoba school tax turndown |
| MSDISEX | Manitoba surtax disability credit |
| MSEMXM | Manitoba surtax married equivalent credit |
| MSMXM | Manitoba surtax married credit |
| MSODISEX | Manitoba surtax old disabled dependant credit |
| MSSAXM | Manitoba surtax spouse age credit |
| MSYCXM | Manitoba surtax young dependants credit |
| MTCINCFL | Manitoba tax credit income definition flag |
| MTRNIO | Manitoba tax reduction net income offset |
| MTXFLG | Man. tax on taxable income activation flag |
| MYPNDL | Man. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hdtenur | Tenure |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |

| | |
|----------|---|
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idmschpd | Manitoba school taxes paid |
| idothpe | Other dependant exemptions (305) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imatxc | Age tax credit |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imedrcv | Education and tuition transferred from others |
| imedtrf | Education and tuition transferred to others |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imstxcrt | Tax credits transferred from spouse |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------|
| imbpt | Basic provincial tax |
| immanltc | Manitoba learning tax credit |
| immhmas | Manitoba Homeowners Assistance |

| | |
|-----------|---|
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impptxtc | Provincial Property tax tax credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impттxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnb Compute provincial taxes for New Brunswick

SUMMARY

When BTXFLG is turned off, the basic Provincial Tax (imbpt) for New Brunswick is simply a proportion (BPTF) of Basic Federal Tax (imbft).

The 2000 budget announced that New Brunswick would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (BTXFLG), a provincial tax table (BPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (BPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|---------|-----------------------|----------------------|
| impbtc | Basic amount | (BBXM) |
| impatxc | Age amount tax credit | (BAXM, BAXRR, BAXTD, |

| | | |
|-----------|--|--|
| | | BAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (BMXM, BMXMT, BEMXM, BEMXMT) |
| impcgtc | Caregiver tax credit | (BCGTC, BCGTCFLG, BCGTCTC, BCGTCTD, BCGTCTK) |
| impchrctc | Charitable donations | (BCHATL1, BCHATR1, BCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (BMAXDX) |
| impdtxc | Dividend tax credit | (BDTCR) |
| impdtxc | Education tax credit | (BEDXPM, BMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (BYPNDL) |
| imptutxc | Tuition Tax credit | (BMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using BAMTOPT.

The New Brunswick labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The New Brunswick provincial credit is modeled as BLVCRT times the gross amount up to BLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Child Tax Benefit

When NBCTBFLG is assigned a value of 1, the New Brunswick Child Tax Benefit calculation is activated. imnbcben is the total benefits received under the New Brunswick Child Benefits program announced in the 1997 New Brunswick Budget and commencing in April 1997. A first component is the base amount, imnbcbb, which is calculated as the base amount per child, NBCBBAS, times the number of children. The level of benefit is reduced, based on family income, at a rate NBCBRRS for families with only one child, and at rate NBCBRR for the others.

If the family gross employment income is higher than a threshold, NBCBECI, then the maximum supplement is NBCBEIS. The supplement is reduced at a rate NBCBESR for each \$ of employment income exceeding the threshold FCBECI. If the family income is higher than NBCBETD then the supplement is reduce at a rate NBCBERR. The final value of the work income supplement is stored in imnbwis.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| BAMTOPT | N.B. alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| BAMTPCTF | N.B. amt rate as pct of additional fed tax due to minimum tax |
| BAMTPCTM | N.B. amt rate as pct of federal minimum tax amount |
| BAMTTX | N.B. amt rate as tax on adjusted income |
| BAXM | N.B. Age Amount |
| BAXPI | N.B. Age Amount phase in rate for 1994 and beyond |
| BAXRR | N.B. Age Amount credit reduction rate |
| BAXTD | N.B. Age Amount net income turndown |
| BBXM | N.B. Basic Personal Exemption/amount |
| BCGTC | N.B. Caregiver Tax Credit |
| BCGTCFLG | N.B. Caregiver Tax Credit activation flag |
| BCGTCTC | N.B. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| BCGTCTD | N.B. Caregiver Tax Credit Turn Down Income |
| BCGTCTK | N.B. Caregiver tax credit take-up rate by income level [employment income,rate] |
| BCHATL1 | N.B. Charitable Donations amount level 1 |
| BCHATR1 | N.B. Charitable Donations tax credit rate 1 |
| BCHATR2 | N.B. Charitable Donations tax credit rate 2 |
| BDCR | N.B. dividend tax credit rate |
| BEDXPM | N.B. Education Amount per month |
| BEMXM | N.B. equivalent to married amount |
| BEMXMT | N.B. equivalent to married turndown level |
| BLVCMAX | Maximum N.B. labour-sponsored funds tax credit allowed |
| BLVCRT | Percent of N.B. labour-sponsored funds cost allowed as credit |
| BMAXDX | N.B. Maximum Disability deduction/amount |
| BMAXET | N.B. maximum on transfer of education and tuition amount |
| BMXM | N.B. married amount |
| BMXMT | N.B. married amount turndown level |
| BPNTCR | N.B. provincial non-refundable tax credit rate |
| BPTC | New Brunsw. political contribution table [total donations,donation allowed] |
| BPTCBEN | Maximum New Brunswick political tax credit allowed |
| BPTF | New Brunswick provincial tax fraction |
| BPTX | N.B. tax table [taxable income,basic provincial tax] |
| BSCI | New Brunswick provincial tax above which surtax applies |
| BSF | New Brunswick provincial surtax rate |
| BTRBAS | Base N.B. low income tax reduction |
| BTRRR | N.B. low income tax reduction Reduction Rate |
| BTRSP | N.B. low income tax reduction for spouse or equivalent-to-spouse |
| BTRTD | N.B. low income tax reduction Turndown |
| BTXFLG | N.B. tax on taxable income activation flag |
| BYPNDL | N.B. Pension Income Deduction Amount |

| | |
|----------|---|
| CTCINC | CTC family income scaling factor |
| NBCBBAS | NB Basic child benefit (per child) |
| NBCBECI | NB Child benefits earning supplement cut-in level |
| NBCBEIS | NB Child benefits earned income supplement |
| NBCBERR | NB Child benefits earning supplement reduction rate |
| NBCBESR | NB Child benefits earned income supplement rate |
| NBCBETD | NB Child benefits earning supplement turndown level |
| NBCBPI | NB Child benefits phase-in rate |
| NBCBRR | NB Multi-children family income reduction rate |
| NBCBRRS | NB Single-child family income reduction rate |
| NBCBTD | NB child benefits family income turndown |
| NBCTBFLG | NB child benefit activation flag |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfinseld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtsg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |

| | |
|-----------|--|
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imisp | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnbcbb | NB child tax Benefits base amount |
| imnbcben | Total NB child tax Benefits |
| imnbwis | NB child tax Benefits WIS |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transferred from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transferred |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txnfld Compute provincial taxes for Newfoundland

SUMMARY

When NTXFLG is turned off, Basic Provincial Tax (imbpt) for Newfoundland is simply a

proportion (NPTF) of Basic Federal Tax (imbft).

For Newfoundland, the SPSM calculates provincial surtax (impsur) as NSF percent of provincial taxes (imtxp) above the level NSCI.

The 2000 budget stated that Newfoundland would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (NTXFLG), a provincial tax table (NPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (NPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (NBXM) |
| impatxc | Age amount tax credit | (NAXM, NAXRR, NAXTD, NAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (NMXM, NMXMT, NEMXM, NEMXMT) |
| impcgtc | Caregiver tax credit | (NCGTC, NCGTCFLG, NCGTCTC, NCGTCTD, NCGTCTK) |
| impchrctc | Charitable donations | (NCHATL1, NCHATR1, NCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (NMAXDX) |
| impdtxc | Dividend tax credit | (NDTCR) |
| impedtxc | Education tax credit | (NEDXPM, NMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (NYPNDL) |
| imptutxc | Tuition Tax credit | (NMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using NAMTOPT.

A new refundable sales tax credit was modeled and added to the provincial tax credit (imptc). Similar to the federal credit, it allows for NSTCA dollars for each adult, NSTCC dollars for each child, and it reduced starting at family incomes over NSTCL at a rate of NSTCR.

Newfoundland and Labrador Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget. The Newfoundland and Labrador Child Benefit (imncb) is a tax-free monthly payment to help low-income families with the cost of raising children under age 18. Benefits from this program are combined with the Canada Child Tax Benefit into a single monthly payment. The program was implemented in July 1999.

SPSM Implementation

This benefit is turned by NCBFLG. Under the Newfoundland and Labrador Child Benefit program, you may be entitled to receive a benefit of NCB1 for the first child, NCB2 for the second child, NCB3 for the third child, and NCB4 for each additional child. The benefit is reduced when net family income is greater than NCBTD and is completely phased out when net family income is at least NCBPO. The benefit (imncb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| NAMTOPT | NFLD alternative minimum tax option (1=none, 2=% fed, 3=fed adj income, 4=% min amt) |
| NAMTPCTF | NFLD amt rate as pct of additional fed tax due to minimum tax |
| NAMTPCTM | NFLD amt rate as pct of federal minimum tax amount |
| NAMTTX | NFLD amt rate as tax on adjusted income |
| NAXM | NFLD Age Amount |
| NAXPI | NFLD Age Amount phase in rate for 1994 and beyond |
| NAXRR | NFLD Age Amount credit reduction rate |
| NAXTD | NFLD Age Amount net income turndown |
| NBXM | NFLD Basic Personal Exemption/amount |
| NCB1 | Nfld. child benefit for first child |
| NCB2 | Nfld. child benefit for second child |
| NCB3 | Nfld. child benefit for third child |
| NCB4 | Nfld. child benefit for 4th and subsequent child |
| NCBFLG | Newfoundland child benefit activation flag |
| NCBPI | Nfld. child benefit program phase in |
| NCBPO | Nfld. child benefit family income phase out |
| NCBTD | Nfld. child benefit family income turndown |
| NCGTC | NFLD Caregiver Tax Credit |
| NCGTCFLG | NFLD Caregiver Tax Credit activation flag |
| NCGTCTC | NFLD Caregiver tax credit take-up rate by age of elderly [age,rate] |
| NCGTCTD | NFLD Caregiver Tax Credit Turn Down Income |
| NCGTCTK | NFLD Caregiver tax credit take-up rate by income level [employment income,rate] |
| NCHATL1 | NFLD Charitable Donations amount level 1 |
| NCHATR1 | NFLD Charitable Donations tax credit rate 1 |
| NCHATR2 | NFLD Charitable Donations tax credit rate 2 |
| NDTCR | NFLD dividend tax credit rate |
| NEDXPM | NFLD Education Amount per month |
| NEMXM | NFLD equivalent to married amount |
| NEMXMT | NFLD equivalent to married turndown level |
| NHEATFLG | Newfoundland home heating fuel rebate activation flag |

| | |
|----------|---|
| NHEATREB | Newfoundland home heating fuel rebate amount |
| NLVCMAX | Maximum NFLD labour-sponsored funds tax credit allowed |
| NLVCRT | Percent of NFLD labour-sponsored funds cost allowed as credit |
| NMAXDX | NFLD Maximum Disability deduction/amount |
| NMAXET | NFLD maximum on transfer of education and tuition amount |
| NMXM | NFLD married amount |
| NMXMT | NFLD married amount turndown level |
| NPNTCR | NFLD provincial non-refundable tax credit rate |
| NPTC | Newfoundland political contribution table [total donations, donation allowed] |
| NPTCBEN | Maximum Newfoundland political tax credit allowed |
| NPTF | Newfoundland provincial tax fraction |
| NPTX | NFLD tax table [taxable income, basic provincial tax] |
| NSCI | Newfoundland provincial tax above which surtax applies |
| NSCI2 | Newfoundland provincial surtax level 2 |
| NSF | Newfoundland provincial surtax rate |
| NSF2 | Newfoundland provincial surtax rate 2 |
| NSTCA | NFLD sales tax credit amount for adults |
| NSTCC | NFLD sales tax credit amount for children |
| NSTCFLAG | NFLD sales tax credit activation flag |
| NSTCL | NFLD sales tax credit reduction level |
| NSTCR | NFLD sales tax credit reduction rate |
| NTXFLG | NFLD tax on taxable income activation flag |
| NYPNDL | NFLD Pension Income Deduction Amount |
| PYINC | Deflator to calculate previous year income |

INPUT VARIABLES:

| | |
|----------|--|
| cfageeld | Age of eldest in census family |
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| fxio | I/O expenditure categories [array] |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvppl | Provincial political contributions (565) |

| | |
|----------|---|
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepmi | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| imigist | GIS provincial top-up |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imncb | Newfoundland Child Benefit |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |

impuictc Prov UI/EI contributions tax credit
 imtxp Provincial income tax payable

txns Compute provincial taxes for Nova Scotia

SUMMARY

This function calculates provincial taxes and credits for Nova Scotia. The programs simulated are as follows:

- Basic provincial tax
- Two level surtax
- Family tax reduction
- Phamacare tax and tax credits
- Provincial foreign tax credit
- Provincial political tax credit
- Provincial labour-sponsored venture capital tax credit
- Stock savings plan tax credit
- Home ownership savings plan tax credit
- Direct Assistance

Basic Provincial Tax

When VTXFLG is turned off, the algorithm first calculates basic provincial tax. Basic provincial tax (imbpt) for Nova Scotia is calculated as a proportion (VPTF) of Basic Federal Tax (imbft). Provincial taxes payable (imtxp) are then initialized to the value of basic provincial tax (imbpt).

The 2000 budget announced that Nova Scotia would convert to a tax on taxable income starting in 2000. When the tax on taxable income flag is turned on (VTXFLG), a provincial tax table (VPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (VPNTCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|----------|--|--|
| impbtc | Basic amount | (VBXM) |
| impatxc | Age amount tax credit | (VAXM, VAXRR, VAXTD, VAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (VMXM, VMXMT, VEMXM, VEMXMT) |
| impcgtc | Caregiver tax credit | (VCGTC, VCGTCFLG, VCGTCTC, VCGTCTD, VCGTCTK) |
| impchrtc | Charitable donations | (VCHATL1, VCHATR1, |

| | | |
|-----------|-----------------------------|------------------|
| | | VCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (VMAXDX) |
| impdtxc | Dividend tax credit | (VDTCR) |
| impedtxc | Education tax credit | (VEDXPM, VMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (VYPNDL) |
| imptutxc | Tuition Tax credit | (VMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using VAMTOPT.

Provincial Surtax

The Nova Scotia surtax (impsur) is calculated as VSF percent of provincial taxes (imtxp) above the level VSCI plus VSF2 percent of provincial taxes above the level VSCI2. This amount is then added to provincial taxes payable (imtxp).

Family Tax Reduction

Program Description

The Nova Scotia tax reduction for low income individuals and families was introduced in 1994. To be eligible for the reduction a filer must be either over age 18, or have a spouse, or be a parent. This a family based tax reduction and only one person of a married couple may claim the reduction. The reduction has prescribed maximum amounts for the claimant, a spouse and children. There is an equivalent to married amount in cases where a claimant has filed for the federal equivalent to married non-refundable tax credit. The total of these amounts is then subject to a family income test.

SPSM Implementation

The calculation closely follows the structure on form T1C (N.S.). Individuals are first tested for eligibility on the basis of age (idage), marital status (idspoflg), and parental status. Parental status is only relevant for young (<19) families and single parents and so is tested using relation to head (idcfrh == 0) and presence of young children (nfnkids).

Persons without a spouse are assigned the basic amount (VTRBAS). Heads of census families with a spouse are assigned the basic and spouse amounts (VTRBAS + VTRSP). Equivalent to married amounts (VTREM) are given to spouseless heads who claim the federal married tax credit (immartxc). Amounts for children are given to the head of the census family. No child amounts are given with respect to children who triggered the equivalent to married amount.

The maximum deduction is then reduced by a fixed proportion (VTRRR) of the net income (iminet) of the head plus spouse (if present) in excess of the income base amount (VTRTD). This calculation is performed for persons without spouses or heads of census families with

spouses. The amounts for families with spouses are then assigned to the spouse with the higher net income. The tax reduction thus calculated is written to the non-refundable provincial tax reduction variable (imptr) and is used to decrease provincial taxes payable (imtxp).

Pharmacare Program

Program Description

Introduced in the 1995 provincial budget, the pharmacare program consists of an annual pharmacare premium payable by all seniors and a refundable tax credit for low income seniors.

SPSM Implementation

The pharmacare premium (VPHPREM) is assigned to the variable impeht for all Nova Scotians age 65 or older. This amount is then used to increase provincial taxes payable (imtxp).

The pharmacare refundable tax credit (impehtc) is calculated for all Nova Scotia seniors in receipt of GIS benefits (imigis). It is calculated as the basic tax credit (VPHTC) less a fixed proportion (VPHRR) of income (imgisinc) above a threshold (VPHTD). The pharmacare refundable tax credit (impehtc) is added to the variable for refundable provincial tax credits (imptc).

Starting in 1996, the tax credit no longer depended on whether or not a person received GIS. Instead, the credit is taxed back depending on family income. When VPHOPT is set to 1, the program depends on GIS receipt, and when it is set to 2 it depends on family income. There are now two turndowns, VPHTD for singles (also used in the original program) and VPHTDC for couples.

Provincial Foreign Tax Credit

The provincial foreign tax credit is imputed from the Greenbook (idprvftc). Only the amount of the foreign tax credit required to reduce provincial tax payable (imtxp) to zero is applied to the variable for non-refundable provincial tax credits (imnptc). Provincial tax payable (imtxp) is then reduced by the amount imnptc.

Political Contribution Tax Credit

Labour Sponsored Venture Capital Tax Credit

The Nova Scotia labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Nova Scotia provincial credit is modeled as

VLVCRT times the gross amount up to VLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Direct Assistance

Program Description

Introduced in the 1997 provincial budget, direct assistance gives a benefit to low income Nova Scotians who would not be otherwise eligible for the tax reduction.

Beginning in 2000, direct assistance is only granted to families with children.

SPSM Implementation

Nova Scotia residents 19 and over are eligible for direct assistance if their income is below the cut-off (VDACI for families or VDASI for single individuals). The benefits are VDACB for families and VDASB for single individuals.

Differences between the SPSM estimate and reality will primarily come from two problems. Persons are eligible for Direct Assistance if they were full time students for 4 months or less or if they received Social Assistance for three months or less. In the SPSM model, anyone who is a full-time student in March (idestat==1) or anyone who receives Social Assistance was deemed ineligible for the program. This should lower estimates. But since people have to apply for the program, the take-up is probably not going to be 100% which will increase the SPSM estimate.

Nova Scotia Child Benefit

Program Description

The child benefit was introduced in the 1998 provincial budget.

SPSM Implementation

The benefit is turned on by the flag VCBFLG, and families whose net income is less than VCBTD are eligible. They receive VCBBAS1 for their first child, VCBBAS2 for their second child, and VCBBAS3 for their third and each additional child. The benefit is completely phased out when the family net income reaches VCBPO. The benefit (imnscb) is assigned to the mother if present.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

CTCINC CTC family income scaling factor
 PYINC Deflator to calculate previous year income
 VAMTOPT N.S. alternative minimum tax option (1=none, 2=% fed, 3=fed
 adj inc, 4=% min amt)
 VAMTPCTF N.S. amt rate as pct of additional fed tax due to minimum
 tax
 VAMTPCTM N.S. amt rate as pct of federal minimum tax amount
 VAMTTX N.S. amt rate as tax on adjusted income
 VAXM N.S. Age Amount
 VAXPI N.S. Age Amount phase in rate for 1994 and beyond
 VAXRR N.S. Age Amount credit reduction rate
 VAXTD N.S. Age Amount net income turndown
 VBXM N.S. Basic Personal Exemption/amount
 VCBBAS1 NS child benefit for first child
 VCBBAS2 NS child benefit for second child
 VCBBAS3 NS child benefit for third or additional child
 VCBFLG NS child benefit activation flag
 VCBPO NS child benefit family income phase out
 VCBTD NS child benefit turndown
 VCGTC N.S. Caregiver Tax Credit
 VCGTCFLG N.S. Caregiver Tax Credit activation flag
 VCGTCTC N.S. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 VCGTCTD N.S. Caregiver Tax Credit Turn Down Income
 VCGTCTK N.S. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 VCHATL1 N.S. Charitable Donations amount level 1
 VCHATR1 N.S. Charitable Donations tax credit rate 1
 VCHATR2 N.S. Charitable Donations tax credit rate 2
 VDACB NS Direct assistance benefit for couples
 VDACI NS Direct assistance maximum income for couples
 VDAFLAG NS Direct assistance benefit flag
 VDAFWC NS Direct assistance benefit for families with children
 flag
 VDASB NS Direct assistance benefit for singles
 VDASI NS Direct assistance maximum income for singles
 VDTCR N.S. dividend tax credit rate
 VEDXPM N.S. Education Amount per month
 VEMXM N.S. equivalent to married amount
 VEMXMT N.S. equivalent to married turndown level
 VLVCMAX Maximum N.S. labour-sponsored funds tax credit allowed
 VLVCRT Percent of N.S. labour-sponsored funds cost allowed as
 credit
 VMAXDX N.S. Maximum Disability deduction/amount
 VMAXET N.S. maximum on transfer of education and tuition amount
 VMXM N.S. married amount
 VMXMT N.S. married amount turndown level
 VPHOPT Nova Scotia pharmacare premium option (1=GIS, 2=income)
 VPHPREM Nova Scotia pharmacare premium
 VPHRR Nova Scotia pharmacare tax credit reduction rate
 VPHTC Nova Scotia pharmacare refundable tax credit
 VPHTD Nova Scotia pharmacare tax credit turndown
 VPHTDC Nova Scotia pharmacare tax credit turndown for couples
 VPNTCR N.S. provincial non-refundable tax credit rate
 VPTC Nova Scotia political contribution table [total
 donations,donation allowed]
 VPTCBEN Maximum Nova Scotia political tax credit allowed

| | |
|--------|---|
| VPTF | Nova Scotia provincial tax fraction |
| VPTX | N.S. tax table [taxable income,basic provincial tax] |
| VSCI | Nova Scotia provincial tax above which surtax applies |
| VSCI2 | Nova Scotia provincial tax above which surtax applies (2nd level) |
| VSF | Nova Scotia provincial surtax rate |
| VSF2 | Nova Scotia provincial surtax rate (2nd level) |
| VTRBAS | Nova Scotia tax reduction basic amount |
| VTREM | Nova Scotia tax reduction equivalent to spouse amount |
| VTRKID | Nova Scotia tax reduction child amount |
| VTRRR | Nova Scotia tax reduction family income reduction rate |
| VTRSP | Nova Scotia tax reduction spouse amount |
| VTRTD | Nova Scotia tax reduction family income turndown |
| VTXFLG | N.S. tax on taxable income activation flag |
| VYPNDL | N.S. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcf | Person's census family [pointer] |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idestat | Educational status |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtvg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imcemc | Child's equivalent to married credit |
| imchara | Allowable charitable donations and gifts (calculated) |

| | |
|----------|--|
| imcppse | CPP contributions deduction for self-emp |
| imcqppc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imgisinc | Individual's income for GIS/SPA reduction |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| idinspo | Person's spouse [pointer] |
| imbpt | Basic provincial tax |
| iminsda | NS Direct Assistance Program |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imnscb | Nova Scotia Child Benefit |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impeht | Provincial elderly health tax |
| impehtc | Provincial elderly health tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |

imtxp Provincial income tax payable

txont Compute provincial taxes for Ontario

SUMMARY

When OTXFLG is turned off, the Ontario Provincial Tax (imbpt) is calculated as a proportion (OPTF) of Basic Federal Tax (imbft). Added to Basic for some years is the Social Services Maintenance Tax which is a proportion (OSSMR) of Basic Provincial Tax (imbpt) exceeding the tax level (OSSML).

When the tax on taxable income flag is turned on (OTXFLG), a provincial tax table (OPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (OPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (OBXM) |
| impatxc | Age amount tax credit | (OAXM, OAXRR, OAXTD, OAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (OMXM, OMXMT, OEMXM, OEMXMT) |
| impcgtc | Caregiver tax credit | (OCGTC, OCGTCFLG, OCGTCTC, OCGTCTD, OCGTCTK) |
| impchrctc | Charitable donations | (OCHATL1, OCHATR1, OCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistc | Disability tax credit | (OMAXDX) |
| impdtxc | Dividend tax credit | (ODTCR) |
| impdtxc | Education tax credit | (OEDXPM, OMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (OYPNDL) |
| imptutxc | Tuition Tax credit | (OMAXET) |
| impuietc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using OAMTOPT.

Ontario provides a tax reduction for persons with a low taxable income. This reduction amounts to a proportion (OTRF) of taxable income (imitax) below the Ontario Tax Reduction Level (OMTY). This is subtracted from Basic Provincial Tax to derive Provincial

Tax Payable (imtxp).

The Ontario labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Ontario provincial credit is modeled as OLVCRT times the gross amount up to OLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Employer Health Tax (imonteht) only applies to self-employed persons, and is calculated when OEHTFLAG is set to 1. When a person's income from self-employment is less than OEHTTD1, the Employer Health Tax is calculated using the rate OEHTRR1 on self-employment earnings over the exemption OEHTEX. When a person's income from self-employment is less than this value, but greater than OEHTTD1, the Employer Health Tax is calculated by adding OEHTRR1 times the difference between the first turndown (OEHTTD1) and the exemption rate (OEHTEX) and OEHTRR2 times the difference between earnings from self-employment and OEHTTD1. When self-employment earnings are greater than OEHTTD2, the Ontario Employer Health Tax is calculated as OEHTRR3 times earnings from self-employment which are greater than the exemption OEHTEX.

When the parameter OCCEAFLG is set to 1, the child care expense credit is calculated. The maximum amount of the benefit is calculated as the lower of either OCCEAPCT times actual child care expenses (imccea), or of a specified amount per child (OCCEAYNG) times the number of children age 6 and under in the census family. Maximum family benefits are then reduced by a proportion (OCCEARR) of family net income above the threshold (OCCEATD). The model assigns the imputed Child Care credit (imoccea) to the mother, if present.

When OCWISFLG is set to 1, the supplement for working families is calculated as a percentage (OCWISRR) of family income over a threshold OCWISTD. The percentage depends on the number of children under the age of 7 in the family. The Supplement cannot exceed OCCEAYNG times the number of children under the age of 7. In single parent families, the maximum cannot exceed OCWISSP times the number of children under the age of 7 as announced in the Ontario 2000 Budget. The benefit which is given is the maximum value of either the supplement or the childcare expenses credit.

The taxpayer dividend (imotxdv) announced in the 2000 Budget was implemented. It is equal to taxes paid in the previous year up to a maximum (OTXDVMAX). People who paid over 0\$ in taxes would get a minimum rebate of OTXDVMIN. The benefit is included in refundable tax credits of 2000. Since it is based on the previous year's taxes, the taxes are multiplied by OPYTAX in order to estimate the lagged effect.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CAPGIR | Capital gains inclusion rate |
| OAMTOPT | Ont. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| OAMTPCTF | Ont. amt rate as pct of additional fed tax due to minimum tax |
| OAMTPCTM | Ont. amt rate as pct of federal minimum tax amount |
| OAMTTX | Ont. amt rate as tax on adjusted income |
| OAXM | Ont. Age Amount |
| OAXPI | Ont. Age Amount phase in rate for 1994 and beyond |
| OAXRR | Ont. Age Amount credit reduction rate |
| OAXTD | Ont. Age Amount net income turndown |
| OBXM | Ont. Basic Personal Exemption/amount |
| OCAPGIR | Ont. Capital Gains Inclusion Rate |
| OCCEAFLG | Ont. Child Care Expense Credit activation flag |
| OCCEAPCT | Ont. Child Care Expense Credit qualifying percentage |
| OCCEARR | Ont. Child Care Expense Credit benefit reduction rate |
| OCCEATD | Ont. Child Care Expense Credit family income turndown |
| OCCEAYNG | Ont. Child Care Expense Credit allowance per child |
| OCGIRFLG | Ont. Capital Gains Inclusion Rate Activation Flag |
| OCGTC | Ont. Caregiver Tax Credit |
| OCGTCTFLG | Ont. Caregiver Tax Credit activation flag |
| OCGTCTC | Ont. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| OCGTCTD | Ont. Caregiver Tax Credit Turn Down Income |
| OCGTCTK | Ont. Caregiver tax credit take-up rate by income level [employment income,rate] |
| OCHATL1 | Ont. Charitable Donations amount level 1 |
| OCHATR1 | Ont. Charitable Donations tax credit rate 1 |
| OCHATR2 | Ont. Charitable Donations tax credit rate 2 |
| OCWISFLG | Ont. Child Care Working Income Supplement activation flag |
| OCWISRR | Ont. Child Care Working Income Supplement Rate [children][rr] |
| OCWISSP | Ont. Child Care Working Income Supplement maximum benefit for single parents |
| OCWISTD | Ont. Child Care Working Income Supplement minimum earnings |
| ODTCR | Ont. dividend tax credit rate |
| OEDXPM | Ont. Education Amount per month |
| OEHTDRR | OEHT - Income Tax Deduction Rate |
| OEHTEX | OEHT - Exemption |
| OEHTFLAG | OEHT - Ontario Employer Health Tax Flag |
| OEHTRR1 | OEHT - Rate 1 |
| OEHTRR2 | OEHT - Rate 2 |
| OEHTRR3 | OEHT - Rate 3 |
| OEHTTD1 | OEHT - Turndown 1 |
| OEHTTD2 | OEHT - Turndown 2 |
| OEMXM | Ont. equivalent to married amount |
| OEMXMT | Ont. equivalent to married turndown level |

| | |
|----------|---|
| OLVCMAX | Maximum Ont. labour-sponsored funds tax credit allowed |
| OLVCRT | Percent of Ont. labour-sponsored funds cost allowed as credit |
| OMAXDX | Ont. Maximum Disability deduction/amount |
| OMAXET | Ont. maximum on transfer of education and tuition amount |
| OMTY | Ontario tax reduction limit |
| OMXM | Ont. married amount |
| OMXMT | Ont. married amount turndown level |
| OPCRA | Ontario property tax college residence amount |
| OPNTCR | Ont. provincial non-refundable tax credit rate |
| OPOCAR | Ontario property tax percent of occupancy cost |
| OPOCM | Ontario property tax maximum occupancy cost |
| OPRIR | Ontario property tax credit rental inclusion rate |
| OPSMAX | Ontario property/sales tax credit maximum |
| OPTC | Ontario political contribution table [total donations,donation allowed] |
| OPTCBEN | Maximum Ontario political tax credit allowed |
| OPTCFLAG | Ontario political contribution refundable tax credit flag |
| OPTF | Ontario provincial tax fraction |
| OPTX | Ont. tax table [taxable income,basic provincial tax] |
| OPYTAX | Estimate of previous year's Ontario taxes |
| ORDOPT | Ontario tax reduction calculation option |
| OSPOCM | Ontario seniors property tax maximum occupancy cost |
| OSSML | Ontario surtax first cut-in level |
| OSSML2 | Ontario surtax second cut-in level |
| OSSMR | Ontario surtax first level rate |
| OSSMR2 | Ontario surtax second level rate |
| OSSTCP | Ontario seniors sales tax credit percent of income |
| OSTCB | Ontario sales tax credit basic credit |
| OSTCD | Ontario sales tax credit dependant credit |
| OSTCFLAG | Ontario seniors tax credit claimed flag |
| OSTCNIBA | Ontario seniors tax credit net income base amount |
| OSTCP | Ontario sales tax credit percent of income |
| OSTCS | Ontario sales tax credit spouse credit |
| OTCNIBA | Ontario tax credit net income base amount |
| OTRBPA | Ontario tax reduction basic personal amount |
| OTRDCA | Ontario tax reduction dependant child amount |
| OTRDDA | Ontario tax reduction disabled dependant amount |
| OTRF | Ontario tax reduction Ontario tax multiplier |
| OTRFP | Ontario tax reduction personal amount multiplier |
| OTXDVMAX | Maximum taxpayer dividend |
| OTXDVMIN | Minimum taxpayer dividend for people with non-zero taxes |
| OTXFLG | Ont. tax on taxable income activation flag |
| OYPNDL | Ont. Pension Income Deduction Amount |

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |

| | |
|----------|---|
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idcapgex | Capital gains exemptions (254) |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| idhomstu | College res/resdnt homeowner assist (558) |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idnf | Person's nuclear family [pointer] |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imccea | Child care expenses allowed |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdedft | Deductions from total income |
| imdepni | Dependant's net income |
| imicapgt | Capital gains (taxable) |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| imitot | Total income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| improptx | Imputed property tax paid |
| imrentpd | Imputed rent paid |
| imuic | UIC contributions |
| nfnkids | Number of children in nuclear family |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imiotax | Ontario taxable income |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| imoccea | Ont. Child Care Exp. credit allowed (Family) |
| imonteht | Ontario Employers Health Tax (Self-employed) |
| imotxdv | Ontario Taxpayer Dividend |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgctc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txpei Compute provincial taxes for P.E.I.

SUMMARY

When PTXFLG is off, the Basic Provincial Tax (imbpt) for Prince Edward Island is simply a proportion (PTF) of Basic Federal Tax (imbft).

The 2000 budget announced that PEI would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (PTXFLG), a provincial tax table (PPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (PPNTR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (PBXM) |
| impatxc | Age amount tax credit | (PAXM, PAXRR, PAXTD, PAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (PMXM, PMXMT, PEMXM, PEMXMT) |
| impcgtc | Caregiver tax credit | (PCGTC, PCGTCFLG, PCGTCTC, PCGTCTD, PCGTCTK) |
| impchrctc | Charitable donations | (PCHATL1, PCHATR1, PCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (PMAXDX) |
| impdtxc | Dividend tax credit | (PDTCR) |
| impedtxc | Education tax credit | (PEDXPM, PMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (PYPNDL) |
| imptutxc | Tuition Tax credit | (PMAXET) |
| impuictc | EI contributions tax credit | |

The option to apply a minimum tax is controlled using PAMTOPT.

The Prince Edward Island labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Prince Edward Island provincial credit is modeled as PLVCRT times the gross amount up to PLVCMAX. The credit cannot be more than provincial taxes (imtxp).

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| PAMTOPT | P.E.I. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| PAMTPCTF | P.E.I. amt rate as pct of additional fed tax due to minimum tax |
| PAMTPCTM | P.E.I. amt rate as pct of federal minimum tax amount |
| PAMTTX | P.E.I. amt rate as tax on adjusted income |
| PAXM | P.E.I. Age Amount |
| PAXPI | P.E.I. Age Amount phase in rate for 1994 and beyond |
| PAXRR | P.E.I. Age Amount credit reduction rate |
| PAXTD | P.E.I. Age Amount net income turndown |
| PBXM | P.E.I. Basic Personal Exemption/amount |
| PCGTC | P.E.I. Caregiver Tax Credit |

PCGTCTCFLG P.E.I. Caregiver Tax Credit activation flag
 PCGTCTC P.E.I. Caregiver tax credit take-up rate by age of elderly
 [age,rate]
 PCGTCTD P.E.I. Caregiver Tax Credit Turn Down Income
 PCGTCTK P.E.I. Caregiver tax credit take-up rate by income level
 [employment income,rate]
 PCHATL1 P.E.I. Charitable Donations amount level 1
 PCHATR1 P.E.I. Charitable Donations tax credit rate 1
 PCHATR2 P.E.I. Charitable Donations tax credit rate 2
 PDTCR P.E.I. dividend tax credit rate
 PEDXPM P.E.I. Education Amount per month
 PEMXM P.E.I. equivalent to married amount
 PEMXMT P.E.I. equivalent to married turndown level
 PLVCMAX Maximum P.E.I. labour-sponsored funds tax credit allowed
 PLVCRT Percent of P.E.I. labour-sponsored funds cost allowed as
 credit
 PMAXDX P.E.I. Maximum Disability deduction/amount
 PMAXET P.E.I. maximum on transfer of education and tuition amount
 PMXM P.E.I. married amount
 PMXMT P.E.I. married amount turndown level
 PPNTCR P.E.I. provincial non-refundable tax credit rate
 PPTC P.E.I. political contribution table [total
 donations,donation allowed]
 PPTCBEN Maximum P.E.I. political tax credit allowed
 PPTF P.E.I. provincial tax fraction
 PPTX P.E.I. tax table [taxable income,basic provincial tax]
 PSCI P.E.I. provincial tax above which surtax applies
 PSF P.E.I. provincial surtax rate
 PTRBAS Base PEI low income tax reduction
 PTRKID PEI low income tax reduction for dependent child
 PTRRR PEI low income tax reduction Reduction Rate
 PTRSP PEI low income tax reduction for spouse or equivalent-to-
 spouse
 PTRTD PEI low income tax reduction Turndown
 PTXFLG P.E.I. tax on taxable income activation flag
 PYPNDL P.E.I. Pension Income Deduction Amount

INPUT VARIABLES:

cfin First person in census family [pointer]
 cfinch First child in census family [pointer]
 cfineld Eldest person in census family [pointer]
 cfinspo Spouse of eldest [pointer]
 cfnchild Number of children (including 18+)
 cfnpers Number of persons in census family
 cfspoflg Census family contains married couple
 efin First person in economic family [pointer]
 efnpers Number of persons in economic family
 hhncf Number of census families in household
 hhnef Number of economic families in household
 hhnin Number of individuals in household
 hhnnf Number of nuclear families in household
 idage Age
 idcfrh Relationship to census family head
 iddisab Disability status
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 ideducm Eligible months of education allowance

| | |
|----------|---|
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imuic | UIC contributions |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impdtxc | Prov Education tax credit |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |

| | |
|----------|-------------------------------------|
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imtxp | Provincial income tax payable |

txprov Compute provincial taxes

SUMMARY

Provincial income taxes are collected by the federal government on behalf of most provinces. Quebec collects its own income tax. Algorithms for computing provincial tax range from taking a proportion of Basic Federal Tax as in Newfoundland, Prince Edward Island, New Brunswick and Nova Scotia to a parallel of the federal system in Quebec. The other provinces begin with a proportion of federal taxes but have their own systems of tax credits, surtaxes and reductions.

CROSS REFERENCE

| Function | Description |
|----------|-------------|
|----------|-------------|

INPUT VARIABLES:

| | |
|--------|----------|
| hdprov | Province |
|--------|----------|

txqcalc Calculate income tax (Quebec)

SUMMARY

The txqcalc function calculates Quebec income tax for those individuals affected.

SPSM Implementation

Each census family is processed in turn. First, the basic provincial tax is computed via a table look-up for each person. Next the non-refundable tax credits are applied and unused credits are transferred between spouses, if appropriate. Subsequently, the 'family situation' and 'eligible income' are computed followed by the family tax reduction. After the family tax reduction has been calculated, the refundable property tax credit is computed.

Relation to Other SPSM Routines

txqcalc is called from within txprov and is in a subsidiary relationship to it. It does not call, and is not called by, any further functions.

Sales tax credit

The refundable sales tax credit (imqstr) is activated when QSTRFLAG is set to 1. The sales tax credit includes a base credit (QSTRBCRD), a credit (QSTRCHILD) is added for each child in the family. A second credit is added (QSTRFTP3) when no spouse is present and at least one dependent child is present. And finally another credit is added (QSTRFTP4) is for a person living alone or with at least one dependent. The credit is reduced by the income considered at a rate QSTRRR.

Housing of Parent tax credit

The Housing of Parent Tax Credit (imqhptc) calculation is activated by a flag (QHPTCFLG) and the base tax credit is QHPTC. An economic family is eligible to the imqhptc if the parent or grandparent of the head of the economic family, or his/her spouse is in the economic family. A take-up rate QHPTCTC based on age of the potential parent assigns individuals with idefrh=3 as a parent according to SCF data. A take-up rate QHPTCTK based on employment income select the appropriate number of beneficiaries according to Portrait de la fiscalité des particuliers au Québec.

Medical Expenses tax credit

The calculation of the refundable tax credit for medical expenses is activated by the flag QMRTCFLG. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). The tax credit is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. Eligibility is also limited to persons aged 18 and over with employment related earnings greater than QMEDRMIN. The medical expenses tax credit was introduced in 1997.

Dues as non-refundable tax credit

Starting in 1997, dues that where a deduction (iddues) in txqinet are a tax credit activated by the option QDUESOPT = 2. The value of the tax credit is imquetc. When QDUESOPT = 1, the dues are calculated in txqinet.

Tuition as non-refundable tax credit

Starting in 1997, tuition are considered as a deduction (idtuitn) in txqinet are now a tax credit activated by the option QTUIOPT = 2. The value of the tax credit is imquitc.

Family Allowance Tax Credit

The Quebec Family Allowance Tax Credit started in September 1997 but is implemented in the model starting 1998. The Quebec Family Allowance Tax Credit is a credit based on

previous year net family income and is non-taxable. The maximum credits vary with the number of children (QFATCMXK), and a supplement QFATCSUP is allocated to single parent families. For families with 4 kids and more, a supplement, QFATCK6, is added that varies with the number of kids and the number of kids under 6 years of age. The credit is the maximum until it reaches the first turn down income level with a specific reduction rate. The sequence of turn down incomes and reduction rates for single parent families are in QFATCSRR and for married couples in QFATCMRR. The turning point at QFATD4K is increased by QFATD4KI for each child over three. The benefits are reduced up to a minimum based on the number of children in the family (QFATCMNK) until the net family income reaches the last turning point in either QFATCSRR or QFATCMRR. At this last turning point the benefits are starting to reduce until they reach a minimum for payments of QFATCMIN. The program is implemented by copying the reduction rate table (QFATCSRR or QFATCMRR) into a temporary table. Then another temporary table assigns benefits and reduction rates to turning point incomes. Finally, the calculated benefits, imqfatc, are assigned to the women in the married couples or to the head of the single parent family. When activated, the take-up rate, QFATCTK, selects the assigned individual only if a random number is higher than the level specified by its total income. As a standard, QFATCTK is set to zero and all individuals are selected.

Alternative Minimum Tax

The Alternative Minimum Tax in Quebec started in 1986 and is now fully implemented. The calculation is activated by QAMTXFLG. The calculation of the income considered is slightly different than the Federal Alternative Minimum Tax because of difference in the rates considered for:

- . the inclusion of an amount of capital in the income considered (QCAPAMTX),
- . the dividing factor for the dividends (QDIVRAT), and
- . the allowable taxable portion the capital gains (QAMTINCRT - QCAPGIR).

The exemption level is QAMTX and the tax rate is QAMTTX. When the Alternative Minimum Tax is higher than the calculated tax using the standard algorithm, the difference is stored in imqamt. A flag, imqamtfg, identifies the individuals with the modified income tax. In 1995, the definition of income was changed and QAMTXREF indicates new components used in the calculation of taxable income.

When QAMTXSTKFLG is set to 1, the stock option deduction (imqstkdd) can be deducted when calculating the Quebec Alternative Minimum Tax.

Political Contribution

Starting in 1995, the political contribution is subject to two rates (QPCTR) instead of one (QPTC). The calculation procedure for 1995 and after is activated when QPCOPT is set to 2, otherwise it is the single rate that applies.

Labour-sponsored venture capital tax credit

The Quebec labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Quebec provincial credit is modeled as QLVCRT times the gross amount up to QLVCMAX. The credit cannot be more than provincial taxes (imtxp).

Simplified tax program (low income credit)

The simplified tax program, which includes a flat tax credit, started in 1998. People were allowed to decide whether it was in their benefit to fill out the simplified or general tax form. A worksheet was provided in order to facilitate the choice.

The SPSM has implemented this tax system in the following way. When QSFOPT is set to 1, everyone in Quebec fills out the general tax form. This is the system which was in place prior to 1998. If QSFOPT is set to 2, then everyone fills in the simplified tax form. And when QSFOPT is set to 3, then an optimization procedure is run. In this scenario, an approximation of the worksheet which was provided with the 1998 tax form is calculated prior to the computation of taxes. People are assigned to either the general tax form (which includes all deductions) or the simplified tax form (which includes few deduction but an additional credit - QSFTC). The variable imqsfllg notes which form was chosen.

A person can transfer all of their extra credits and deductions to their spouse when both spouses fill out the simplified tax form. When using the general form, only a limited number of deductions can be transferred. Because the worksheet does not take into account all the inter-spouse complexities, the optimization procedure will tend to overstate taxes. While it is very accurate for single persons, it tends to maximize the individual's gain which is not necessarily the couple's gain. The model may therefore slightly overstate Quebec taxes.

At the same time, the number of income tax brackets in QTX is reduced from 5 to 3, the Surtax and the Tax Reduction are eliminated.

This tax change also signified the replacement of the age, living alone, and retirement credits with a combined family-based credit (imqcalr).

Improved Tax System for Self Employed Workers

The improved tax system for self employed workers in Quebec was added. This improved system was announced in the Quebec 2000 Budget to enable the increasing number of self-employed workers to benefit from the simplified tax form. This system will standardize the tax treatment applicable to that part of the contribution paid by a worker in respect of pensionable self-employed earnings that could be equated with an employer's contribution, and refrain from excluding a growing number of self-employed workers from the simplified tax system. When activated (QITSFSEW), it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new

deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine the contribution to the Health Services Fund payable by individuals. The calculated amount of the contributions to be converted is held in imqcpse.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. The value of the tax credit is calculated in txqitax.

Refundable Tax Credit for Medical Expenses

When QMRTCFLG is assigned to 1, the Quebec refundable tax credit for medical expenses (imqmedrc) is calculated for persons aged 18 and over who had employment related earnings greater than QMEDRMIN. The maximum refundable credit will be the lesser of QMEDRMAX and QMEDRATE percent of eligible medical expenses (imqmeda). It is reduced by QMEDRRR percent of net family income in excess of QMEDRTD. When QMRTCFLG is assigned to 0, the calculation of the Quebec refundable tax credit for medical expenses is suppressed.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| PYINC | Deflator to calculate previous year income |
| QAMTCBX | Quebec Alternative Minimum Tax Calculate Basic Exemption |
| QAMTDIV | Quebec Alternative Minimum Tax Taxable Dividend Limit |
| QAMTINCRT | Quebec Alternative Minimum Tax Inclusion Rate |
| QAMTNEGTTI | Quebec Alternative Minimum Tax Allow Negative Taxable Income |
| QAMTRITC | Quebec Alternative Minimum Tax Retirement Income Credit Deduction |
| QAMTRPFLG | RRSP/RPP included in Quebec Alternative Minimum Tax (1=include) |
| QAMTTX | QAMTX tax rate |
| QAMTX | QAMTX exemption level |
| QAMTXFLG | Quebec alternative minimum tax, QAMTX, activation flag |
| QAMTXREF | Quebec alternative minimum tax 1995 reform indicator (flag) |

| | |
|------------------|--|
| QAMTXSTKFLG | QAMTX stock option deduction inclusion (1=stk can be deducted) |
| QAPFFLG | Quebec anti-poverty fund activation flag |
| QAPFRAT | Quebec anti-poverty fund rate |
| QAXM | Quebec age exemption/amount |
| QBXM | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPAMTX | QAMTX taxable capital ratio |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |
| QCCETCR | Refundable CCE credit rate [net income, % cce claimable] |
| QCRDFLG | Quebec income credit flag [1=if social contribution are deducted] |
| QDIVRAT | QAMTX dividends ratio |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEIA1 | Quebec eligible income family type #1 |
| QEIA2 | Quebec eligible income family type #2 |
| QEIA3 | Quebec eligible income family type #3 |
| QEIA4 | Quebec eligible income family type #4 |
| QEIA5 | Quebec eligible income family type #5 |
| QEIAA | Quebec eligible income aged amount |
| QFAMDED | Quebec Family related deduction on income in refundable credits |
| QFAMFLG | Quebec family income deduction activation flag |
| QFAMNETI | Quebec family allowance tax credit net income concept flag |
| QFAMRAT | Quebec family income rate |
| QFATCHIRR | QFATC High income reduction rate |
| QFATCHITD | QFATC High income turndown |
| QFATCK6 | QFATC Supplement for kids under 6 in large families |
| [#kids][#kids<6] | |
| QFATCK6PYR | QFATC supplement for kids under 6 phase out year proportion |
| QFATCK6YR | QFATC Supplement for kids under 6 phase out year |
| QFATCMIN | QFATC minimum benefit paid |
| QFATCMNK | QFATC Minimum benefits by kid rank |
| QFATCMRR | QFATC turn down income levels and reduction rate for married parents |
| QFATCMXK | QFATC Maximum benefits by kid rank |
| QFATCOPT | Quebec Family Allowance Tax Credit Option tranfer=1, tax credit=2 |
| QFATCSRR | QFATC turn down income levels and reduction rate for single parent |
| QFATCSUP | Quebec Family Allowance Tax Credit Supplement for single parent |
| QFATCTK | QFATC Take-up rates by total income |
| QFATD4K | QFATC turn down income for 4 children and more |
| QFATD4KI | QFATC turn down income increase by child for 4 children and more |
| QFTRA1 | Quebec family tax reduction family type #1 |
| QFTRA2 | Quebec family tax reduction family type #2 |
| QFTRA3 | Quebec family tax reduction family type #3 |
| QFTRA4 | Quebec family tax reduction family type #4 |
| QFTRFLAG | Quebec family tax reduction activation flag |
| QFTRRR | Quebec family tax reduction reduction rate |

QGIFTOPT Quebec gifts as tax credit
 QHPTC Quebec Housing Parent Tax Credit
 QHPTCFLG Quebec Housing Parent Tax Credit activation flag
 QHPTCTC QHPTC take-up rate by age of elderly [age,rate]
 QHPTCTK QHPTC take-up rate by income level [employment income,rate]
 QHSCI Quebec surtax first cut-in level
 QHSCI2 Quebec surtax second cut-in level
 QHSF Quebec surtax first level rate
 QHSF2 Quebec surtax second level rate
 QITSFSEW Quebec improved tax system for self-employed worker
 activation flag
 QLAXM Quebec living alone exemption/amount
 QLVCMAX Maximum Quebec labour-sponsored funds tax credit allowed
 QLVCRT Percent of Quebec labour-sponsored funds cost allowed as
 credit
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDRATE Proportion of expenses allowed for refundable tax credit
 for medical expenses
 QMEDRMAX Maximum expenses allowed for Que. refundable tax credit for
 medical expenses
 QMEDRMIN Minimum earnings for Quebec refundable tax credit for
 medical expenses
 QMEDRRR Reduction rate for the Que. refundable tax credit for
 medical expenses
 QMEDRTD Turndown level for Que. refundable tax credit for medical
 expenses
 QMRTCFLG Quebec refundable tax credits for medical expenses
 activation flag
 QNTPCR Quebec nominal tax credit rate
 QPCOPT Quebec political contribution option
 QPCTR Quebec political contribution tax rates
 QPTC Quebec political contribution table [total
 donations,donation allowed]
 QPTCBEN Maximum Quebec political tax credit allowed
 QPTRGISB Quebec property tax rebate GIS bonus
 QPTRMTP Quebec property tax minimum tax per person
 QPTRMTR Quebec property tax maximum tax for reduction
 QPTRRR Quebec property tax rebate reduction rate
 QPTRTF Quebec property tax fraction
 QRTRFLAG Quebec real estate rebate activation flag
 QSFDISFLAG Quebec Simplified Form Disability tax credit inclusion flag
 QSFOPT Quebec Simplified Form Option (1=general 2=simplified
 3=optimized)
 QSFTC Quebec Simplified Form tax credit
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QSTRBCRD Quebec sales tax rebate base credit
 QSTRCHILD Quebec sales tax rebate children dependent credit
 QSTRFLAG Quebec sales tax rebate activation flag
 QSTRFTP3 Quebec sales tax rebate family type 3 credit
 QSTRFTP4 Quebec sales tax rebate family type 4 credit
 QSTROPT Quebec sales tax rebate option=1 based on imigis, =2
 otherwise
 QSTRRR Quebec sales tax rebate reduction rate
 QTRBE Quebec Tax Reduction Breakeven
 QTROPT Quebec Tax Reduction calculation option 1=universal
 2=income tested

QTRP Quebec tax Reduction proportion
 QTUIOPT Quebec tuition tax credit option
 QTX Quebec income tax table [taxable income,basic provincial tax]
 QYPDL Quebec deduction limit for pension income
 TARGETYEAR Year of analysis

INPUT VARIABLES:

cfin First person in census family [pointer]
 cfinch First child in census family [pointer]
 cfindeld Eldest person in census family [pointer]
 cfinspo Spouse of eldest [pointer]
 cfnkids Number of children in census family
 cfnpers Number of persons in census family
 cfspoflg Census family contains married couple
 efin First person in economic family [pointer]
 efnpers Number of persons in economic family
 hdnadult Number of adults in household
 hdnpers Number of persons in household
 hhncf Number of census families in household
 hhnef Number of economic families in household
 hhnnf Number of nuclear families in household
 idage Age
 idcarry Carrying charges (221)
 idccet Child care expenses associated with child
 idccett Child care expenses (Limit A, Form T778)
 idcfrh Relationship to census family head
 idcloss Allowable other years capital loss (253)
 iddisab Disability status
 ideofrh Relationship to economic family head
 idemplo Employee home relocation loan dedn (248)
 idexplor Exploration and development expenses (224)
 idicapg Capital gains (actual)
 idiemp Wages & salaries
 idiloss Business investment losses (217)
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idisefm Self-employed income - farming
 idisenf Self-employed income - non-farming
 idlabtxg Gross Labour funds bought (413)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idprvppl Provincial political contributions (565)
 idrand Random numbers [array]
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idsex Sex
 idspoflg Person has spouse
 imigis GIS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 immtot Total income
 improptx Imputed property tax paid
 imqalexp Quebec allowable employment expenses
 imqatc Quebec age tax credit
 imqbtc Quebec basic tax credit
 imqcapgx Quebec modelled capital gains deduction (254)

| | |
|----------|--|
| imqcchc | Quebec child's non-refundable credit |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqcppse | Quebec self-employ. QPP/PPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdctc | Quebec dependent child tax credits |
| imqdedfn | Quebec all deductions from net income |
| imqdedft | Quebec deductions from total income |
| imqdistc | Quebec disability tax credit |
| imqduetc | Quebec Dues Tax Credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqidivt | Quebec taxable dividends |
| imqinet | Quebec net income |
| imqitax | Quebec taxable income |
| imqitot | Quebec total income |
| imqlatc | Quebec living alone tax credit |
| imqmeda | Quebec medical expenses allowed |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |
| imqritc | Quebec retirement income tax credit |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqstkdd | Quebec modelled Stock option deduction (249) |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|----------|---|
| imbpt | Basic provincial tax |
| implvctc | Provincial labour-sponsored funds tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| impsur | Provincial surtax |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| imqamt | Quebec Minimum Tax Amount |
| imqamtfg | Quebec Minimum Tax flag |
| imqapf | Quebec Anti-Poverty Fund |
| imqcalr | Quebec combined age, living alone, retirement credit |
| imqcceni | Quebec net income for refundable cce credit calculation |
| imqccetc | Quebec refundable child care expenses Tax Credit |
| imqdtxc | Quebec dividend tax credit |
| imqei | Quebec eligible income for tax reduction |
| imqfatc | Quebec Family Allowance Tax Credit |
| imqfs | Quebec family situation (1-5) |
| imqftr | Quebec family tax reduction |
| imqhptc | Quebec Home Parent Tax Credit level |
| imqittr | Quebec income tested tax reduction |
| imqmedrc | Quebec refundable tax credit for medical expenses |
| imqptr | Quebec property tax refund |
| imqstr | Quebec sales tax refund |
| imqtca | Quebec tax credits applied |
| imqtct | Quebec tax credits transferable |
| imqtcts | Quebec tax credits transferred from spouse |
| imqtottc | Quebec total tax credits |

imtxp Provincial income tax payable

txqceea Compute child care expense allowance (Quebec)

SUMMARY

Since the amounts allowable for the Child Credit Expense Deduction differ slightly between the federal and Quebec provincial tax systems, it would be desirable to use the actual amount allowed for Quebec provincial tax purposes in the calculation of this deduction. The rules for eligibility exactly parallel the federal (see txceea). The algorithms are therefore essentially the same as the ones modeling the allocation of the federal Child Care Expense Deduction.

Unlike the federal algorithm, child care expenses are always treated as a deduction from total income. There is no option for treating them as a tax credit.

CROSS REFERENCE

| Function | Description |
|-----------------|--------------------|
|-----------------|--------------------|

INPUT PARAMETERS:

| | |
|----------|---|
| CCEATFLG | CCEA eligible->claimable transformation activation flag |
| CCEATFR | CCEA eligible->claimable fraction |
| CCEATLL | CCEA eligible->claimable lower limit |
| QCCEAC1 | Quebec CCEA earned income fraction (1 child) |
| QCCEAC2 | Quebec CCEA earned income fraction (2 children) |
| QCCEAC3 | Quebec CCEA earned income fraction (3+ children) |
| QCCEAOLD | Quebec CCEA old child limit |
| QCCEAYNG | Quebec CCEA young child limit |
| QCCEOPT | Quebec CCE calculation option [1=deduction,2=refundable credit] |

INPUT VARIABLES:

| | |
|----------|---|
| cfinch | First child in census family [pointer] |
| cfined | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnkids | Number of children in census family |
| cfspoflg | Census family contains married couple |
| hhncf | Number of census families in household |
| idage | Age |
| idccet | Child care expenses associated with child |
| idccett | Child care expenses (Limit A, Form T778) |
| idiemp | Wages & salaries |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |

OUTPUT VARIABLES:

| | |
|----------|---|
| imqccea | Quebec child care expenses allowed (dedn) |
| imqdedft | Quebec deductions from total income |
| imqinet | Quebec net income |

txqhstr Compute family-related deductions or credits (Quebec)

SUMMARY

This function parallels txhstr which performs similar calculations for federal taxes. The major difference is that the model does not incorporate the conversion of deductions into tax credits for the calculation of Quebec taxes. The algorithms include:

- calculate and allocate Personal Exemptions for Wholly Dependent Children
- calculate and allocate Married Exemption
- calculate Family Support Exemption (similar to federal Married Equivalent Exemption)
- calculate and transfer deductions from spouse

Calculate and Allocate Personal Exemptions for Wholly Dependent Children

Quebec filers with dependent children are eligible to claim an exemption based on the age and net income of the child. The exemption is calculated as a fixed amount minus a proportion of the child's net income exceeding the reduction level. The young child exemption is claimable on behalf of children aged 16 or 17. The old child exemption is claimable on behalf of children 18 and over but under 21, or over 20 and attending school full-time.

For taxation year 1986 and later, the definition of dependant's net income for the purpose of calculating the Exemption for Wholly Dependent Children requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The exemptions for all children are accumulated in cdeds which may later be adjusted by the calculation of the Family Support Exemption. If a spouse is present, the one with the higher Net Income (imqinet) receives the full amount of the exemption for all dependent children (imqcdeds) which is used to reduce Taxable Income (imqitax).

The model does not partition the exemptions for dependent children between spouses as is allowed by the tax regulations. This means that the tax burden of spouses with similar net incomes is not minimized.

In calculating the amount of the exemption, the model does not adjust the Net Income of the dependant to include certain non-taxable amounts of the Guaranteed Income Supplement (GIS), Spouse's Allowance (SPA) or Social Assistance as is specified in the Quebec tax regulations.

Calculate and Allocate Married Tax Credit

Persons legally married during the taxation year are eligible to claim a Married Tax Credit amounting to a fixed value reduced by the spouse's net income. The definition of spouse's net income for the purpose of calculating the Married Tax Credit requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- earnings from international sources which are tax exempt in Canada

SPSM Implementation

The Married Tax Credit (imqmtc) is calculated only for the spouse with the lower Net Income (imqinet). It amounts to a fixed value (QMXM) reduced by the other spouse's Net Income. imqmtc is used to reduce the taxable income (imqitax) of the claiming spouse.

Note that the value of Net Income is not adjusted to include GIS, SPA, Social Aid and non-taxable amounts from international sources. GIS and SPA are calculated later in the model and the amounts are not available when this function is executed. Non-taxable amounts from international sources cannot be separated from other non-taxable income in the database.

Calculate Family Support Exemption

The definition of the Family Support Exemption is similar to the federal Married Equivalent Exemption. Filers who are single, divorced, separated or widowed and who supported a relative related by blood, marriage or adoption are eligible to claim that relative for a Family Support Exemption. This exemption amounts to a fixed value reduced by a proportion of the dependant's net income exceeding a reduction level.

The definition of the dependant's net income for the purpose of calculating the Family Support Exemption requires the addition of the following amounts on non-taxable income to the standard definition of net income:

- Guaranteed Income Supplement, Spouse's Allowance
- CSST Compensation
- Social Aid Benefits
- Earnings from international sources which are tax exempt in Canada

SPSM Implementation

SPSM calculates the Family Support Exemption on behalf of dependent children and not other relatives who may be eligible.

The model attempts to make the claim on behalf of the dependant for whom a claim will benefit the filer most. The first choice for the exemption is a dependant who is not claimable for the child exemption, i.e., one who is 15 years of age or younger, or one who is over 21 and not attending an educational institution. If more than one dependant is eligible under these conditions, then the one with the lower Net Income (imqinet) is chosen. If there is no such dependant, the dependant claimable for the child exemption with the lowest Net Income is chosen.

If the Family Support Exemption is claimed on behalf of a dependant who is also claimable for the child exemption, the accumulated amount of the child exemption is adjusted by subtracting the amount claimed for that dependant.

The Family Support Exemption (imqmarex) is added to Total Personal Exemptions (imqpex) and subtracted from Taxable Income (imqitax).

Calculate and Transfer Deductions From Spouse

As in the federal case (see the function txhstr) Quebec allows the transfer of certain deductions from the spouse in the calculation of provincial income taxes. Deductions that may be transferred are:

- Age Exemption
- Interest and Dividend Income Deduction
- Deduction for Retirement Income
- Disability Deduction

Only the amount not required to reduce the spouse's taxable income to zero may be transferred. There is a limit to the amount of combined Interest and Dividend Income Deduction and Pension Income Deduction transferable which amounts to the unused proportion of the Married Exemption, i.e., if the full Married Exemption was claimed, no portion of these two deductions may be transferred.

SPSM Implementation

For the spouse with the lower Net Income (imqinet) the model calculates a value for potentially transferable deductions as the sum of:

- Age Exemption (imqaxm)
- Disability Deduction (imqdisex)

the lesser of:

- Total Pension Income Deduction (imqpendn) and Interest Income Deduction (imqintdn),
and
- the unused portion of the Married Exemption (QMXM minus imqmarex).

minus any amount required to reduce the spouse's Taxable Income to zero (imqinet minus QBXM).

The amount transferred from the spouse is subtracted from the filer's Taxable Income (imqitax) and added to Total Deductions from Net Income (imqdedfn). The spouse's Taxable Income and deductions are not adjusted because, if a transfer occurs, taxable income is zero by definition. The amounts recorded for the individual deductions (e.g., imqaxm, imqpendn) are not adjusted to reflect the transfer.

The value of Net Income used in the calculation of the transfer is not adjusted to include GIS, SPA and Social Aid income.

Calculate Living alone tax credit

The calculation of the living alone tax credit imqlatc is based on the value of the tax credit QLAXM adjusted by the nominal tax credit rate (QNTCR).

Starting in 1996, the calculation of the living alone tax credit is subject to turndown income (QLAXTD) and a reduction rate (QLAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QLAXPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqlatc is set to zero.

CROSS REFERENCE

Function Description

INPUT PARAMETERS:

| | |
|----------|---|
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QLAXM | Quebec living alone exemption/amount |
| QLAXPI | Quebec living alone phase-in |
| QLAXRR | Quebec living alone reduction rate |
| QLAXTD | Quebec living alone turn down |
| QLPXM | Quebec lone parent exemption/amount |
| QMEDINC | Income definition for Que. refundable tax credit for medical expenses |
| QMXM | Quebec married exemption/amount |
| QNTCR | Quebec nominal tax credit rate |
| QPSXM | Quebec post-secondary exemption/amount |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QYCXM1 | Quebec dependent child #1 amount |
| QYCXM2 | Quebec dependent child #2 amount |

INPUT VARIABLES:

| | |
|----------|--|
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |

| | |
|----------|--|
| cfspoflg | Census family contains married couple |
| hdnpers | Number of persons in household |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| idage | Age |
| idestat | Educational status |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| imigis | GIS benefits |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqinet | Quebec net income |
| imqitot | Quebec total income |

OUTPUT VARIABLES:

| | |
|----------|--------------------------------------|
| imqcchc | Quebec child's non-refundable credit |
| imqdctc | Quebec dependent child tax credits |
| imqdepni | Quebec dependant's net income |
| imqlatc | Quebec living alone tax credit |
| imqmtc | Quebec married tax credit |
| imqndc | Quebec number of dependent children |

txqinet Compute net income (Quebec)

SUMMARY

The Quebec provincial personal income tax system largely parallels the federal system: deductions and exemptions reduce total income to a taxable amount for which the basic provincial tax is calculated, then tax credits are applied to derive the amount of provincial tax payable. The function calculates net income for Quebec taxpayers and is similar to the process for calculating net income for federal income tax purposes.

SPSM Implementation

The algorithms for calculating Net Income for Quebec Provincial Income Tax Purposes are similar to the algorithms for calculating federal Net Income described under the function txinet. The major difference is that there are no options to treat deductions and personal exemptions as tax credits.

Whenever possible values already calculated in the computation of federal Net Income are applied here. The implementation of specific measures are described below.

Employment Expense Deduction

The calculation of the Quebec Employment Expense Deduction (imqdedia) is the same as the federal case. imqdedia is a proportion (QEAP) of Earnings from Employment (idiemp) up to a maximum deduction of QEAMAX. There is no flag controlling the calculation of

this value. If this deduction is to be eliminated, the values of QEAP and QEAMAX may be set to zero.

This value is added into Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Other Allowable Employment Expenses

The model assumes that the definition for Other Allowable Employment Expenses as applied to Quebec Provincial Taxes is the same as the federal definition (see txinet). The same value as used in the federal algorithm (idalexp) is used here. The value of idalexp may be scaled up or down by supplying an appropriate value for the parameter QALEXP (Proportion of Other Allowable Employment Expenses to Use as a Deduction).

The amount idalexp is added to Total Deductions from Total Income (imqdedft) in contrast to the federal algorithm in which the amount is subtracted from Total Income.

Calculate Taxable Capital Gains

Capital Gains are treated as they are for federal taxes (see function txinet). Taxable Capital Gains for Quebec Provincial Tax Purposes (imqcapgt) is calculated as Total Capital Gains Received (idicapg) multiplied by the Capital Gains Inclusion Rate for Quebec Provincial Taxes (QDGUR).

Taxable Dividends

The treatment of dividends is similar to the federal algorithms described under the function txinet. Taxable Dividends for Quebec Provincial Taxes (imqdivt) are calculated as Total Dividends Received (ididiv) multiplied by the Quebec Dividend Gross-up Rate (QDGUR).

Calculation of Total Income

As in the federal case (see function txinet), Total Income at this stage does not include Family Allowances which cannot be allocated until it is known whether the mother or the father have the higher net income. Total Income (imqitot) is calculated as the sum of:

| | |
|----------|---|
| idiemp: | Earnings From Employment |
| idisenf: | Self-employment Earnings (Non-farm), optionally scaled by the parameter FACTISENF |
| idisefm: | Self-employment Earnings (farm) |
| idiint: | Interest Income |
| idioinv: | Other Investment Income |
| idicqp: | CPP/QPP Benefits Received |
| iditogv: | Other Taxable Government Income |
| idipens: | Pension Income |
| iditoth: | Other Taxable Income |
| imiuib: | Modeled Unemployment Insurance Benefits Received |
| imiotg: | Modeled New Taxable Demogrants |
| imffa: | Modeled Family Allowance Benefits (optional) |

imioas: Modeled OAS Benefits
imqidivt: Modeled Taxable Amount of Dividends for Quebec
imqcapgt: Modeled Taxable Capital Gains and Losses for Quebec

The parameter QFAIFLAG controls whether federal Family Allowances are included in total income. If QFAIFLAG is set to one then imffa is added to imqitot. Also, Employment Expenses (imqdedia) and Other Allowable Employment Expenses (imqalexp) are added into All Deductions from Total Income (imqdedft) and not subtracted from Total Income as in the federal algorithms.

Calculation of Net Income

All Deductions from Total Income (imdedft) is calculated as the sum of:

idrpp: Registered Pension Plan Contributions
idrrsp: Registered Retirement Savings Plan Contributions
iddues: Union and Professional Dues
idtuitn: optionally, Tuition Fees
imqiloss: Allowable Business Investment Loss
idothded: Other Deductions from Total Income (includes Moving Expenses, Alimony Paid, Repayment of Income Amounts, Legal and Accounting Fees, Petroleum Exploration Ventures, Capital Cost Allowance on Canadian Motion Picture Films and Video Tapes)
idcarry: Carrying Charges (interest on money borrowed to earn investment income)
imcqppc: optionally, CPP/QPP Contributions (calculated in txinet)
imuic: optionally, UI Contributions (calculated in txinet)
imqceca: optionally, Child Care Expense Deduction Allowed (calculated separately in function txqceca)
imqdedia: Employment Expenses
imqalexp: Other Allowable Employment Expenses

Dues as a tax credit

The dues as a deduction is activated by the option QDUESOPT = 1. Starting in 1997, dues are used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Tuition as a tax credit

The tuition as a deduction is activated by the option QTUIOPT = 1. Starting in 1997, tuition is used in txqcalc as a non-refundable tax credit and QDUESOPT is set to 2.

Improved Tax System for Self-Employed Workers

The improved tax system for self employed workers in Quebec was added. When activated by QITSFSEW, it will result in a conversion of QITSSEF of the tax credit granted in respect of amounts payable as contributions on pensionable self-employed earnings to the CPP/QPP into a deduction in the calculation of income. This new deduction will be applied to the calculation of income under the simplified tax system and to the income used to determine

the contribution to the Health Services Fund payable by individuals.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CPPXM | CPP/QPP exemptible earnings |
| QALEXP | Quebec proportion of other allowable employment expenses to use |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCPPOPT | Quebec CPP/QPP contribution deduction/credit option [1=deduction,2=credit] |
| QDGUR | Quebec dividend gross-up rate |
| QDTCR | Quebec dividend tax credit rate |
| QDUESOPT | Quebec Dues Tax Credit option |
| QEAMAX | Quebec maximum employment allowance deduction |
| QEAP | Proportion of earnings for Quebec employment allowance deduction |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QITSSEF | Quebec percentage of self-employ CPP/QPP contributions to convert to deduction |
| QMAXDX | Quebec maximum disability deduction/amount |
| QMEDANF | Quebec medical allowance lower limit net income fraction |
| QNTCR | Quebec nominal tax credit rate |
| QREPNETFG | Social program repayments reduce Quebec net income flag |
| QSFDISFLAG | Quebec Simplified Form Disability tax credit inclusion flag |
| QSFOPT | Quebec Simplified Form Option (1=general 2=simplified 3=optimized) |
| QSFSMXI | Quebec simplified form spouse maximum income for work sheet |
| QSFTC | Quebec Simplified Form tax credit |
| QSPBFLAG | Quebec inclusion of social program benefits in income flag |
| QTUIOPT | Quebec tuition tax credit option |
| QTX | Quebec income tax table [taxable income,basic provincial tax] |
| QUICOPT | Quebec UI contributions deduction/credit option [1=deduction,2=credit] |
| WSCF | CPP/QPP contribution rate on employment earnings |
| YMPE | CPP/QPP maximum pensionable earnings |

INPUT VARIABLES:

| | |
|---------|---|
| hhnin | Number of individuals in household |
| idalexp | Other allowable employment expenses (229) |

| | |
|----------|--|
| idcarry | Carrying charges (221) |
| idcclos | Allowable other years capital loss (253) |
| iddalimo | Alimony paid (220) |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| iddues | Union and professional dues (212) |
| idemplo | Employee home relocation loan dedn (248) |
| idexplor | Exploration and development expenses (224) |
| idicapg | Capital gains (actual) |
| idicqpp | CPP/QPP income (114) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idiloss | Business investment losses (217) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditogv | Other government income (taxable) |
| iditoth | Other non-government income (taxable) |
| iditrrsp | Taxable RRSP withdrawals |
| idmedgro | Medical expenses, gross (330) |
| idmovexp | Imputed moving expenses (219) |
| idnclos | Allowable other years non-capital loss (252) |
| idnorth | Northern deductions (255) |
| idothded | Other deductions from total income (232) |
| idpartlo | Limited partnership losses (251) |
| idrpp | Registered pension plan contributions (207) |
| idrrsp | RRSP calculated amount (208) |
| idspoflg | Person has spouse |
| idstkded | Stock option deduction (249) |
| idtuitn | Tuition fees (320) |
| imcqqpc | CPP/QPP contributions |
| imigis | GIS benefits |
| iminet | Net income |
| imioas | OAS benefits |
| imiotg | Other taxable demogrants |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitot | Total income |
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imoasr | OAS recovery |
| imqtfa | Quebec taxable family allowances |
| imrepay | Social Benefits Repayments |
| imuibr | UI benefit recovery |
| imuic | UIC contributions |

OUTPUT VARIABLES:

| | |
|----------|--|
| imqalexp | Quebec allowable employment expenses |
| imqcapgt | Quebec taxable capital gains |
| imqcppse | Quebec self-employ. QPP/ CPP Cont. deduction |
| imqcpptc | Quebec CPP/QPP contributions tax credit |
| imqdedia | Quebec employment allowance |
| imqdedft | Quebec deductions from total income |
| imqduetc | Quebec Dues Tax Credit |

| | |
|----------|--|
| imqidivt | Quebec taxable dividends |
| imqiloss | Quebec Modelled Business investment losses (243) |
| imqinet | Quebec net income |
| imqitot | Quebec total income |
| imqsfflg | Quebec simplified tax form flag 0=general 1=simplified |
| imqtuitc | Quebec Tuition Tax Credit |
| imquictc | Quebec UI contributions tax credit |

txqitax Compute taxable income and individual credits (Quebec)

SUMMARY

The process of computing taxable income for Quebec provincial taxes parallels that of the federal method. The following deductions are calculated and subtracted from Net Income (imqinet) to derive a tentative value for Taxable Income (imqitax):

| | |
|-----------|---|
| imqpendn: | Pension Income Deduction |
| imqintdn: | Interest Income Deduction |
| imqstddn: | Combined Medical Expense Deduction, Charitable Donations and Gifts to Canada or a Province |
| imqdisex: | Disability Deduction |
| imqdedfn: | Calculate Deductions from Net Income |
| imqaxm: | Age Exemption |
| imqexm: | Basic Exemption |

The computation of Taxable Income is completed by the function txqhstr which calculates exemptions for dependents and performs the transfer of deductions between members of the family.

Unlike the algorithms for the calculation of Federal Taxable Income, this function contains no options for converting these deductions into tax credits.

Pension Income Deduction

Depending upon the filer's age and the type of income, pension and retirement income may be eligible for the Pension Income Deduction. Any portion of this deduction not required to reduce a filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Modeled Pension Income Deduction (imqpendn) is calculated as the lesser of:

- a) Eligible Pension Income (idipens), and
- b) the Maximum Pension Income Deduction (QYPDL)

The Modeled Pension Income Deduction (imqpendn) is added to Total Deductions from Net

Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet).

The function txqhstr may transfer some amount of the Pension Income Deduction to the spouse. In this event, adjustments are made to imqdedfn and imqinet but not to imqpendn.

The model assumes that the value of idipens represents pension income eligible for this deduction. No further checks are made to ensure that the pension is of the appropriate type for the age of the filer.

After the reform in 1988, the non-refundable tax credit for pension income (imqritc) was the minimum of the base credit (QYPDL) and the eligible pension income (idipens). Starting in 1996, the calculated deduction for pension income (imqritc) based on the credit (QYPDL) is now subject to turn-down income (QYPTD) and a reduction rate (QYPRR) for pension income (idipens) in excess. In 1996 the reduction is only 50% and 100% after and it is controlled by the phase in variable QYPPI.

When QCALRFLG is activated, the combined age, living alone, and retirement credit is activated (imqcalr) and imqritc is set to zero.

Interest Income Deduction

Interest income and dividends from Canadian sources are eligible for the Interest Income Deduction. This deduction amounts to the lesser of a fixed amount and the eligible income. Any portion of the deduction not required to reduce the filer's taxable income to zero may be transferred to the spouse.

SPSM Implementation

The Interest and Dividend Income Deduction (imqintdn) is calculated as the lesser of:

- a) the Maximum Interest and Dividend Income Deduction (QYIDL), and
- b) the sum of Interest Income (idiint) and Dividends (imqidivt) minus Carrying Charges (idcarry).

The deduction is added to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income (imqinet) to derive Taxable Income (imqitax).

Since the Interest and Dividend Income Deduction is transferable between spouses, the function txqhstr may adjust the values of imqdedfn and imqitax. The value of imqintdn is not adjusted to reflect a transfer to the spouse.

Medical Expense and Charitable Donations Deduction

The filer is allowed a deduction for certain medical expenses, charitable donations and gifts to Canada or a province. In 1984, eligible medical expenses were deductible if they exceeded 3% of Net Income. Deductible charitable donations were limited to 20% of Net Income.

Before 1997, the calculation of the medical exemption in txqitax was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997,

(with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

SPSM Implementation

The database contains variables representing the federal Medical Expense Deduction Allowed (immeda) and combined Eligible Charitable Donations and Gifts to Canada or a Province (imchara). Net Medical Expenses represent medical expenses in excess of 3% of Net Income. Eligible Charitable Donations represent charitable donations not exceeding QCHATNF percent of Net Income.

The Combined Medical Expense and Charitable Donations Deduction (imqstddn) is calculated by taking the higher of:

- a) the Standard Deduction (QSTD), which may be zero, and
- b) the sum of Net Medical Expenses Allowed (imqmeda), Eligible Charitable Donations and Gifts to Canada or a Province (imqchara).

The variable imqstddn is added to Total Deductions from Net Income (imqdedfn) which is subsequently used to reduce Taxable Income.

Disability Deduction

As in the case of the federal income tax system, Quebec allows a special deduction for blind persons or persons confined to a bed or a chair. Any unused portion of the Disability Deduction may be transferred to a spouse or supporting parent.

SPSM Implementation

The database contains a value of the Disability Deduction Allowed on behalf of the filer (iddisslf), spouse or dependents (iddisoth). If either of these values are non-zero, the Quebec Disability Deduction (imqdisex) takes on the value assigned to the parameter QMAXDX. imqdisex is added in to Total Deductions from Net Income (imqdedfn) which is subsequently subtracted from Net Income.

Since this deduction is potentially transferable, the function txqhstr checks the relative net incomes of the head and spouse and performs any necessary transfers. The values of imqdedfn and imqitax are adjusted to reflect these changes. The value of imqdisex is not updated if the Disability Deduction is transferred to a spouse.

The model does not transfer unused portions of the Disability Deduction from dependant to parent. This probably does not cause a large error since the value on the database already takes into account amounts transferred from the spouse or dependents. The transfer between head and spouse is repeated in txqhstr because the estimate of Net Income is more accurate at this stage than during the database creation process.

Calculate Deductions from Net Income

The variable imqdedfn stores the value of All Deductions from Net Income. It is calculated

as the sum of:

| | |
|-----------|---|
| imqstdn: | Combined Medical Expense and Charitable Donations Deduction |
| imqintdn: | Interest and Dividend Income Deduction |
| imqpendn: | Pension Income Deduction |
| imqdisex: | Disability Deduction |
| imuibr: | Unemployment Insurance Benefits Reimbursed |
| idclos: | Capital Losses from Other Years |
| idnclos: | Non-capital Losses from Other Years |

The variable imqdedfn is subtracted from Net Income (imqinet) and may be adjusted in the function txqhstr if deductions are transferred between spouses.

The model does not include the Exemption for Members of a Religious Order, the Exemption for Dependents Aged 21 and Over Suffering from a Physical or Mental Infirmary, Deduction for a Home Relocation Loan, the Sociétés de placements dans l'entreprise québécois Deduction, or the Capital Gains Deduction.

Basic Exemption

Each filer claims a Basic Exemption which is subtracted from Net Income. The Amount of the Basic Exemption for Quebec Provincial Income Taxes is increased occasionally.

SPSM Implementation

For all filers with income, the Quebec Basic Exemption (QBXM) is added to the variable imqexm which accumulates personal exemptions. imqexm is subsequently added to imqpex which accumulates all exemptions and is later subtracted from Net Income imqinet.

Age Exemption

All filers who were 65 years of age or older during the taxation year claim the Age Exemption. The value of the Age Exemption is increased occasionally. Any unused portion of the Age Exemption may be transferred to the spouse.

SPSM Implementation

The Modeled Quebec Age Exemption (imqaxm) is assigned the value of the parameter QAXM for all filers 65 or over (idage \geq 65) if they have income (imninc $>$ 0). This value is added to imqexm (All Personal Exemptions on behalf of filer) which is subsequently added to imqpex (All Personal Exemptions) and subtracted from Net Income imqinet. The function txqhstr may transfer the unused portion of the Age Exemption to the spouse and make corresponding adjustments to the value of imqinet but not to imqaxm.

Starting in 1996, the calculation of the age exemption tax credit is subject to turndown income (QAXTD) and a reduction rate (QAXRR) for net income (imqinet) in excess. In 1996, the reduction is only 50% and 100% after, and it is controlled by the phase in variable QAXPI.

Medical exemption calculation

Before 1997, the calculation of the medical exemption was based on individual income (activated by QMEDOPT set to 1 with QMEDALL limitation). Starting in 1997, the calculation of the medical exemption is transferred to txqhstr (with QMEDOPT set to 2) and the exemption is based on net family income without the limitation of QMEDALL. The credit is allocated to the spouse with the highest net income.

Charity and Gifts to the Crown as Tax Credit

The charity and gifts deduction is transformed in 1993 in a tax credit, imqchatc, and is used in the calculation of total non-refundable tax credits in txqcalc. When QGIFTOPT is set to one, imqchara is calculated and included in the deductions. Before 1998, QGIFTFLG set to zero, idgifts, was included without any limits. Starting 1998, QGIFTFLG set to 1, idgifts and idcharit are subject to the same calculation rules with a limit based on net income. Beginning in 2000, there are two tax credit rates applied to gifts in Quebec. The activation flag, QGIFTHCR, is used to implement the calculation. Allowable gifts up to QGIFTL1 use the QNTCR. The higher credit rate QGFTCR is applied to allowable gifts over QGIFTL1. The total value of the tax credit is imqchatc.

CROSS REFERENCE

| Function | Description |
|--------------------|---|
| INPUT PARAMETERS : | |
| QAXM | Quebec age exemption/amount |
| QAXPI | Quebec age exemption reduction phase in |
| QAXRR | Quebec age exemption reduction rate |
| QAXTD | Quebec age exemption income turn down |
| QBXN | Quebec basic personal exemption/amount |
| QCALRFLG | Quebec combined age, living alone retirement credit |
| QCAPGIR | Quebec capital gains inclusion rate |
| QCHATNF | Quebec charitable donations maximum % net income |
| QEEXPDED | Quebec employment expenses deduction application flag |
| QGFTCR | Quebec credit rate for gifts over upper limit |
| QGIFTFLG | Quebec max to gifts to Federal/Province/Crown activation flag |
| QGIFTHCR | Quebec higher tax credit on large gifts activation flag |
| QGIFTL1 | Quebec minimum gift limit subject to higher credit rate |
| QGIFTOPT | Quebec gifts as tax credit |
| QHSC | Quebec Health Services Fund Contribution table |
| QHSCDIR | Quebec Health Services Fund Contribution Dividend inclusion rate |
| QHSCFLAG | Quebec Health Services Fund Contribution calculation flag |
| QHSOASFG | Quebec Health Services Fund Contribution OAS Deduction flag |
| QITSFSEW | Quebec improved tax system for self-employed worker activation flag |
| QMAXDX | Quebec maximum disability deduction/amount |

QMEDALL Quebec medical allowance maximum lower limit
 QMEDANF Quebec medical allowance lower limit net income fraction
 QMEDINC Income definition for Que. refundable tax credit for
 medical expenses
 QMEDOPT Quebec Medical Tax Credit option
 QNFSDED Quebec deduction of net federal supplements (SPA and GIS)
 from net income flag
 QNTRC Quebec nominal tax credit rate
 QREPNETFG Social program repayments reduce Quebec net income flag
 QSADED Quebec deduction of social assistance benefits from net
 income flag
 QSPBFLAG Quebec inclusion of social program benefits in income flag
 QYPDL Quebec deduction limit for pension income
 QYPPI Quebec deduction phase-in for pension income
 QYPRR Quebec deduction reduction rate for pension income
 QYPTD Quebec deduction turn down for pension income

INPUT VARIABLES:

hhnin Number of individuals in household
 idage Age
 idcagex Capital gains exemptions (254)
 idcarry Carrying charges (221)
 idcfrh Relationship to census family head
 idcharit Charitable donations (340)
 idclos Allowable other years capital loss (253)
 iddalimo Alimony paid (220)
 iddisoth Disability amount for dependants (318)
 iddisself Disability amount for self (316)
 idemplo Employee home relocation loan dedn (248)
 idgifts Gifts to Canada/provinces/culture (342)
 ididiv Dividend income (actual)
 idiemp Wages & salaries
 idinspo Person's spouse [pointer]
 idipens Pension income (115)
 idmedgro Medical expenses, gross (330)
 idnclos Allowable other years non-capital loss (252)
 idnorth Northern deductions (255)
 idpartlo Limited partnership losses (251)
 idrpp Registered pension plan contributions (207)
 idrrsp RRSP calculated amount (208)
 idspoflg Person has spouse
 idstkded Stock option deduction (249)
 imigis GIS benefits
 imioas OAS benefits
 imisa Social assistance (or replacement program)
 imispa Spouse's allowance
 imninc No income flag
 imoasr OAS recovery
 imqalexp Quebec allowable employment expenses
 imqcapgt Quebec taxable capital gains
 imqcppse Quebec self-employ. QPP/PPP Cont. deduction
 imqiloss Quebec Modelled Business investment losses (243)
 imqinet Quebec net income
 imqitot Quebec total income
 imqsfflg Quebec simplified tax form flag 0=general 1=simplified
 imrepay Social Benefits Repayments
 imuibr UI benefit recovery

OUTPUT VARIABLES:

| | |
|----------|--|
| imqatc | Quebec age tax credit |
| imqbtc | Quebec basic tax credit |
| imqcapgx | Quebec modelled capital gains deduction (254) |
| imqchara | Quebec allowable charitable donations(calc) |
| imqchatc | Quebec allowable charitable donations tax credit |
| imqdedfn | Quebec all deductions from net income |
| imqdistc | Quebec disability tax credit |
| imqhsfc | Quebec Health Services Fund Contributions |
| imqhsftc | Quebec Health Services Fund Cont.tax credit |
| imqitax | Quebec taxable income |
| imqmeda | Quebec medical expenses allowed |
| imqritc | Quebec retirement income tax credit |
| imqstkdd | Quebec modelled Stock option deduction (249) |

txque Compute provincial taxes for Quebec

SUMMARY

For residents of Quebec, the calculation of provincial taxes roughly approximates the process of calculating federal taxes. The SPSM divides this task among three functions which are described in another section of this document:

1. txqinet calculates total and net income tax
2. txqitax calculates a provisional value for taxable income subject to updating by txqhstr
3. txqhstr performs the calculation of personal exemptions for dependents and the allocation of deductions between head and spouse

The value of Taxable Income (imqitax) calculated by txqhstr is used to look up a value for Basic Provincial Tax (imbpt) in the tax table (QTX).

The Quebec Dividend Tax Credit (imqdtxc) is calculated as a proportion (QDTCR) of Taxable Dividends (imqidivt) and is subtracted from Basic Provincial Tax to derive Provincial Tax Payable (imtxp). Also subtracted is the Quebec Tax Reduction which is a proportion (QTRP) of Provincial Tax Payable (imtxp).

txsask Compute provincial taxes for Saskatchewan

SUMMARY

When STXFLG is off, Saskatchewan Basic Provincial Tax is a proportion (SPTF) of Basic Federal Tax (imbft). A flat surtax, calculated as a proportion (SFTAX) on Net Income (iminet) is added to Basic Tax.

The 2000 budget announced that Saskatchewan would convert to a tax on taxable income starting in 2001. When the tax on taxable income flag is turned on (STXFLG), a provincial tax table (SPTX) is applied on taxable income (imitax) in order to get the gross provincial tax (imprvtax). Non-refundable tax credits are calculated using the non-refundable tax credit rate (SPNTPCR) and are applied against gross provincial tax in order to get the basic provincial income tax (imbpt).

The non-refundable credits which are calculated are:

| | | |
|-----------|--|--|
| impbtc | Basic amount | (SBXM) |
| impatxc | Age amount tax credit | (SAXM, SAXRR, SAXTD, SAXPI) |
| impmartc | Married and equivalent-to-married tax credit | (SMXM, SMXMT, SEMXM, SEMXMT) |
| impcgtc | Caregiver tax credit | (SCGTC, SCGTCFLG, SCGTCTC, SCGTCTD, SCGTCTK) |
| impchrctc | Charitable donations | (SCHATL1, SCHATR1, SCHATR2) |
| impcpptc | CPP/QPP contribution | |
| impdistic | Disability tax credit | (SMAXDX) |
| impdtxc | Dividend tax credit | (SDTCR) |
| impedtxc | Education tax credit | (SEDXPM, SMAXET) |
| impmedtc | Medical expenses tax credit | |
| imppentc | Pension income tax credit | (SYPNDL) |
| imptutxc | Tuition Tax credit | (SMAXET) |
| impuictc | EI contributions tax credit | |
| imsctxc | Saskatchewan Non-refundable child tax credit | (SCNTC) |
| imssstxc | Saskatchewan senior supplement tax credit | (SSSTC) |

The option to apply a minimum tax is controlled using SAMTOPT.

Adjusted Saskatchewan Tax Payable (before a tax reduction is applied, is stored in the temporary variable a) is calculated as Basic Saskatchewan Tax (imbpt) plus a proportion (SSF) of Basic Saskatchewan Tax exceeding the Saskatchewan Surtax Level (SSCI).

Saskatchewan also implements a system of tax reductions for senior citizens and persons with dependent children. The Basic Tax Reduction (STRBR) is augmented by the Senior Citizen's Tax Reduction (STRSC) if the filer is age 65 or older. A tax reduction per child under 18 (STRPC) up to a maximum total for all children (STRCL) is also added. The number of children claimable for this tax reduction is taken from imnfach, the number of children eligible for Family Allowances.

The total potential tax credit is reduced by a proportion (STRRR) of the tax credit exceeding Adjusted Saskatchewan Tax Payable a to derive Reduced Saskatchewan Tax Payable imtxp.

Starting in 1992, a surtax (SDSF) for the reduction of the deficit is applied to the tax (imtxp). In 1995, an amount (SDSRA) was deducted from the surtax.

The Saskatchewan labour-sponsored venture capital credit is modeled (implvctc). A study was made showing that the majority of Canadians who contribute to labour-sponsored funds claim both federal and provincial credits. Therefore the gross contributions from the Greenbook are imputed onto the database. The Saskatchewan provincial credit is modeled as SLVCRT times the gross amount up to SLVCMAX. The credit cannot be more than provincial taxes (imtxp).

The Saskatchewan Child Benefit and Saskatchewan Employment Supplement announced in the 1998 budget are modeled. When the SCBFLG is activated, families receive a benefit which depends on the number of children in the family (SCB1, SCB2, and SCB3). The benefit is reduced in two stages. Net family income greater than SCBTD1 and less than SCBTD2 is reduced at a rate SCBRR1 which depends on the number of children in the family. The benefit is further reduced at a rate of SCBRR2 for income over SCBTD2.

The Saskatchewan Employment Supplement is a monthly program. In the SPSD/M, the program is modeled in a yearly fashion. The maximum benefit is derived by multiplying a family's employment income in excess of SESCO (up to a maximum of SESMXIP) by a rate (SESR) which depends on the number of children in the family. The benefit is reduced for any family net income in excess of SESTD by a SESRR rate. The supplement started in mid-1998 and hence a phase-in rate SESPI was applied.

The estimate resulting from the SPSD/M may differ from the administrative totals. In modeling the program, employment income is assumed to be evenly distributed during the year. No maintenance income (e.g. child or spousal support) is added to employment income. The program is administered monthly with eligibility being determined depending on each month's income.

The Saskatchewan Sales Tax Credit announced in their 2000 Budget is now modelled. The Saskatchewan Sales Tax Credit is activated when SSTCFLAG is set to 1.

The Saskatchewan Sales Tax Credit was introduced in 2000 and became effective April 1, 2000 to offset the effect of sales taxes on lower income earners. SSTCPI represents the phase in rate for the program. The Saskatchewan Sales Tax Credit (imsstc) will consist of an adult component and a child component. This credit will be fully refundable and will be assigned to the spouse with the highest income.

The adult component of the Saskatchewan Sales Tax Credit will rise at a rate of SSTCBASPIR of individual net income up to a maximum (SSTCBAS). It will be reduced at a rate of SSTCRR as family net income increases above SSTCBASTD. An individual will also be eligible for SSTCSP in additional benefits for a dependent spouse or equivalent. This amount will be reduced at a rate of SSTCRR as family net income rises over SSTCSPTD.

The child component of the Saskatchewan Sales Tax Credit will provide an additional

SSTCKID per child. For two-parent families, the maximum child component will be SSTCKID + SSTCKID. For single parent families, the first child will be eligible for the adult benefit of SSTCSP and the maximum child component will be SSTCKID. The child component of the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC1KIDTD for families with one qualifying child. For families with more than one qualifying child, the Credit will be reduced at a rate of SSTCRR as family net income rises over SSTC2KIDTD.

CROSS REFERENCE

| Function | Description |
|-------------------|--|
| INPUT PARAMETERS: | |
| CTCINC | CTC family income scaling factor |
| HEATSNG | Federal relief for heating expenses for singles |
| PYINC | Deflator to calculate previous year income |
| SAMTOPT | Sask. alternative minimum tax option (1=none, 2=% fed, 3=fed adj inc, 4=% min amt) |
| SAMTPCTF | Sask. amt rate as pct of additional fed tax due to minimum tax |
| SAMTPCTM | Sask. amt rate as pct of federal minimum tax amount |
| SAMTTX | Sask. amt rate as tax on adjusted income |
| SAXM | Sask. Age Amount |
| SAXPI | Sask. Age Amount phase in rate for 1994 and beyond |
| SAXRR | Sask. Age Amount credit reduction rate |
| SAXTD | Sask. Age Amount net income turndown |
| SBXM | Sask. Basic Personal Exemption/amount |
| SCB1 | Sask Child Benefit max for 1st child |
| SCB2 | Sask Child Benefit max for 2nd child |
| SCB3 | Sask Child Benefit max for 3rd and additional child |
| SCBFLG | Sask Child Benefit activation flag |
| SCBRR1 | Sask Child Benefit 1st reduction rate [number of kids] |
| SCBRR2 | Sask Child Benefit 2nd reduction rate [number of kids] |
| SCBTD1 | Sask Child Benefit 1st turndown |
| SCBTD2 | Sask Child Benefit 2nd turndown |
| SCGTC | Sask. Caregiver Tax Credit |
| SCGTCFLG | Sask. Caregiver Tax Credit activation flag |
| SCGTCTC | Sask. Caregiver tax credit take-up rate by age of elderly [age,rate] |
| SCGTCTD | Sask. Caregiver Tax Credit Turn Down Income |
| SCGTCTK | Sask. Caregiver tax credit take-up rate by income level [employment income,rate] |
| SCHATL1 | Sask. Charitable Donations amount level 1 |
| SCHATR1 | Sask. Charitable Donations tax credit rate 1 |
| SCHATR2 | Sask. Charitable Donations tax credit rate 2 |
| SCNTC | Sask. non-refundable child tax credit amt per child |
| SDSF | Saskatchewan provincial deficit surtax fraction |
| SDSRA | Saskatchewan deficit surtax reduction rate |
| SDTCR | Sask. dividend tax credit rate |

| | |
|------------------------------|---|
| SEDXPM | Sask. Education Amount per month |
| SEMXM | Sask. equivalent to married amount |
| SEMXT | Sask. equivalent to married turndown level |
| SESCI | Sask Employment Supplement cut in level |
| SESMIN | Sask Employment Supplement minimum benefit |
| SESMXIP | Sask Employment Supplement maximum benefit income point |
| SESPI | Sask Employment Supplement phase-in |
| SESR | Sask Employment Supplement benefit rate [number of kids] |
| SESRR | Sask Employment Supplement reduction rate |
| SESTD | Sask Employment Supplement turndown level |
| SESTK | Sask. Employment Supplement take up by number of kids |
| SESYPI | Sask Employment Supplementary benefit for under 13 phase-in |
| SESYR | Sask Employment Supplementary benefit for under 13 rate |
| [number of kids] | |
| SESYRR | Sask Employment Supplementary benefit for under 13 |
| reduction rate | |
| SFTAX | Saskatchewan provincial flat surtax rate on net income |
| SHEATFAM | Saskatchewan Home Heating Assistance Rebate for families |
| SHEATFLG | Saskatchewan Home Heating Assistance Rebate activation flag |
| SHEATSNG | Saskatchewan Home Heating Assistance Rebate for singles |
| SLVCMAX | Maximum Sask. labour-sponsored funds tax credit allowed |
| SLVCRT | Percent of Sask. labour-sponsored funds cost allowed as |
| credit | |
| SMAXDX | Sask. Maximum Disability deduction/amount |
| SMAXET | Sask. maximum on transfer of education and tuition amount |
| SMXM | Sask. married amount |
| SMXMT | Sask. married amount turndown level |
| SPNTR | Sask. provincial non-refundable tax credit rate |
| SPTC | Saskatchewan political contribution table [total |
| donations, donation allowed] | |
| SPTCBEN | Maximum Saskatchewan political tax credit allowed |
| SPTF | Saskatchewan provincial tax fraction |
| SPTX | Sask. tax table [taxable income, basic provincial tax] |
| SSCI | Saskatchewan surtax cut-in |
| SSF | Saskatchewan provincial high income surtax fraction |
| SSSTC | Sask. senior supplement tax credit |
| SSTC1KIDTD | Sask. sales tax credit child amount turndown if only 1 |
| child | |
| SSTC2KIDTD | Sask. sales tax credit child amount turndown if more than 1 |
| child | |
| SSTCBAS | Sask. sales tax credit base amount |
| SSTCBASPIR | Sask. sales tax credit base amount phase in rate |
| SSTCBASTD | Sask. sales tax credit base amount turndown |
| SSTCFLAG | Sask. sales tax credit activation flag |
| SSTCKID | Sask. sales tax credit child amount |
| SSTCPI | Sask. sales tax credit phase in |
| SSTCRR | Sask. sales tax credit reduction rate |
| SSTCSP | Sask. sales tax credit spousal amount |
| SSTCSPTD | Sask. sales tax credit spousal amount turndown |
| SSTR | Saskatchewan spousal & married equivalent tax reduction |
| STRBA | Saskatchewan tax reduction base amount |
| STRBR | Saskatchewan basic provincial tax reduction |
| STRCL | Saskatchewan child tax reduction limit |
| STRPC | Saskatchewan tax reduction per child |
| STRRR | Saskatchewan tax reduction reduction rate |
| STRSC | Saskatchewan tax reduction for senior citizens |
| STXFLG | Sask. tax on taxable income activation flag |

SYPNDL Sask. Pension Income Deduction Amount

INPUT VARIABLES:

| | |
|----------|---|
| cfin | First person in census family [pointer] |
| cfinch | First child in census family [pointer] |
| cfineld | Eldest person in census family [pointer] |
| cfinspo | Spouse of eldest [pointer] |
| cfnchild | Number of children (including 18+) |
| cfnkids | Number of children in census family |
| cfnpers | Number of persons in census family |
| cfspoflg | Census family contains married couple |
| efin | First person in economic family [pointer] |
| efnpers | Number of persons in economic family |
| hhncf | Number of census families in household |
| hhnef | Number of economic families in household |
| hhnin | Number of individuals in household |
| hhnnf | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| iddisab | Disability status |
| iddisoth | Disability amount for dependants (318) |
| iddisslf | Disability amount for self (316) |
| ideducm | Eligible months of education allowance |
| idefrh | Relationship to economic family head |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| idlabtxg | Gross Labour funds bought (413) |
| idmincar | Minimum tax carryover (504) |
| idprvftc | Provincial foreign tax credit (Form T2036) |
| idprvpol | Provincial political contributions (565) |
| idrand | Random numbers [array] |
| idsex | Sex |
| idtuitn | Tuition fees (320) |
| imamtfg | Minimum tax flag |
| imamtinc | Net adjusted income used for minimum tax |
| imamtprv | Federal minimum tax concept used for provincial minimum tax |
| imbft | Basic federal tax |
| imchara | Allowable charitable donations and gifts (calculated) |
| imcppse | CPP contributions deduction for self-emp |
| imcqqpc | CPP/QPP contributions |
| imdedfn | All deductions from net income |
| imdepni | Dependant's net income |
| imheatrl | Federal relief for heating expenses |
| imidivt | Dividend income (taxable) |
| imigis | GIS benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imispa | Spouse's allowance |
| imitax | Taxable income |
| immartxc | Married tax credit claimed |
| immeda | Medical expenses allowed (computed) |
| imminamt | Minimum Amount due to Federal Minimum Tax |
| imnfach | Number of family allowance children claimed |
| imuic | UIC contributions |

| | |
|----------|---|
| nfinch | First child in nuclear family [pointer] |
| nfineld | Eldest person in nuclear family [pointer] |
| nfinspo | Spouse of eldest [pointer] |
| nfnkids | Number of children in nuclear family |
| nfspoflg | Nuclear family contains married couple |

OUTPUT VARIABLES:

| | |
|-----------|---|
| imbpt | Basic provincial tax |
| imninc | No income flag |
| imnptc | Non-refundable provincial tax credits |
| impatxc | Prov Age amount tax credit |
| impatxcr | Prov total tax credits applied |
| impbtc | Prov Basic amount |
| impcgtc | Prov Caregiver Tax Credit Level |
| impcgtcp | Prov Dependant caregiver tax credit amount |
| impchrctc | Prov Charitable Donations tax credit |
| impcpptc | Prov CPP/QPP contributions tax credit |
| impctxct | Prov tax credits transfered from children |
| impdistc | Prov Disability tax credit |
| impdtxc | Provincial dividend tax credit |
| impedtxc | Prov Education tax credit |
| impheatr | Provincial Home Heating Fuel/Energy Rebate |
| implvctc | Provincial labour-sponsored funds tax credit |
| impmartc | Prov Married and Equivalent to Married tax credit |
| impmedtc | Prov Medical Expenses tax credit |
| impminco | Prov Minimum tax carryover |
| impnit | Provincial net income tax |
| imppentc | Prov Pension Income tax credit |
| impptc | Provincial Political Contrib Tax Credit |
| imprvtax | Prov gross provincial tax |
| impstxct | Prov tax credits transferred from spouse |
| impsur | Provincial surtax |
| imptaxcr | Prov total tax credits |
| imptc | Refundable provincial tax credits |
| imptr | Provincial tax reduction |
| impttxct | Prov total tax credits transfered |
| imptutxc | Prov Tuition tax credit |
| impuictc | Prov UI/EI contributions tax credit |
| imscb | Saskatchewan Child Benefit |
| imsctxc | Saskatchewan Non-refundable child tax credit |
| imses | Saskatchewan Employment Supplement |
| imssstxc | Saskatchewan senior supplement tax credit |
| imsstc | Saskatchewan refundable sales tax credit |
| imtxp | Provincial income tax payable |

ui Compute UI benefits

SUMMARY

Unemployment Insurance (UI) and Employment Insurance (EI) benefits are calculated by a set of functions which mimic application of UI/EI regulations to individual employment and

claim histories. These histories are summaries of administrative data from a 1% sample of persons with some UI/EI claim activity . Benefits are first calculated on a claim basis. Adjustments are then made to allow for claims overlapping more than one calendar year. Finally, taxable benefits received by individuals within a calendar year are determined.

Program Description

Unemployment/Employment insurance is an income support program financed jointly by employees, employers and the federal government. It is intended to provide income maintenance during temporary interruptions in employment. As such, it is not a universal program. Among those excluded from coverage are persons who do not participate in the labour force, the self-employed (other than fishermen) and persons who have exhausted benefit entitlements.

SPSM Implementation

The SPSM implementation of the UI/EI program has distinct steps representing application of program regulations to a given claim. The function `ui` operates as a controller which calls the sub-functions which apply UI/EI regulations to each claim and each UI/EI claimant within a household and returns the benefits received by individuals for the calendar year. Claimants may have one or two claims overlapping the survey calendar year. Payments within the calendar year are determined assuming benefits are paid on consecutive weeks.

For SPSM purposes, the unemployment regions are urban size classes within each province. These are not the regions defined for administration of the UI/EI program. The use of proxy unemployment regions is required to ensure data confidentiality.

For purposes of determining entitlements, the claim histories include the initial claim type `ucbtyp` (i.e., Maternity, Sickness, Retirement, Fishing or Regular) and a type change flag (i.e., indicating that a Sickness claim, for example, was changed to a Regular claim within the Initial Phase). SPSM deems the type change to have taken place immediately after the claim is established and does not attempt to subdivide the Initial Phase into Special and Regular periods. Since type change takes place, the special benefits totals (e.g., Sickness benefits) can not be determined by eliminating the type (e.g., by setting eligibility requirements high) and calculating the reduction in benefits. A second claim type (`ucmtyp`) is also imputed. If there was more than one type of benefit received within a claim, `ucmtyp` represents the claim type which had the majority of weeks. By turning on `UIEIMTYPFLG`, `ucmtyp` is modelled instead of `ucbtyp`.

The UI/EI algorithm has no behavioral response capacity, so that, for example, no new claims can be created. However, there have been more people with claims imputed in the base year than was necessary. The means that the number of persons with claims can be modified using the `UITARGET` and `UIEITKP` parameters. Similarly, the duration of modeled claims does not exceed observed durations, except when the following parameters are used: `UIREGWKFCT`, `UITRNWKFCT`, `UIOTHWKFCT`, `UIEXTMATWKS`. Unless these parameters are modified, the assumption is that individuals would not increase their duration on claim, if their entitlements were increased. However, no restriction is placed on

durations within each phase. Consequently, the elimination of a phase need not reduce the overall duration of a claim.

There are several sub-functions contained in the *ui* function. The first called is *uicl*m which calculates benefits for a single claim. *uicl*m does this by first calling three sub-functions which test for eligibility requirements based on claim type, repeat claim status, and regional unemployment rates (*uielent*, *uielrep*, *uielrge*). *uicl*m next calls three sub-functions which determine the weeks of entitlement in the Initial, Labour Force Extended and Regional Extended Phases (*uiwkbas*, *uiwklfe* and *uiwkrge*). The *ui* function then calls *uitrnc*l*m* which calculates training and other benefits (excluding regular, fishing, sickness, maternity, and parental which are calculated in *uicl*m). If a second claim is required *uicl*m and *uitrnc*l*m* are called again. Each function and sub-function are briefly described below.

ui

The *ui* function serves to pass information about each individual with a UI/EI claim in a household to *uicl*m. If an individual has more than one claim, modeled weeks of benefits in the qualifying period are computed for the first claim and passed to *uicl*m when the second claim is processed. UI/EI benefits for a calendar year are returned.

***uicl*m**

The sub-function *uicl*m processes distinct claims from the information passed to it by *ui*. In the event of a repeat claim, *ui* passes information about modeled claim activity in the qualifying period. Modeled changes to UI/EI regulations may produce important differences in first claim activity, thereby effectively changing the status of the second claim.

The *uicl*m function operates at a claim rather than an individual level. It calls *uielent*, *uielrep* and *uielrge* to establish eligibility. It then changes the type of eligible claims, where appropriate.

Once a claim is established, *uicl*m calls *uiwkbas*, *uiwklfe* and *uiwkrge* to determine the weeks of entitlement in each of the Initial, Labour Force Extended and Regional Extended Phases, respectively. The claim is represented by four pointers which identify:

Pointer #1 - 1st week of benefits (following waiting period)

Pointer #2 - 1st week of Labour Force Extended benefits

Pointer #3 - 1st week of Regional Extended benefits

Pointer #4 - week after end of Regional Extended Benefits.

Weeks are identified by integers with the week of January 1 being zero. The differences between succeeding pointers will initially equal the entitlement on the appropriate phase. *uicl*m then calls a utility function *uisqz* which ensures that interval between #1 and #4 does not exceed the original claim (minus any training or other weeks) or the maximum allowable duration of a claim. A subsequent call to *uisqz* produces a second set of (windowed) pointers that do not include any weeks outside the calendar year.

The *uicl*m function then calculates the weekly benefits. Benefits are the product of phase weeks times the weekly benefit rate for each phase summed over phases. However, benefit

rates may be increased or decreased by the following modelled programs: minimum divisor rule (see UIEIDIVFLG), the intensity rule (see UIEIFIFLG), an enhanced rate should there be dependents (see UIENSTRO), and the family supplement (see UIEIFSFLG).

uielent

The uielent sub-function applies eligibility tests based on the minimum weeks or hours of insurable employment in the qualifying period required for each initial claim type. These are basic tests which may be superseded by special tests applied to repeaters, new entrants/re-entrants, and other regular claimants. The function sets a flag indicating eligibility status.

uielrep

The uielrep function performs special eligibility tests that apply to repeaters only. The required weeks of insurable employment depend on the regional unemployment rate and on weeks of benefits in the qualifying period. The function performs a two dimensional table lookup to determine whether eligibility is established. The function sets a flag indicating eligibility status.

uielrge

Claims that are initiated as regular claims are subject to variable entrance requirements that depend on the regional unemployment rate. The function uielrge performs the table lookup necessary for these tests. The function sets a flag indicating eligibility status.

uiwkbas

The function uiwkbas determines entitlements in the Initial Phase. For special benefit types (i.e., claims that remain maternity, fishing, sickness or parental), this is the total claim entitlement and is determined by a table lookup. For regular claims, entitlements, up to a maximum number of weeks, are determined in proportion to weeks or hours of insurable employment in the qualifying period up to a maximum number of weeks.

uiwklfe

The function uiwklfe determines entitlements in the Labour Force Extended Phase. As in the Initial Phase, entitlements are determined in proportion to weeks, above a minimum, of insurable employment in the qualifying period.

uiwkrge

The function uiwkrge determines entitlements in the Regional Force Extended Phase. Entitlements are determined by the regional unemployment rate.

uitrnclm

The function uitrnclm is called by the ui function after the uiclm function. Therefore, regular, sickness, maternity, fishing, and parental benefits have already been assigned. The uitrnclm function assigns first other types of benefits, then training benefits. Other types of

benefits will include everything not included in regular, sickness, maternity, parental, fishing or training. The list of other benefits included will vary depending on the year of the program. But they may include such items as job creation benefits, work sharing benefits, and self-employed assistance.

Other benefits are calculated using the imputed weeks of other benefits (ucothwk) and a weekly benefit rate (ucothbr). These can be adjusted using UIOTHWKFCT and UIOTHBNFCT. Training benefits are calculated in a similar manner using uctrnwk, uctrnbr, UITRNWKFCT, and UITRNBNFCT. There are no eligibility tests for these types of benefits. New pointers, ubp5 and ubp6 are created to signify the end of these benefit phases.

Adjusting UI/EI

Some parameters were added to the model in order to mimic some historical changes to the UI/EI program which the model cannot do without changes to the database. The UITARGET and UIEITKP parameters allow the users to increase or decrease the number of UI/EI recipients. The following parameters: UIREGWKFCT, UITRNWKFCT, UIOTHWKFCT, UIEXTMATWKS allow the users to increase the number of weeks of benefits over and above the weeks claimed on the database. UITRNBNFCT and UIOTHWKFCT allow the benefit rate for training and other benefits to be increased.

1 - Qualifying for benefits is now based on hours of work instead of weeks of work

Since the SPSD does not contain total hours of work, these are derived using the weeks of work prior to claim (ucwwork) multiplied by a new variable: the average weekly hours of work (ucwchr) which was imputed from the Survey of Labour and Income Dynamics. For more information, see UIREGHRMIN, UIMATHRMIN, UISICHRMIN,.

As for fishing benefits, qualification is based on earnings in the past 31 weeks. These are derived using weeks of work prior to claim (ucwwork) and average weekly earnings (ucern). It is assumed that the weeks ucwwork occurred immediately prior to the start of the claim. See UIFSHERMIN.

2 -The Family Income Supplement was added

When UIEIFSFLG is set to 1, the Family supplement is calculated. The total amount of the family supplement paid on a claim is ubclmfs. The total amount of family supplement paid on a claim in the calendar year is ubcalfs.

The Family Supplement was introduced as part of the Employment Insurance system reform introduced in 1995. It increases the basic benefit of families with low income. It replaces the older program which gave an enhanced rate for individuals with low income (in the SPSD/M this older program was controlled by UIENSRATE, UIDEPOPT, UIENSRTCO).

There are two methods of calculating the Family Supplement. When UIEIFSOPT is set to 1, then family supplement is directly tied into the Canada Child Tax Benefit (imfcben). Families which are eligible for the Child Tax Benefit receive the weekly amount of the benefit in addition to their regular Employment Insurance. It is reduced at a rate (UIEIFSRR) over incomes greater than UIEIFSRL.

Some simplifications were made in order to implement this program in the SPSM. The calculation of the Canada Child Tax Benefit is done after the calculation of EI in the model since it requires net income. But it requires the previous year's net income which is estimated as PYINC times the current year's net income.

When the Family Supplement is activated, the tax/transfer driver (drv) is run through twice per eligible household. The first time, no one will get a family supplement since the child tax benefit is equal to zero. The value of the benefit is saved (in cceopt) and drv is called again. This time, the previously saved value for the child tax benefit is used to calculate the family supplement. The family supplement will be slightly inconsistent with the child tax benefit since the latter will be recalculated and may be slightly smaller than the one used for deriving the family supplement since family net income will increase due to the family supplement.

Another simplification in deriving the family supplement derives from the fact that the SPSM assumes that the Child Tax Benefit is given in one lump sum amount in July. Therefore in the case of the Family supplement, the rules governing the Child Tax Benefit may be a year off if the benefit is received in the first half of the year.

When UIEIFSOPT is set to 2, the family supplement is calculated independently of the child tax benefit. First the number of children under the age of 7 is calculated (imuiydep). By going through the drv twice, the family's net income (prior to the addition of the family supplement) is available and the previous year's income is derived by multiplying it by PYINC. The family supplement is then derived by looking up the base value (UIEIFS1 for families with 1 child, UIEIFS2 for families with 2 children, and UIEIFS3 for families with 3 or more children). A supplement for each child over and above the third is added (UIEIFSTOPUP) as is a supplement for each child under the age of 7 (UIEIFSYNG).

The Family supplement rules changed on July 1999. Since the methodology under UIEIFSOPT = 1 would be off by a year, it was decided to treat all of 1999 under the methodology introduced in July 1999 (UIEIFSOPT = 2).

Under both options, EI weekly benefits including the family supplement cannot exceed a proportion (UIEIMFSP) of the claimant's weekly earnings (ubern). Nor can EI benefits, including the family supplement exceed the base rate (UIEIRATE) times the maximum weekly earnings (UIERNMAX).

Also, under both options, when the UIEIFIFLG is turned on, people who receive the family supplement are exempted from the intensity rule.

3 - The Intensity Rule

For persons receiving regular or fishing EI benefits and who did not receive the Family Income Supplement, the intensity rule was applied. The benefit rate (UIEIRATE) depends on the number of weeks of EI collected in the past. See UIEIFIFLG, UIEIRATE, UIEIYRS, ubeiwbp, ucy1, ucy2, ucy3, ucy4, ucy5 for more details.

4 -The Minimum Divisor

In order to obtain their maximum benefits, EI claimants must work two weeks more than the minimum entrance requirements. The minimum divisor rule is controlled by UIEIDIVFLG and UIEIDIV.

5 -Minor Changes

There was a minor change in the method used to derive training weeks and training benefits.

The method of using the UI/EI regular benefit weeks adjustment factor UIREGWKFACT was adjusted.

CROSS REFERENCE

| Function | Description |
|-------------------|---|
| INPUT PARAMETERS: | |
| BXM | Basic personal exemption/amount |
| PYINC | Deflator to calculate previous year income |
| UIBASFLAG | Basic phase calculation flag (UI and EI) |
| UIBASOPT | UI reform option [1=normal, 2=Apr'89] (UI and EI) |
| UIBASRATE | Benefit rate for basic phase (UI only) |
| UIDEPOPT | UI dependency option [1=normal, 2=Feb'94] (UI only) |
| UIEFFFLAG | Observed effective weekly benefit rate flag (UI and EI) |
| UIEIDIV | EI minimum divisor [uer][divisor] (EI only) |
| UIEIDIVFLG | EI minimum divisor flag (EI only) |
| UIEIFIFLG | EI intensity rule exemption for family supplement receivers (EI only) |
| UIEIFS1 | Max fam supplement 1 child (EI only) |
| UIEIFS2 | Max fam supplement 2 children (EI only) |
| UIEIFS3 | Max fam supplement 3+ children (EI only) |
| UIEIFSFLG | UI EI calculate family supplement flag (EI only) |
| UIEIFSOPT | UI EI calculate family supplement option (EI only) |
| UIEIFSRL | UI EI family supplement reduction level (EI only) |
| UIEIFSRR | UI EI family supplement reduction rate (EI only) |
| UIEIFSTOPUP | Max fam supplement top up for more than 3 kids (EI only) |
| UIEIFSYNG | Max fam supplement top up for young children (EI only) |
| UIEIMFSP | EI Maximum family supplement percent of earnings (EI only) |
| UIEIMTYPFLG | Flag to model main benefit type (UI and EI) |
| UIEINEREFLG | Flag to check for hours for new entrants and re-entrants (EI only) |

| | |
|----------------------------|---|
| UIEIOPT | UI Employment Insurance reform option [1=UI, 2=EI Dec'95] |
| UIEIRATE | Benefit rate under EI reform [Past Wks ben][Rate] (EI only) |
| UIEITKP | UI EI takeup rate [index] : index based on prov, sex, age, |
| weeks | |
| UIEIYRS | Number of years of previous EI benefits calculated (EI |
| only) | |
| UIENSRATE | Enhanced rate for basic phase (UI only) |
| UIENSRTCO | Enhanced rate cutoff (UI only) |
| UIENTFLAG | Basic entrance requirements flag (UI and EI) |
| UIERNMAX | Maximum insurable earnings (UI and EI) |
| UIEWK | Entitlement (weeks) [wkwrk, uer] (UI and EI) |
| UIEXTMATWKS | Additional weeks for maternity - behavioural response (UI |
| and EI) | |
| UIFLAG | UI/EI Activation flag (UI and EI) |
| UIFSHERMIN | Min. earnings to qualify for fish. benefits [unempl. rate] |
| (EI only) | |
| UIFSHMINWK | Minimum weeks to qualify for fishing benefits (UI only) |
| UILFEFLAG | Labour force extended phase calculation flag (UI only) |
| UILFEMIN | Weeks worked in qualifying period [UILFEWKS index] (UI |
| only) | |
| UILFERATE | Benefit rate for labor force extended phase (UI only) |
| UILFEWKS | Weeks LFE entitlement [UILFEMIN](UI only) |
| UIMATHRMIN | Minimum hours to qualify for maternity benefits (EI only) |
| UIMATMINWK | Minimum weeks to qualify for maternity benefits (UI only) |
| UIMAXBASEWKS | Maximum number of weeks - regular (UI and EI) |
| UIMAXDUR | Maximum duration of a UI claim (UI and EI) |
| UIMAXFSHWKS | Maximum number of weeks - fishing (UI and EI) |
| UIMAXMATWKS | Maximum number of weeks - maternity (UI and EI) |
| UIMAXPARWKS | Maximum number of weeks - parental (UI and EI) |
| UIMAXSICWKS | Maximum number of weeks - sickness (UI and EI) |
| UINEREHRMIN | Minimum hours to qualify for new entrant or re-entrant (EI |
| only) | |
| UIOTHBNFCT | UI other benefits per week adjustment factor (EI and EI) |
| UIOTHWKFCT | UI other benefits weeks adjustment factor (UI and EI) |
| UIREGHRMIN | Min. hours to qualify for reg. benefits [unempl. rate] (EI |
| only) | |
| UIREGMINWK | Minimum weeks to qualify for regular benefits (UI only) |
| UIREGWKFCT | UI regular benefit weeks adjustment factor (UI and EI) |
| UIREPPREV | Weeks of insurable employment [weeks] (UI only) |
| UIREPUER | Regional unemployment rate [rates] (UI only) |
| UIREPWWKD | Repeater eligibility requirements [weeks x rates] (UI only) |
| UIRGEFLAG | Regional extended phase calculation flag (UI only) |
| UIRGEMIN | Unemployment rate for Regional Extended entitlement |
| [UIRGEWKS index] (UI only) | |
| UIRGERATE | Benefit rate for regional extended phase (UI only) |
| UIRGEWKS | Weeks Regional Extended entitlement [UIRGEMIN] (UI only) |
| UIRGNFLAG | Regional requirements flag (UI only) |
| UIRGNMIN | Regional unemployment rate (UI only) |
| UIRGNWKS | Weeks required for eligibility (UI only) |
| UIRPTFLAG | Repeater requirements flag (UI only) |
| UISICHRMIN | Minimum hours to qualify for sickness benefits (EI only) |
| UISICMINWK | Minimum weeks to qualify for sickness benefits (UI only) |
| UITARGET | UI/EI target for the number of cases (UI and EI) |
| UITRBNFCT | UI training benefit per week adjustment factor (EI and EI) |
| UITRNWKFCT | UI training benefit weeks adjustment factor (UI and EI) |
| UIWAITWKS | Minimum waiting period all claims (UI and EI) |

INPUT VARIABLES:

| | |
|----------|--|
| cfin | First person in census family [pointer] |
| cfnpers | Number of persons in census family |
| hdprov | Province |
| hdurb | Size of urban area |
| hhncf | Number of census families in household |
| hhnin | Number of individuals in household |
| hhnfn | Number of nuclear families in household |
| idage | Age |
| idcfrh | Relationship to census family head |
| idicapg | Capital gains (actual) |
| ididiv | Dividend income (actual) |
| idiemp | Wages & salaries |
| idiint | Interest income (121) |
| idinoth | Other money income (non-taxable) |
| idinspo | Person's spouse [pointer] |
| idioinv | Other investment income with net rental |
| idipens | Pension income (115) |
| idisefm | Self-employed income - farming |
| idisenf | Self-employed income - non-farming |
| iditoth | Other non-government income (taxable) |
| iditrsp | Taxable RRSP withdrawals |
| idnfn | Person's nuclear family [pointer] |
| idninc | No income flag (SPSD variables) |
| idrand | Random numbers [array] |
| idspoflg | Person has spouse |
| iduirank | Predicted ranked likelihood of getting UI |
| imfcben | Total Federal Child Benefits |
| iminet | Net income |
| imisa | Social assistance (or replacement program) |
| imuidpfg | UI claimants has dependents flag |
| nfin | First person in nuclear family [pointer] |
| nfinch | First child in nuclear family [pointer] |
| nfnkids | Number of children in nuclear family |
| nfnpers | Number of persons in nuclear family |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ucbtyp | Claim type |
| ucdivwk | Minimum divisor weeks |
| uceff | Effective weekly rate |
| ucern | Insurable weekly earnings |
| ucgotpa | Received paternity benefits |
| uchrwk | Hours worked prior to claim |
| ucmtyp | Main Claim type (majority of weeks) |
| ucnere | New entrant re-entrant flag |
| ucothbr | Other benefits weekly rate |
| ucothwk | Weeks of other benefits |
| ucrpeat | Repeat claim flag |
| ucstart | Week claim established |
| ucstat | Claim status flag |
| uctpcng | Also received regular benefits |
| uctrnbr | Training benefit weekly rate |
| uctrnwk | Weeks of training benefits |
| ucuer | Local unemployment rate (x10) |
| ucweeks | Weeks of benefits |
| ucwork | Weeks of work prior to claim |
| ucyl | Weeks on UI in first year before claim |

| | |
|------|---|
| ucy2 | Weeks on UI in second year prior to claim |
| ucy3 | Weeks on UI in third year prior to claim |
| ucy4 | Weeks on UI in fourth year prior to claim |
| ucy5 | Weeks on UI in fifth year prior to claim |

OUTPUT VARIABLES:

| | |
|----------|--|
| imiuib | Unemployment Insurance/Employment Insurance benefits |
| imninc | No income flag |
| imuibr | UI benefit recovery |
| imuidpfg | UI claimants has dependents flag |
| imuiydep | Number of dependents under 7 for family supplement (EI only) |
| ubcalfs | Family supplement paid in calendar year |
| ubcalpd | Benefits paid in calendar year |
| ubcalwk | Weeks on claim in calendar year |
| ubclmfs | Family supplement paid on claim |
| ubclmpd | Benefits paid on claim |
| ubclmwk | Weeks on claim |
| ubeiwbp | Weeks of past EI benefits |
| ubern | Modelled insurable weekly earnings |
| ubp1 | Week # of first payment |
| ubp1c | Week # of first payment (windowed) |
| ubp2 | Week # of start of second phase |
| ubp2c | Week # of start of second phase (windowed) |
| ubp3 | Week # of start of third phase |
| ubp3c | Week # of start of third phase (windowed) |
| ubp4 | Week # of last payment |
| ubp4c | Week # of last payment (windowed) |
| ubp5 | Week # of last other type of ui/ei payment |
| ubp5c | Week # of last other type of ui/ei payment (windowed) |
| ubp6 | Week # of last training payment |
| ubp6c | Week # of last training payment (windowed) |

vardef Define structure member as an SPSM variable

SUMMARY

The vardef function (actually a macro) is used to define a new variable to the facilities of the SPSM that make use of variables. Please see the [Programmer's Guide](#) for more information.