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.

Statistics Canada   Statistique Canada

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. `uiclm, 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.

fmspopen   Routines to read SPSD file (.spd)

fmfxopen   Routines for reading SHS (.fxv) file

adj   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.

mpc   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.

call	Call tax/transfer calculator
drv	Tax/transfer calculator

1.3 Government Cash Transfers

1.3.1 Employment Insurance Benefits

Employment Insurance benefits are calculated by a set of functions which mimic application of EI 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 the Quebec family allowance, the Quebec new born allocation and the Quebec availability allowance. The famod function also calculates the Federal Universal Child Care Benefit program, which is a monthly payment designed to help all families with the cost of child care for children under age 6.

famod	Compute family allowance

1.3.3 Federal Child Tax Benefit/Credit

This function is used to calculate the federal child tax benefit. This program is 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
cceopt	Multiple calls of tax/transfer calculator

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 provincial GIS supplementation programs in Newfoundland and Labrador, New Brunswick, 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).

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 txccea 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.

txccea   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)
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 consummable 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 and to adjust the months of education for students
aged 16 to 18. 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 a certain calendar year.
Adjustment of this data may be required for several reasons.

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. Two such specific database adjustments are
currently available in black box mode: an adjustment of RRSP contributions and an
adjustment of months of education.

The RRSP contribution 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.

The educational adjustment is designed to replace the values for months in school for post-secondary students under the age of 19. When EDUCADJFLAG is turned on, an adjustment is made to the months of education (ideducfm and ideducpm) for students in post-secondary school aged 16 to 18. As few of these people file income taxes, their months of education would otherwise be under-reported. The months of education for these students is drawn from the EDUCMPQ and EDUCMROC distributions when EDUCADJFLAG is turned on.

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:
EDUCADJFLAG  Adjust education months activation flag
EDUCMPQ      Distribution of months in school by age for
Quebec
EDUCMROC     Distribution of months in school by age for
provinces other than Quebec
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
idage        Age
idestat      Educational status
idrand       Random numbers [array]
idrpp        Registered pension plan contributions (207)
idschtp      School type
```

```
OUTPUT VARIABLES:
hdprov      Province
ideducfm    Eligible full-time months of education
ideducpm    Eligible part-time months of education
idrrsp      RRSP calculated amount (208)
```

---

call   Call tax/transfer calculator

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.cpp.

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cceopt   Multiple calls of tax/transfer calculator

SUMMARY

The cceopt 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 cceopt function controls such recalculations. Each case is discussed under separate headings below:

Pre-calculation of various variables

The tax and transfer system in the SPSM is run in a specified order (drv). In some cases, a variable is required which hasn't yet been calculated. For example, 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. cceopt 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. This is done for other programs, as needed.

Splitting of pension income

Beginning in 2007, pension income was allowed to be split between spouses in order to lower the tax burden of the family.

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 cceopt 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

cceopt performs the re-calculations and optimizations in a specific sequence. The pre-calculation of the programs for the calculation of other programs (such as pre0calculating the federal Child Tax Benefit in order to model Employment Insurance) is performed first. Next, the optimization of pension income splitting is done. Finally, 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 various variables.

The first time drv is called, certain variables in the code will have a zero value. If necessary, the tax system will be called a second time in order to populate these values.

For example, 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 cceopt 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.

Splitting of pension income

The tax system is first run without splitting pension income. When SPLTPNSFLAG or QSPLTPNSFLAG is turned on, pension income can be split between spouses. drv will be called multiple times in order to find the optimal split of pension income. Please see SPLTPNSFLAG for more details about this implementation.

Optimization of the Child Tax Credit/Child Tax Benefit

The default calculation first performed in txccea makes use of any child care expenses associated with the children in the family. In the cceopt 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.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
CCEZOPT      CCE young kid optimization rules [1=use, 2=zero,
3=optimize]
PENSPLTINCR  Increment by which to split pension income
QPENSPLTINCR   Quebec increment by which to split pension
income
QSPLTPNSFLAG   Quebec flag to split pension income
QSPLTPNSOPT  Quebec option for income concept to optimize
split pension income
SPLTPNSFLAG  Flag to split pension income
SPLTPNSOPT   Option for income concept to optimize split
pension income
UITARGET     EI target for the number of cases

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
idipens    Pension income (115)
idspoflg   Person has spouse
iduirank   Predicted ranked likelihood of getting EI
imccec     Child care expenses claimed on behalf of child
immdisp    Disposable income
```

```
immicons        Consumable income
imqpipcbn       Quebec parental insurance plan calendar year
benefits
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
imfcbene        Total Federal Child Benefit Supplement
imgistsa        Amount of GIST which goes into SA
imicnet         Net Income (line 236)
imigis          GIS benefits
iminet          Net income
imisa           Social assistance (or replacement program)
imispa          Spouse's allowance
imiuccbc        Universal Child Care Benefit amount claimed
imiuccbr        Universal Child Care Benefit amount received
impnsph         Pension income split for head
impnsps         Pension income split for spouse
imqinet         Quebec net income
imqpnsph        Quebec pension income split for head
imqpnsps        Quebec pension income split for spouse
imscb           Saskatchewan Child Benefit
```

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.

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, goods and services tax, gasoline excise tax, and air transportation tax. 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 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 four tax types: custom import duties; excise duties; goods and services tax; and excise taxes. 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 SHS 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 User's Guide*.

Notes Regarding Expenditure Adjustments

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

The first is made necessary because of the way SNA and SHS 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 SHS 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 SHS. Two other SHS 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 SHS values to the levels of other sources. We provide users with factors to inflate expenditures to known levels.

Estimation of commodity taxes

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

The SHS 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. Provincial taxes applied are defined in the following input parameters:

- CTPAMU   Provincial amusement tax
- CTPGAS   Provincial gasoline tax
- 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 SHS spending unit via personal income shares in the ctmod function. The income of the household's head is derived by adding four variables from the SHS income concept not surveyed elsewhere to his/her SPSD income concept variables. These variables are: savings; other money receipts; net sales of durables and account balancing difference. 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 SHS 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 SHS 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 Labour and Income Dynamics (SLID) data using Department of Revenue Greenbook 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 SHS data suffers from the same under-coverage as the SLID so the reported spending unit expenditure can be out of synch with the Greenbook 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 SHS spending unit income by the ratio of the SPSD "shared" income concept to an equivalent SHS "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.

Calculating the Ontario Clean Energy Benefit (OCEB)

The calculation of the Ontario Clean Energy Benefit has been added to the ctmod algorithm because the benefit requires the calculation of commodity taxes. Once commodity taxes are available the benefit is calculated by multiplying the rebate rate by each household's total spending on electricity (including taxes).

Interpretation

There are some other discrepancies between the system of national accounts (SNA) definition of consumer expenditure and that of SHS. Generally, SNA includes the entire personal sector whose components are households, self-employed professionals, and universities. SHS tracks only households and, therefore, tax levels by commodity are

generally lower. For a detailed description of these differences see the *Commodity Tax User's Guide.*

In the aggregate, differences between income SPSM income concept (CTOPT=2) and the SHS income concept (CTOPT=1) are almost negligible. Using 1984 base case parameters the SHS option produced a $20.997 billion tax burden on Canadian families while the scaled option generated $21.048 billion. These compare favourably with the SNA estimate of $22.5 billion. However, the differences for the highest income households are greater. 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 SHS 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     SHS->SNA conceptual conversion factor [com]
CTCAPTOBFLG  Flag to cap tobacco expenditures
CTFABD       Account balancing difference
CTFCID       Federal custom import duties [com]
CTFEXD       Federal excise duties [com]
CTFEXT       Federal excise taxes [com]
CTFGST       Federal GST [com]
CTFGSTHOUSE  Gst on housing to be allocated [prov][tenure]
CTFLAG       Commodity tax activation flag
CTFNEW       New federal commodity tax [com]
CTLPROP      Local property taxes
CTNES        Expenditures NES
CTOPT        Commodity tax calculation method [1=SHS,2=SPSM]
CTPAMU       Provincial amusement tax [prov]
CTPCAR       Provincial carbon tax [com x prov]
CTPGAS       Provincial gasoline tax [com x prov]
CTPLGL       Provincial liquor gallonage tax [prov]
CTPNEW       New provincial commodity tax [com x prov]
```

```
CTPPLQ      Provincial profits on liquor commissions [prov]
CTPRST      Provincial retail sales tax [com x prov]
CTPTOB      Provincial tobacco tax [prov]
CTSAVE      All positive savings
CTTOBMAX    Maximum value of tobacco expenditures
OOCEBFLG    Ontario Clean Energy Benefit activation flag
OOCEBRATE   Ontario Clean Energy Benefit rebate rate

INPUT VARIABLES:
ctfabdn     Negative account balancing difference
ctnexp      Household expenditure net of taxes
ctothmon    Household money from other sources
cttxfc      Federal commodity taxes (total)
cttxpc      Provincial commodity taxes (total)
fxalimo     Alimony and child support
fxanncon    Annuity contracts and transfers to RRIFs
fxfabd      Account balancing difference
fxfomr      Other money receipts
fxgstidx    Index for distributing GST on housing
fxgvpen     Gvt pension plan contributions
fxhomexp    Expenses assoc with principal residence
fxio        I/O expenditure categories [array]
fxnes       Not elsewhere stated
fxnsave     Negative savings
fxprtax     Property tax
fxpsave     Positive savings
fxpvpen     Private pension plan contributions
fxrepr      Repairs paid
fxsaldur    Sale of durables
fxseqhv     SHS record sequence number
fxtptax     Transfer of Property taxes
hdprov      Province
hdtenur     Tenure
hhnin       Number of individuals in household
idhhrh      Relationship to head of household
idicapg     Capital gains (actual)
immdisp     Disposable income

OUTPUT VARIABLES:
ctfabdn     Negative account balancing difference
ctfabdp     Positive account balancing difference
ctfcid      Federal custom import duties
ctfcid_     Federal custom import duties [array]
ctfexd      Federal excise duties
ctfexd_     Federal excise duties [array]
ctfext      Federal excise taxes
ctfext_     Federal excise taxes [array]
```

```
ctfgst       Federal GST
ctfgst_      Federal GST [array]
ctfgsths     Federal GST on housing
ctfnew       New federal commodity tax
ctfnew_      New federal commodity tax [array]
ctishrh      Shared income concept (SHS)
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
ctpcar       Provincial carbon tax
ctpcar_      Provincial carbon tax [array]
ctpgas       Provincial gasoline tax
ctpgas_      Provincial gasoline tax [array]
ctplgl       Provincial liquor gallonage taxes
ctpnew       New provincial commodity tax
ctpnew_      New provincial commodity tax [array]
ctpplq       Provincial profits on liquor commissions
ctprov       Province for COMTAX calculations
ctprst       Provincial retail sales tax
ctprst_      Provincial retail sales tax [array]
ctptob       Provincial tobacco tax
ctsave       Household savings
ctseqhv      SHS 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 (SHS & SPSD)
imooceb      Ontario Clean Energy Benefit
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
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
txfstc	Compute federal sales tax credit
txprov	Compute provincial taxes and credits
gai	Stub routine for new post-tax system programs
memo1	Compute memo items for reporting
ctmod	Compute commodity taxes

memo2	Compute consumable income, etc.
cceopt	Multiple calls of tax/transfer calculator
classu	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.
- 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 memo1 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.
- cceopt optimizes income by maximizing the child care expense credit and the child tax credit, optimizes pension income splitting, and pre-calculates variables.
- 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 txccea 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.cpp, txcalc.cpp). 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 cceopt all the functions are called multiple times by drv.

ui	Compute UI benefits
qpclm	Simulate a QPIP claim
uiclm	Simulate an EI claim
uisqz	Squeeze EI phases into time window
uitrnclm	tack on a training claim for those eligible

	uiclm		Simulate an EI claim
		uisqz	Squeeze EI phases into time window
	uitrnclm		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
	txccea		Compute child care expense allowance
gis			Compute GIS/SPA for elderly
	gissub		Compute income used to tax back GIS/SPA
gist			Compute Provincial GIS top-ups for elderly
	txhhexp		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
txctc			Compute child tax credit
txfstc			Compute federal sales tax credit
txprov			Compute provincial taxes
	txnfld		Compute Newfoundland provincial taxes
	txpei		Compute PEI provincial taxes
	txns		Compute Nova Scotia provincial taxes
	txnb		Compute New Brunswick provincial taxes
	txque		Compute Quebec provincial taxes
		txqinet	Compute net income (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.

gai			Stub routine for new post-tax system programs
memo1			Compute memo items for reporting
ctmod			Compute commodity taxes
	ctfx		Compute commodity taxes for SHS spending unit
		ctfxd	Compute commodity taxes for SHS spending unit (detailed)
memo2			Compute consumable income, etc.
cceopt			Multiple calls of tax/transfer calculator recalculate programs
	pass2		
		drv	Conditional execution of the Tax/Transfer Calculator
	...		Repeat if necessary for optimizing
classu			Compute User Defined Reporting Variables

---

famod   Compute family allowance

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 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 provincial (impfa) family allowances. The function loops through each nuclear family in a household.

The function first calculates provincial family allowances for residents of Quebec. Counts of numbers of children by age group are calculated and used to index into a look-up table for provincial programs.

The calculation of Quebec allowances in famod includes 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 SPSD 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.

Universal Child Care Benefit

The UCCBFLAG parameter turns on and off the Federal Universal Child Care Benefit (UCCB) program, which is a monthly payment designed to help all families with the cost of child care for children under age 6. The program was implemented in July 2006.

This amount will be taxable for the lower-income spouse. This amount will not be taken into account for the purposes of calculating income-tested benefits delivered through the income tax system. Nor will they reduce Old Age Security or Employment Insurance Benefits, and will not reduce the amount of expenses claimable under the child care expense deduction.

When UCCBSPFLG is activated, single parents may transfer the amount of UCCB received (imiuccbr) to a dependent, who then can claim the UCCB amount on their income. In the case of 2 parent families, the amount of UCCB claimed (imiuccbc) will be equal to the amount received (imiuccbr).

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
FAFLAG       Family allowance flag
QFATCOPT     Quebec Family Allowance Tax Credit Option
QFPSL        Quebec provincial family allowance [parity,$]
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
QNBRFLAG     Quebec newborn family random increase of child
rank
TARGETYEAR   Year of analysis
UCCBAMT      Universal child care benefit amount for each
child < 6
UCCBFLAG     Universal child care benefit activation flag

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]
nfnkids      Number of children in nuclear family
nfspoflg     Nuclear family contains married couple

OUTPUT VARIABLES:
imiuccbr     Universal Child Care Benefit amount received
imnfach      Number of under 18 children claimed for tax
reduction
impfa        Provincial family allowance
imqnbfa      Quebec newborn Allowance
nfineld      Eldest person in nuclear family [pointer]
nfinspo      Spouse of eldest [pointer]
```

SUMMARY

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

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
CTCFALC      SHS reporting error adjustment: Alcohol [prov]
CTCFGAS      SHS reporting error adjustment: Gasoline [prov]
CTCFTOB      SHS reporting error adjustment: Tobacco [prov]
CTTXRM       Base year commodity tax removal factor [com x
prov]
EXPADJ       Adjustment Factor: All expenditure adjustment
GFALIMO      Adjustment Factor: Alimony and child support
GFANNCON     Adjustment Factor: Annuity contracts and
transfers to RRIFs
GFCQP        Adjustment Factor: CPP/QPP contributions
GFFABDN      Adjustment Factor: Negative account balancing
difference
GFFABDP      Adjustment Factor: Positive account balancing
difference
GFFMX        Adjustment Factor: consumer expenditure
categories [commodity]
GFFOMR       Adjustment Factor: Other money receipts
GFGSTIDX     Adjustment Factor: GST on housing index
[province][tenure]
GFGVPEN      Adjustment Factor: Government pension plan
contributions
GFHOMEXP     Adjustment Factor: Expenses associated with princ
residence
GFHRTCPR     Adjustment Factor: Home Renovation Tax Credit
eligible expenses on principal residence
GFHRTCVH     Adjustment Factor: Home Renovation Tax Credit
eligible expenses on vacation homes
GFINTAX      Adjustment Factor: Income taxes
```

```
GFIPAC        Adjustment Factor: Life insurance premiums and
annuity contributions
GFNCALN       Adjustment Factor: Negative change in assets and
liabilities
GFNCALP       Adjustment Factor: Positive change in assets and
liabilities
GFNES         Adjustment Factor: Not elsewhere stated
GFPRTAX       Adjustment Factor: Property tax
GFPURPRC      Adjustment Factor: Purchase price of home
GFPVPEN       Adjustment Factor: Private pension plan
contributions
GFRECOM       Adjustment Factor: Real estate commissions
GFREPR        Adjustment Factor: Repairs paid
GFRFEES       Adjustment Factor: Registration and license fees
GFRRSPT       Adjustment Factor: Total RRSP contributions (SHS)
GFSELPRC      Adjustment Factor: Selling price of home
GFTPTAX       Adjustment Factor: Transfer of property taxes
GFUIC         Adjustment Factor: UI contributions
KEEPNEGEXP    Retain negative expenditures in SHS
DBVERSION     Version of the database (x100)
INPFXV        Name of SHS 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]
fhnnum        Number of numbers in the file
fralimo       Alimony, separation allowance, child support
payments
franncon      Annuity contracts and transfers to RRIFs
frclohhv      Cloning factor for SHS exp. vector
frcloshs      SHS cloning factor
frcqp         Cpp - qpp contributions
frfabd        Account balancing difference
frfomr        Other money receipts
frgstidx      Index for distributing GST on housing
frgvpen       Gvt pension plan contributions
frhomexp      Expenses associated with operation of principal
residence
frhrtcpr      Home renovation tax credit eligible expenses on
principal residence
frhrtcvh      Home renovation tax credit eligible expenses on
vacation home
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
frpurprc    Purchase price of home
frpvpen     Private pension plan contributions
frrecom     Real estate commissions
frrepr      Repairs paid
frrfees     Registration and license fees
frrrspt     Total RRSP contributions (SHS)
frselprc    Selling price of home
frtptax     Transfer of Property taxes
fruic       UI contributions
hdprov      Province
hdtenur     Tenure

OUTPUT VARIABLES:
fhhash      Hashed code of header information
fxalimo     Alimony and child support
fxanncon    Annuity contracts and transfers to RRIFs
fxclohhv    SHS cloning factor
fxcloshs    SHS cloning factor
fxcqp       Cpp - qpp contributions
fxfabd      Account balancing difference
fxfomr      Other money receipts
fxgstidx    Index for distributing GST on housing
fxgvpen     Gvt pension plan contributions
fxhomexp    Expenses assoc with principal residence
fxhrtcpr    Home Renovation Tax Credit eligible expenses on
principal residence
fxhrtcvh    Home Renovation Tax Credit eligible expenses on
vacation home
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
fxpurprc    Purchase price of home
fxpvpen     Private pension plan contributions
fxrecom     Real estate commissions
fxrepr      Repairs paid
fxrfees     Registration and license fees
fxrrspt     Total RRSP contributions (SHS)
fxsaldur    Sale of durables
fxselprc    Selling price of home
```

```
fxseqhv        SHS record sequence number
fxtptax        Transfer of Property taxes
fxuic          EI contributions
hdfrstfx       First household in SHS group flag
hdlastfx       Last household in SHS group flag
hdwgtfx        Sum of household weight for SHS 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:
GFADDDED    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)
GFCCET      Growth Factor: Child care expenses associated
with child
GFCCETT     Growth Factor: Child care expenses (Limit A, Form
T778)
GFCGTC      Growth Factor: Caregivers tax credit (315)
GFCHARIT    Growth Factor: Charitable donations (340)
GFCLERGY    Growth Factor: Clergy residential deduction
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)
GFFITEXP     Growth Factor: Fitness Expenses for children
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)
GFIALIMG     Growth Factor: Gross Alimony Income
GFIALIMO     Growth Factor: Alimony Income
GFICAPG      Growth Factor: Capital gains (actual) (127 * 1.5)
GFIDIV       Growth Factor: Dividend income (actual) (120 /
1.5)
GFIDIVE      Growth Factor: Dividend income (actual -
eligible)
GFIDIVIE     Growth Factor: Dividend income (actual - other
than eligible)
GFIEMP       Growth Factor: Employment income [province,sex]
GFIINVND     Growth Factor: Investment income (excluding
dividend)
GFILOSS      Growth Factor: Business investment losses (217)
GFINTSTU     Growth Factor: Interest paid on student loans
(319)
GFIPENS      Growth Factor: Pension income (115)
GFIQPIP      Growth Factor: Original QPIP
GFISA        Growth Factor: Social assistance income
GFISE        Growth Factor: Self-employment income
```

```
GFITC         Growth Factor: Federal investment tax credits
(412)
GFITOTH       Growth Factor: Other non-government income
(taxable)
GFITRRSP      Growth Factor: Taxable RRSP withdrawals
GFIWORKC      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)
GFQPERN       Growth Factor: Weekly earnings to qualify for
QPIP
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
GFSPRECPR     Growth Factor: Children's Sport & Recrn
Expense(Prov)
GFSTKDED      Growth Factor: Stock option deduction (249)
GFTRANSIT     Growth Factor: Public Transit
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]
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 SHS expenditure vector file
INPSPD        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 SLID clones
hrevmv        Expenditure vector matching variable
hrprov        Province
hrtenur       Tenure
hrurb         Size of urban area
idage         Age
idccqp        Converted CPP/QPP benefit
idcsa         Converted social assistance
idsex         Sex
irage         Age
iralhrs       Total Hours Worked Last Year
irccqp        Converted CPP/CQP
ircfrh        Relation to census family head
ircfseq       Census family sub-sequence number
ircsa         Converted social assistance
ircuib        Converted UI benefit
irdisab       Disability status (age 16+)
iredlev       Educational level
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
irlyun        Weeks unemployed last year
irlyww        Weeks worked last year
irmarst       Marital status
irocc         Occupation
irqpfrst      First type of QPIP
irqpstrt      Start of QPIP
irqptype      Type of QPIP
irqpweek      Weeks of QPIP
```

```
irrklyun      Raking foundation: weeks worked
irrklyww      Raking foundation: weeks unemployed
irsamths      Number of Months in receipt of SA
irschtp       School type
irseqino      Slid sequence number
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       Received parental benefits
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 unemplyment rate (x10)
urweeks       Claim weeks of benefits
urwwork       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:
fhhash        Hashed code of header information
hdclohh       Number of SLID 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
idaddded      Additional deductions from net income (256)
idage         Age
idalexp       Other allowable employment expenses (229)
idalhrs       Total Paid Hours of Work Last Year (imputed)
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/QPP benefit
idcfrh        Relationship to census family head
idcfseq       Census family sub-sequence number
idcgtc        Caregivers tax credit (database) (315)
idcharit      Charitable donations
idclergy      Clergy residential deduction
idcloss       Allowable other years capital loss (253)
idcsa         Converted social assistance
idcuib        Converted EI benefit
iddalimo      Alimony paid (220)
iddisab       Disability status (age 16+)
iddisoth      Disability amount for dependants (318)
iddisslf      Disability amount for self (316)
iddues        Union and professional dues (212)
idedlev       Educational level
ideducfm      Eligible full-time months of education
ideducpm      Eligible part-time months of education
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]
idfitexp      Fitness expense amount for children
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)
idialimg      Alimony income received (gross)
idialimo      Alimony income received
idicapg       Capital gains (actual)
idicqp        CPP/QPP income (114)
ididiv        Dividend income (actual)
```

```
ididive     Amount of eligible dividend income
ididivie    Amount of other than eligible dividend income
idieflag    Cloned institutionalized elderly person
idiemp      Wages & salaries
idiinvnd    Interest and other investment income
idiloss     Business investment losses (217)
idimmi      Years since immigration
idind       Industry
idinseq     Individual sub-sequence number
idintstu    Interest paid on student loans (319)
idipens     Pension income (115)
idiqpip     Original amount of QPIP
idisa       Social assistance income
idise       Self-employed income
iditc       Federal investment tax credits (412)
iditoth     Other taxable income (130)
iditrrsp    Taxable RRSP withdrawals
idiworkc    Workers compensation benefits
idlabtxg    Gross Labour funds bought (413)
idlfst      Labour force status
idlyfp      Last year full/Part time
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)
idnorth     Northern deductions (255)
idocc       Occupation
idothded    Other deductions from total income (232)
idothpe     Amounts for Infirm Dependants (306)
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)
idqpern     Weekly earnings to qualify for QPIP
idqpfrst    First type of QPIP claim
idqpstrt    Week of QPIP start
idqptype    Type of QPIP claim
idqpweek    Weeks of QPIP
idrentpd    Total rental payments (555)
idrklyun    Raking foundation: weeks unemployed
idrklyww    Raking foundation: weeks worked
```

```
idrpp       Registered pension plan contributions (207)
idrrsp      RRSP calculated amount (208)
idsamths    Imputed number of months on SA
idsapred    Predicted amount of SA received
idsarank    Predicted ranked likelihood of getting SA
idschtp     School type
idseqino    SLID Individual Identifier (Original)
idsex       Sex
idsprecpr   Children's Sport & Recrn Expense(Prov)
idstkded    Stock option deduction (249)
idsynthi    Synthetic high income person
idtransit   Public Transit
idtuitn     Tuition fees (320)
iduipred    Predicted amount of EI received
iduirank    Predicted ranked likelihood of getting EI
ucbtyp      Claim type
ucdivwk     Minimum divisor weeks
uceff       Effective weekly rate
ucern       Insurable weekly earnings
ucexhas     Exhaustee flag
ucgotpa     Received parental 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
ucwwork     Weeks of work prior to claim
ucy1        Weeks on EI in first year before claim
ucy2        Weeks on EI in second year prior to claim
ucy3        Weeks on EI in third year prior to claim
ucy4        Weeks on EI in fourth year prior to claim
ucy5        Weeks on EI in fifth year prior to claim
```

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
```

gis   Compute GIS/SPA for elderly

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.

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).

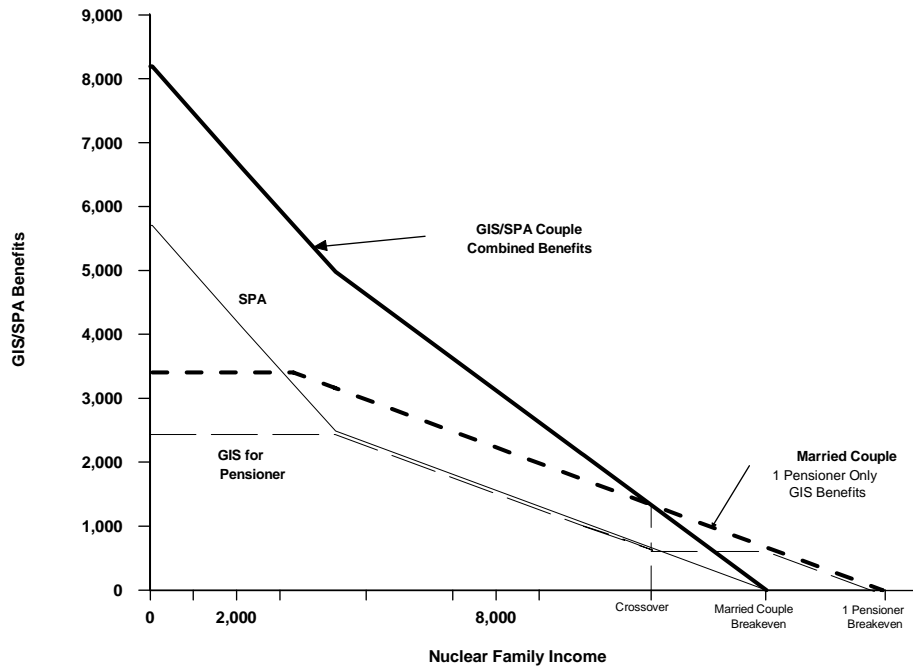**GIS and SPA For Married Couples, 1 is not an OAS Pensioner**

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 survey, 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
+ idiinvnd	Interest and Investment Income

+ neteinc (see note)	Net adjusted employment income (see note)
+ idise	Self Employment Income
+ iditoth	Other Income
+ idicqp	CPP/QPP Benefits
+ imipnst	Taxable pension Income (after splitting)
+ iditrrsp	Taxable RRSP Withdrawals
+ idiworkc	Workers compensation benefits
+ imiuib	Employment Insurance Benefits
+ imqpipcbn	Quebec parental insurance plan calendar year benefits
- imcqppc	CPP/QPP Contributions
- imuic	Employment Insurance Contributions
- imqpipp	Quebec parental insurance plan premiums for paid workers
- nneg(imdedft-idalexp – idclergy – impentrd)	Other deductions

Note: net adjusted employment income is calculated as:

idiemp (employment income) less idalexp (other allowable employment expenses) and idclergy (clergy residential deduction) and, then this amount is reduced by the minimum of (adjusted employment income times GISEMPEXP) and GISEMPEXM.

Benefits are then calculated in each of the five groups discussed above. Every individual is assigned a value for the variables imoldtyp and imgistyp 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.

GIS/SPA Top-up

When GISTOPFLG is set to one, eligible GIS and SPA recipients may receive a top-up to their benefits depending on their income. For single GIS or SPA recipients the maximum top-up is GISTOPSNG provided their annual income (other than OAS, GIS and SPA) is less than GISTOPSIN. Single recipients with annual income greater than GISTOPSIN may get a reduced top-up, where the benefit is reduced by GISTOPSRR for each dollar of income in excess of GISTOPSIN. GIS and SPA recipients in a couple may receive a maximum top-up of GISTOPMAR if their annual income (other than OAS, GIS and SPA) is less than GISTOPMIN. Recipients in a couple may receive a reduced top-up, where the benefit is reduced by GISTOPMRR for each dollar of income in excess of GISTOPMIN.

The annual top-up begins in July 2011. The calculated top-up is multiplied by the phase in rate GISTOPPI, which is set to 0.5 for 2011 and 1.0 for 2012 and onwards.

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 gis 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]
GISEMPEXM    GIS employment income exemption - maximum
GISEMPEXP    GIS employment income exemption - percentage of
earnings
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]
GISTOPFLG    GIS Top Up Activation Flag
GISTOPMAR    GIS Top Up Maximum amount per married pensioners
GISTOPMIN    GIS Top Up Income Turndown for married pensioners
```

```
GISTOPMRR     GIS Top Up Reduction Rate for married pensioners
GISTOPPI      GIS Top Up Phase in rate
GISTOPSIN     GIS Top Up Income Turndown for single pensioners
GISTOPSNG     GIS Top Up Maximum amount per single pensioners
GISTOPSRR     GIS Top Up Reduction Rate for single pensioners
GISTURFLAG    GIS take-up flag: apply 5 take-up tables
PYINC         Deflator to calculate previous year income
SPAOASRR      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:
hhnnf         Number of nuclear families in household
idage         Age
idalexp       Other allowable employment expenses (229)
idclergy      Clergy residential deduction
idicqp        CPP/QPP income (114)
idiemp        Wages & salaries
idiinvnd      Interest and other investment income
idise         Self-employed income
iditoth       Other taxable income (130)
iditrrsp      Taxable RRSP withdrawals
idiworkc      Workers compensation benefits
idmarst       Marital status
idrand        Random numbers [array]
imcqppc       CPP/QPP contributions
imdedft       Deductions from total income
imicapgt      Capital gains (taxable)
imidivt       Dividend income (taxable)
imioas        OAS benefits
imipnst       Taxable pension income (after splitting)
imiuib        Employment Insurance benefits
imoaspar      Partial OAS residency flag
imoasres      Partial OAS fraction
impentrd      Pension income deduction from transfer to spouse
imqpipcbn     Quebec parental insurance plan calendar year
benefits
imqpipp       Quebec parental insurance plan premiums for paid
workers
imuic         Employment Insurance 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
imigistop   GIS/SPA Top Up Amount
imispa      Spouse's allowance
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 provincial GIS supplementation programs in seven
provinces; Newfoundland, 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

Seven provinces provide cash benefits to pensioners in receipt of federal OAS, GIS, and in
some cases, SPA benefits. The seven 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
New Brunswick	Low-income Seniors Benefit
Ontario	Guaranteed Annual Income System (GAINS-A)
Manitoba	Manitoba Fifty Five Plus Program (55+)
Saskatchewan	Income Plan (SIP)
Alberta	Alberta Seniors Benefit
British Columbia	GAIN for Seniors Supplement (Guaranteed Available Income for Need)

Newfoundland Low-Income Seniors Benefit

All single seniors aged 65 and over, with a previous years' individual net income less than
NFSBTD are eligible to receive the maximum benefit NFSBBAS. This benefit will be
reduced by NFSBRR for each dollar of net income over NFSBTD. For seniors married to
non-seniors, the maximum benefit NFSBBAS is reduced by NFSBRR for each dollar of
family net income over NFSBCTD.

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.

Manitoba Fifty Five Plus Program (MFFP)

The MFFP provides quarterly benefits to Manitoba residents who are in receipt of certain levels of GIS and SPA benefits, including extended and widowed SPA recipients (the senior component). MFFP also provides benefits to persons aged 55 and over who do not qualify for OAS (the junior component). 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 the maximum benefit is MFFPSBEN and it is reduced by MFFPSRR. In the case of people who are not recipients, the maximum benefit is MFFPJBEN which is reduced at a rate of MFFPJRR for income over MPPFJTD.

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 Seniors Benefit

Starting in 1994, 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.

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.

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.

Note that in some cases, GIST is included in social assistance. In order to avoid double counting benefits, the SAELDOPTPR parameter controls how social assistance and GIST are related. See SAELDOPTPR for more details

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:
ASBBASIC   Alberta seniors benefit annual basic benefit
ASBBASICP   Alberta seniors benefit annual basic benefit for
1st half of year
ASBBOASP   Alberta seniors benefit Basic OAS from previous
year
ASBCYFLG   Alberta seniors benefit calendar year calculation
flag
ASBEMP   Alberta seniors benefit employment inclusion rate
ASBEMPDD   Alberta seniors benefit employment income maximum
deduction
ASBEMPDDP   Alberta seniors benefit employment income maximum
deduction for 1st half of year
ASBEMPOPT   Alberta seniors benefit employment income option
[1=ASBEMP,2=ASBEMPDD]
ASBEMPOPTP   Alberta seniors benefit employment income option
for 1st half of year [1=ASBEMPP,2=ASBEMPDDP]
ASBEMPP   Alberta seniors benefit employment inclusion rate
for 1st half of year
ASBFLAG   Alberta seniors benefit activation flag
ASBNOAS   Alberta seniors benefit reduction if no OAS
[senior type]
ASBNOASP   Alberta seniors benefit reduction if no OAS for
1st half of year [senior type]
ASBNSS   Alberta seniors benefit non-senior spouse
supplement
ASBNSSP   Alberta seniors benefit non-senior spouse
supplement for 1st half of year
ASBRENT   Alberta seniors benefit renter supplement
ASBRENTP   Alberta seniors benefit renter supplement for 1st
half of year
ASBRR   Alberta seniors benefit reduction rate [senior
type]
ASBRRP   Alberta seniors benefit reduction rate for 1st
half of year [senior type]
ASBSAB   Alberta seniors benefit supplemental
accommodation benefit
ASBSABP   Alberta seniors benefit supplemental
accommodation benefit for 1st half of year

ASBSABRR   Alberta seniors benefit supplemental
accommodation reduction rate
ASBSABRRP   Alberta seniors benefit supplemental
accommodation reduction rate for 1st half of year
ASBSS   Alberta seniors benefit senior spouse supplement
ASBSSOPT   Alberta seniors benefit 1 senior couple option
[1=model separately,2=model as senior couples]
ASBSSOPTP   Alberta seniors benefit 1 senior couple option
for 1st half of year
ASBSSP   Alberta seniors benefit senior spouse supplement
for 1st half of year
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
MFFPJBEN   Manitoba GIS supplement: maximum benefit for
junior component
MFFPJRR   Manitoba GIS supplement: reduction rate for
junior component
MFFPJTD   Manitoba GIS supplement: turndown for junior
component
MFFPSBEN   Manitoba GIS supplement: maximum benefit for
senior component
MFFPSRR   Manitoba GIS supplement: reduction rate for
senior component
MFFSAFLAG   Manitoba GIS supplement: flag that only people
without SA can apply
NBSB   New Brunswick Low-Income Seniors' Benefit
NBSBSPA   N.B. Low-Income Seniors' Benefit - SPA
eligibility
NFSBBAS   NFLD Low-Income Seniors' Benefit base amount
NFSBCBAS   NFLD Low-Income Seniors' Benefit base amount for
senior couples
NFSBCRR   NFLD Low-Income Seniors' Benefit reduction rate
for senior couples
NFSBCTD   NFLD Low-Income Seniors' Benefit turndown for
senior couples
NFSBRR   NFLD Low-Income Seniors' Benefit reduction rate
NFSBTD   NFLD Low-Income Seniors' Benefit turndown
ONTC   Ontario GIS supplement: married pensioners
ONTS   Ontario GIS supplement: single pensioners
PYINC   Deflator to calculate previous year income
PYINCP   Deflator to calculate income from 2 years prior
SAELDOPTPR   SA for elderly calculation method [prov]

```
SAPFLAG       Social assistance predicted value flag
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
SASKTECA      Saskatchewan GIS supplement temporary energy cost
allowance
SATARGET      Social assistance target for predicted SA

INPUT VARIABLES:
hdageeld      Age of eldest in household
hdprov        Province
hdtenur       Tenure
hhnin         Number of individuals in household
idage         Age
idialimo      Alimony income received
idieflag      Cloned institutionalized elderly person
idiemp        Wages & salaries
idinspo       Person's spouse [pointer]
idisa         Social assistance income
idrpp         Registered pension plan contributions (207)
idrrsp        RRSP calculated amount (208)
idsapred      Predicted amount of SA received
idsarank      Predicted ranked likelihood of getting SA
idspoflg      Person has spouse
imgisinc      Individual's income for GIS/SPA reduction
imgismax      Maximum amount of GIS
imgistyp      Type of GIS entitlement
imicnet       Net Income (line 236)
imigis        GIS benefits
imioas        OAS benefits
imispa        Spouse's allowance
imitot        Total income
imiuccbc      Universal Child Care Benefit amount claimed
imoasres      Partial OAS fraction
imoldtyp      Type of GIS/SPA nuclear family
imspamax      Maximum amount of SPA

OUTPUT VARIABLES:
imgistsa      Amount of GIST which goes into SA
imiasb        Alberta seniors benefit
```

```
imigist        GIS provincial top-up
```

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 isnzero(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 x 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.

SUMMARY

The `memo1` function is used to calculate several reporting variables as aggregates of other modeled variables. The function calculates all dollars 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
imiemp =	idiemp;
imiself =	idise;
impoth =	idiworkc + impheatr + imresreb + imclimdv + imoshptg + imotxtgr;
imicqp =	idicqp;
immemp =	idiemp + idise;
imminv =	idiinvnd + ididiv + idicapg;
immoth =	imipnst + iditoth + idialimg;
immmkt =	immemp + imminv + immoth;
imftran =	imioas + imiotg + imigis + imispa + imfcben + imicqp + imiuib + imfstc +imqtar + imiosa + imfortc + imiuccbr + imheatrl + imfecb;
imfnewpg =	imiotg + imiosa;
imfothtr =	imfortc + imheatrl + imfecb + imqtar + imfnewpg;
imigispa =	imigis + imispa;
impfp =	impfa + imqnbfa + imqfatc + imiafetc + imnbcben + imibcfb + imoccea + imoccext + imscb + imnscb + imibceib + imncb + imnmbns + imqca + imocb + immcb + imnpfgb + imnpsb;
imptran =	impfp + imigist + imptc + impsa + importc + iminsda + imnstxrf + impoth + imqpipcbn;
impotran =	imqpipcbn + importc + iminsda + imnstxrf + impheatr + imresreb + imclimdv + imoshptg + imotxtgr;

importxc =	impehtc + imqhptc + imqncgtc + imqmedrc + imqccetc + imqwrkpr + imqawrkpr + imotxdv + immanltc + immcoltc + imvsrtxrf + impptc (when OPTCFLAG is set to 1 and hdprov = Ontario) + impptc (when CPTCREF is set to 1 and hdprov = British Columbia);
imppstc =	imnstc + imvaltc + imqptr + imqstr + imqstc + imopstc + imoprtxc + imostc + imosttb + impptxtc + imsstc + imslitc + imcatc + imbchstc + imcstc;
impotax =	imqpipp + imqpippse;
impalltc =	imptc + importc;
immtran =	imptran + imftran;
immtot =	immmkt + immtran;
imftax =	imuic + imcqppc + imrepay + imtxf + imsaclaw (when SACLAWOPT is set to 1);
imfotax =	imrepay + imsaclaw (when SACLAWOPT is set to 1);
imptax =	imtxp + imphp + imqpipp + imqpippse;
immtax =	imftax + imptax;
immdisp =	immtot − immtax + imsaclaw (when SACLAWOPT is set to 1);
immicons =	immdisp; (initial assignment, may be re-assigned in memo2)

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 PARAMETERS:
CPTCREF     British Columbia political tax credit refundable
flag
OPTCFLAG    Ontario political contribution refundable tax
credit flag
SACLAWOPT   Social assistance NCBS clawback include in
tax/income flag


INPUT VARIABLES:
```

```
hdprov      Province
hhnin       Number of individuals in household
idialimg    Alimony income received (gross)
idicapg     Capital gains (actual)
idicqp      CPP/QPP income (114)
ididiv      Dividend income (actual)
idiemp      Wages & salaries
idiinvnd    Interest and other investment income
idipens     Pension income (115)
idise       Self-employed income
iditoth     Other taxable income (130)
idiworkc    Workers compensation benefits
imbchstc    B.C. HST Low Income Credit
imbft       Basic federal tax
imcatc      B.C. Refundable Climate Action Tax Credit
imclimdv    B.C. Climate Action Dividend
imcqppc     CPP/QPP contributions
imcstc      British Columbia Sales Tax Credit
imfcben     Total Federal Child Benefits
imfecb      Federal Energy Cost Benefit
imfortc     Federal other refundable tax credits
imfstc      Federal sales tax / GST credit
imheatrl    Federal relief for heating expenses
imiafetc    Alberta Family Employment Tax Credit Benefits
imibceib    B.C. Earned Income Benefit
imibcfb     B.C. Family Bonus
imigis      GIS benefits
imigist     GIS provincial top-up
iminet      Net income
iminsda     NS Direct Assistance Program
imioas      OAS benefits
imiosa      Other SA or guarantees
imiotg      Other taxable demogrants
imispa      Spouse's allowance
imiuccbr    Universal Child Care Benefit amount received
imiuib      Employment Insurance benefits
immanltc    Manitoba learning tax credit
immcb       Manitoba Child Benefit
immcoltc    Manitoba Cost of Living Tax Credit
imnbcben    Total NB child tax Benefits
imncb       Newfoundland Child Benefit
immmbns     Newfoundland Mother-Baby Nutrition Supplement
imnpfgb     Newfoundland Progressive Family Growth Benefit
imnpsb      Newfoundland Parental Support Benefit
imnscb      Nova Scotia Child Benefit
imnstc      Newfoundland and Labrador Sales Tax Credit
imnstxrf    Nova Scotia Taxpayer Refund
```

```
imocb          Ontario Child Benefit
imoccea        Ont. Child Care Exp. credit allowed (Family)
imoccext       Ont. Child Care Supplement one-time extra benefit
imoprtxc       Ontario Property Tax Credit
imopstc        Ont. Property and Sales Tax Credit
imoshptg       Ontario Senior Homeowners' Property Tax Grant
imostc         Ontario Sales Tax Credit
imosttb        Ontario Sales Tax Transition Benefit
imotxdv        Ontario Taxpayer Dividend
imotxtgr       Ontario Textbook and Technology Grant
impehtc        Provincial elderly health tax credit
impfa          Provincial family allowance
impheatr       Provincial Home Heating Fuel/Energy Rebate
imphp          Provincial Health Premium
importc        Other refundable provincial tax credits
impptc         Provincial Political Contrib Tax Credit
impptxtc       Provincial Property tax tax credit
impsa          Provincial social assistance
imptc          Refundable provincial tax credits
imqawrkpr      Quebec Adapted Work Premium for Disabled
refundable tax credit
imqca          Quebec Child Assistance refundable tax credit
imqccetc       Quebec refundable child care expenses Tax Credit
imqfatc        Quebec Family Allowance Tax Credit
imqhptc        Quebec Home Parent Tax Credit level
imqmedrc       Quebec refundable tax credit for medical expenses
imqnbfa        Quebec newborn Allowance
imqncgtc       Quebec Refundable Natural Caregivers Tax Credit
imqpipcbn      Quebec parental insurance plan calendar year
benefits
imqpipp        Quebec parental insurance plan premiums for paid
workers
imqpippse      Quebec parental insurance plan premiums for self-
employed
imqptr         Quebec property tax refund
imqstc         Quebec Solidarity Tax Credit amount
imqstr         Quebec sales tax refund
imqtar         Quebec tax abatement (refundable)
imqwrkpr       Quebec Work Premium refundable tax credit
imrepay        Social Benefits Repayments
imresreb       Alberta Resource Rebate Amount
imsaclaw       Social Assistance NCB Clawback Amount
imscb          Saskatchewan Child Benefit
imslitc        Saskatchewan refundable low income tax credit
imsstc         Saskatchewan refundable sales tax credit
imtxf          Federal income tax payable
imtxp          Provincial income tax payable
```

```
imuic        Employment Insurance contributions
imvaltc      N.S. Affordable Living Tax Credit
imvsrtxrf    Nova Scotia Seniors' with GIS tax Refund

OUTPUT VARIABLES:
imfiler      Taxable filer status
imfnewpg     Federal new programs
imfotax      Other Federal Taxes
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
importxc     Provincial Other Refundable Tax Credits
impotax      Provincial Other Taxes
impoth       Provincial other government income
impotran     Provincial Other Transfers
imppstc      Provincial Property and Sales Tax Credits
imptax       Provincial taxes
imptran      Provincial transfer income
```

memo2   Compute consumable income, etc.

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 (`CTFLAG=0`). The function first adjusts several reporting variables calculated in memo1 as follows.

Reporting Variable	Formula
imftax =	imftax + imtxfc
imptax =	imptax + imtxpc
immtax =	immtax + imtxfc + imtxpc
immicons =	immdisp - imtxfc – imtxpc
immtran =	immtran + imooceb
imptran =	imptran + imooceb
impotran =	impotran + imooceb
immtot =	immtot + imooceb

The function next calculates additional reporting variables as follows.

Reporting Variable	Formula
imnettr =	immtran - immtax
imothrep =	imrepay - imuibr
imqta =	imqtaa + imqtar
imfedbal =	imftax - imftran
imprvbal =	imptax - imptran
impovinc =	immtot
imatpinc =	immicons

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
```

```
imooceb      Ontario Clean Energy Benefit
imqtaa       Quebec tax abatement (applied)
imqtar       Quebec tax abatement (refundable)
imrepay      Social Benefits Repayments
imtxfc       Federal commodity taxes
imtxpc       Provincial commodity taxes
imuibr       EI benefit recovery

OUTPUT VARIABLES:
efin         First person in economic family [pointer]
idef         Person's economic family [pointer]
imatpinc     After tax Income for low income measurement
imfedbal     Federal taxes less transfers
imftax       Federal taxes
immicons     Consumable income
immtax       All taxes
immtot       Total income
immtran      All transfer income
imnettr      Net transfers to person
imothrep     Other federal repayments
impotran     Provincial Other Transfers
impovinc     Before Tax Income for low income measurement
imprvbal     Provincial taxes less transfers
imptax       Provincial taxes
imptran      Provincial transfer income
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.

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, the head/spouse transfer (`txhstr`) function, the Quebec Work Premium (`txqcalc`), and the refundable Working Income Tax Benefit (`txcalc`). 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

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).
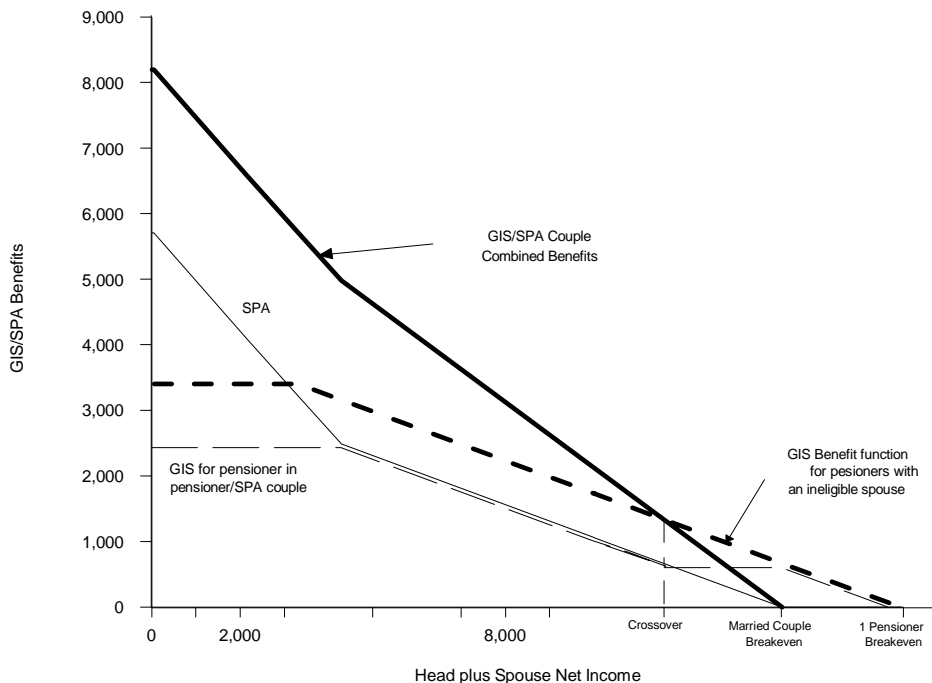
Figure 1 GIS/SPA Benefits for One OAS Pensioner Couples

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.

```
GISBE1 = BGISS/GISRRM + BOAS + 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".

```
GISBE2 = (BGISM*2)/(GISRRM*2)+BOAS/SPAOASRR+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.

```
SPAXO = 2*GISBE2-GISBE1
```

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

A number of parameters for the Working Income Tax Benefit for Quebec residents are derived, based on the legislated design of this program. The minimum earnings threshold is set to be the same earnings thresholds used in the Quebec Work Premium program, based on

family type – family types in order for these programs are person living alone, couple without children, single parent family and couple with children.

```
QWITBMINE[family type] = QWPEIPI[family type]
```

The maximum WITB amount for Quebec residents is also calculated by multiplying the Quebec WITB phase-in rate to the difference of the Quebec Work Premium Income Turndown level less the Quebec Work Premium minimum earnings threshold, by family type.

```
QWITBAMT[family type] = QWITBPIR[family type] * (QWPTD[family
type] – QWPEIPI[family type])
```

The net income phase-out threshold for the Quebec WITB program is derived as the minimum of the Quebec Work Premium net income threshold divided by the difference of 1 less the percent of income allowed for the Quebec Earned Income Deduction, and the Quebec Work Premium net income threshold less the maximum allowable Quebec Earned Income Deduction, for each of the 4 family types.

```
QWITBPOT[family type] = minn((QWPTD[family type]/(1 –
QEMPDEDP)), (QWPTD[family type] + QEMPDEDM))
```

The net income phase-out threshold for the Quebec WITB Supplement for Disabilities is derived as the maximum Quebec WITB amount divided by the WITB reduction rate, which is then added to the net income phase-out threshold for the Quebec WITB program, by family type. This threshold will only be calculated if the Quebec WITB reduction rate is greater than 0.

```
QWITBSPOT[family type] = QWITBAMT[family type] / QWITBRR +
QWITBPOT[family type]
```

The maximum allowable amounts for the Quebec Work Premium by family type are calculated by multiplying the Quebec Work Premium phase in credit rate to the product of the Quebec Work Premium Phase-out Income Threshold less the Quebec Work Premium minimum earnings threshold.

```
QWPMAX[family type] = (QWPTD[family type] – QWPEIPI[family
type]) * QWPCR[family type]
```

Similarly, the maximum allowable amounts for the Quebec Adapted Work Premium for the disabled by family type are calculated by multiplying the Quebec Adapted Work Premium phase in credit rate to the product of the Quebec Adapted Work Premium Phase-out Income Threshold less the Quebec Adapted Work Premium minimum earnings threshold.

```
QAWPMAX[family type] = (QAWPTD[family type] -
QAWPEIPI[family type]) * QAWPCR[family type]
```

For all of the parameters described above users may refer to the *Parameter Guide* for further information.

Edit Checks

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 SHS 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.

- If SPLTPNSFLAG or QSPLTPNSFLAG is turned on, a check is made to ensure that the corresponding increments (PENSPLTINCR and QPENSPLTINCR) are greater than zero.

- If the Quebec WITB reduction rate is zero and the Quebec WITB maximum allowable amount is greater than zero, an error message regarding the derived parameter for the net income thresholds is issued but processing continues. If both the Quebec WITB reduction rate and the Quebec WITB maximum amount are both zero, the net income thresholds by family type for the Quebec WITB program are set to 0.

- If the CTFLAG parameter is set to 0 (thereby specifying that commodity taxes will not be calculated) and the OOCEBFLG parameter is set to 1 (indicating that the Ontario clean energy benefit will be calculated) then a warning will result informing the user that the

Ontario clean energy benefit cannot be calculated without commodity expenditures and taxes.

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, the head/spouse transfer `txhstr` function, the `txqcalc` function, and the `txcalc` function.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
FXVFLAG      Read SHS expenditure vector file
BGISM        Basic GIS - married
BGISS        Basic GIS - single
BOAS         Basic OAS
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
PENSPLTINCR  Increment by which to split pension income
QAWPCR       Quebec Adapted Work Premium for Disabled Credit
Rate [family type]
QAWPEIPI     Quebec Adapted Work Premium for Disabled
Employment Income Phase In [family type]
QAWPTD       Quebec Adapted Work Premium for Disabled Income
Turndown [family type]
QEMPDEDM     Quebec earned income deduction for workers
maximum
QEMPDEDP     Quebec earned income deduction percent of income
QNTCR        Quebec nominal tax credit rate
QPENSPLTINCR  Quebec increment by which to split pension
income
QSPLTPNSFLAG  Quebec flag to split pension income
QWITBPIR     Quebec Working Income Tax Benefit Phase in Rate
[family type]
QWITBRR      Quebec Working Income Tax Benefit Reduction Rate
QWITBSAMT    Quebec WITB Supplement for Disabilities Amount
```

```
QWPCR       Quebec Work Premium Credit Rate [family type]
QWPEIPI     Quebec Work Premium Employment Income Phase In
[family type]
QWPTD       Quebec Work Premium Income Turndown [family type]
SAELDOPTPR  SA for elderly calculation method [prov]
SPAOASRR    OAS portion of SPA taxback rate
SPLTPNSFLAG Flag to split pension income
UIBAF       EI benefit recovery base amount factor
UIBAFNR     EI benefit recovery base amount factor for non-
repeaters
UIERNMAX    Maximum insurable earnings

OUTPUT PARAMETERS:
CTFLAG      Commodity tax activation flag
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
OOCEBFLG    Ontario Clean Energy Benefit activation flag
QAWPMAX     Quebec Adapted Work Premium for Disabled Maximum
[family type]
QWITBAMT    Quebec Working Income Tax Benefit amount [family
type]
QWITBMINE   Quebec Working Income Tax Benefit Minimum
Earnings Threshold [family type]
QWITBPOT    Quebec WITB Net Income Phase-out Threshold
[family type]
QWITBSPOT   Quebec WITB Supplement for Disabilities Net
Income Phase-out Threshold [family type]
QWPMAX      Quebec Work Premium Maximum [family type]
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.

oas	Compute OAS for elderly

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 survey.

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 SLID survey. 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.

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 the survey calendar year, 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.

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
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 invalid 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 *Tools User's Guide*.

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.

samod   Compute social assistance or guarantees

SUMMARY

Social assistance payments are not currently modeled 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 GIS supplementation programs (see the description of the gist function). Some of these are classified with the other social assistance programs by the SLID. In fact the SLID 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 five possible means of calculating social assistance which are controlled by the SAELDOPTPR parameter. It allows for different values for each province. These options are as follows.

1. Social assistance is set to zero for all persons aged 65 and over.

2. 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.

3. 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.

4. For all individuals over the age of 64, the value of simulated social assistance is zeroed out if the person received provincial GIS supplementation of 500 or more. This is done since the provinces only give T5007 slips for social assistance which is worth more than 500. Thus only these amounts should be on the T1, and thus in scope for SLID.

5. Give the amount of social assistance found on SLID to people over the age of 65.

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:
ANCBSFT1     Alberta social assistance NCBS flow-through
amount for first child
ANCBSFT1P    Alberta SA NCBS flow-through amount for first
child for 1st half of year
ANCBSFT2     Alberta social assistance NCBS flow-through
amount for second child
ANCBSFT2P    Alberta SA NCBS flow-through amount for second
child for 1st half of year
ANCBSFT3     Alberta social assistance NCBS flow-through
amount for third (or more) child
ANCBSFT3P    Alberta SA NCBS flow-through amount for third (or
more) child for 1st half of year
ASHELTER     Alberta Shelter Increase by number of persons in
household
ASHELTERP    Alberta Shelter Increase by number of persons in
household for 1st half of year
ASHELTFLG    Alberta Shelter Increase under NCBS clawback flag
ASHELTFLGP   Alberta Shelter Increase under NCBS clawback flag
for 1st half of year
FCBENCAL     Calculate child benefits for calendar year flag
MCLAWPCT     Manitoba SA Clawback percentage kids over flow
through age in families [#kids][#kids<age]
MCLAWPCTP    Manitoba SA Clawback percentage kids over flow
through age for 1st half of year [#kids][#kids<age]
MCLAWSA12    Manitoba Social assistance NCBS clawback for
children 12 and under
MCLAWSA12P   Manitoba SA NCBS clawback for children 12 and
under for 1st half of year
MCLAWSA6     Manitoba Social assistance NCBS clawback for
children 6 and under
MCLAWSA6P    Manitoba SA NCBS clawback for children 6 and
under for 1st half of year
NCLAWSA1     Newfoundland social assistance clawback amount
for first child
NCLAWSA1P    Newfoundland SA clawback amount for first child
for 1st half of year
NCLAWSA2     Newfoundland social assistance clawback amount
for each additional child
```

```
NCLAWSA2P    Newfoundland SA clawback amount for each
additional child for 1st half of year
ONCBSFT1     Ontario social assistance NCBS flow-through
amount for first child
ONCBSFT1P    Ontario SA NCBS flow-through amount for first
child for 1st half of year
ONCBSFT2     Ontario social assistance NCBS flow-through
amount for second child
ONCBSFT2P    Ontario SA NCBS flow-through amount for second
child for 1st half of year
ONCBSFT3     Ontario social assistance NCBS flow-through
amount for third (or more) child
ONCBSFT3P    Ontario SA NCBS flow-through amount for third (or
more) child for 1st half of year
PNCBSFT      P.E.I. social assistance NCBS flow-through amount
per child
PNCBSFTP     P.E.I. SA NCBS flow-through amount per child for
1st half of year
QNCBSFT1     Quebec social assistance NCBS flow-through amount
for first child
QNCBSFT1P    Quebec SA NCBS flow-through amount for first
child for 1st half of year
QNCBSFT2     Quebec social assistance NCBS flow-through amount
for second child
QNCBSFT2P    Quebec SA NCBS flow-through amount for second
child for 1st half of year
QNCBSFT3     Quebec social assistance NCBS flow-through amount
for third (or more) child
QNCBSFT3P    Quebec SA NCBS flow-through amount for third (or
more) child for 1st half of year
SACLAWFLAG   Social assistance NCBS clawback flag
SACLAWPR     Social assistance clawback flag [prov]
SAELDOPTPR   SA for elderly calculation method [prov]
SAFLAG       Social assistance flag
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]
cfnkids      Number of children in census family
cfnpers      Number of persons in census family
hdprov       Province
hhncf        Number of census families in household
idage        Age
idisa        Social assistance income
idsamths     Imputed number of months on SA
```

```
idsapred      Predicted amount of SA received
idsarank      Predicted ranked likelihood of getting SA
imfcbene      Total Federal Child Benefit Supplement
imigist       GIS provincial top-up
imscb         Saskatchewan Child Benefit

OUTPUT VARIABLES:
imashelt      Alberta shelter increase under NCBS clawback
imisa         Social assistance (or replacement program)
impsa         Provincial social assistance
imsaclaw      Social Assistance NCB Clawback Amount
```

---

strn   Retrieve string by string number

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.

---

taxbak1   One level tax-back function

SUMMARY

```
NUMBER taxbak1(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 taxbak1 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, taxbak1 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

```
NUMBER taxbak2(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 taxbak2 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, taxbak2 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 (APNTCR) 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)

impmartc	Married and equivalent-to-married tax credit	(AMXM, AMXMT, AEMXM, AEMXMT)
impcgtc	Caregiver tax credit	(ACGTC, ACGTCFLG)
impchrtc	Charitable donations	(ACHATL1, ACHATR1, ACHATR2)
impcpptc	CPP/QPP contribution	(ACPPCTXC)
impdistc	Disability tax credit	(AMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(AODISTC)
impdtxc	Dividend tax credit	(ADTCR, ADTCRLC)
impedtxc	Education tax credit	(AEDXPM, AEDXPMPT, AMAXET)
impmedtc	Medical expenses tax credit	(AMEDEXFLG, AMEDANF, AMEDALL)
imppentc	Pension income tax credit	(AYPNDL)
imptutxc	Tuition Tax credit	(ATUITFLG, AMAXET)
impuictc	EI contributions tax credit	(AEICTXC)
impintsl	Interest on Student Loans tax credit	(AINTSLFLG)
impminco	Minimum tax carryover	(AAMTOPT, AAMTPCTF, AAMTTX, AAMTPCTM)

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 using AFETCAPC, which is based on 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.

Alberta Health Care Insurance Plan

When AHCIPFLG is turned on, the Alberta Health Care Insurance Plan premiums are calculated. AHCIPIT represents the income threshold amounts for the Alberta Health Care Insurance Plan subsidy, based on family type. The value of the health premium is determined by family size, AHCIPS for unattached individuals and AHCIPF for families. Lower income individuals and families may be eligible for a premium subsidy based on income. For non-seniors, the income threshold is based on taxable income for the head and spouse if applicable. For senior or couples with at least one senior, the income test is based on the non-deductible income used for the Alberta Seniors Benefit. If the income is less than the threshold then a full subsidy of the health premium is granted. Where the income is greater than the threshold, a partial subsidy may be granted. The health premium is determined by subtracting the income threshold from family income and multiplying the result by the subsidy rate AHCIPSR without exceeding the base premium amounts.

For non-senior individuals and couples/families, this parameter is only in effect when AHCIPSOPT is set to 2. The value of the calculated health premium (imphp) is assigned to the eldest in the census family.

Alberta Energy Tax Refund

When AHEATFLG is turned on, persons aged 16 or over will receive an Alberta Energy Tax Refund (AHEATREB) from the Alberta government for assistance with home heating expenses. The value of the refund is held in impheatr.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
AAMTOPT      Alta alternative minimum tax option
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
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
ACGTCOPT     Alta Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
ACGTCTD      Alta Caregiver Tax Credit income turndown
ACHATL1      Alta Charitable Donations amount level 1
ACHATR1      Alta Charitable Donations tax credit rate 1
ACHATR2      Alta Charitable Donations tax credit rate 2
ACPPCTXC     Alta CPP Contribution Tax Credit activation flag
ADTCR        Alta dividend tax credit rate
ADTCRLC      Alta dividend tax credit rate from large
(eligible) corporations
AEDXPM       Alta Education Amount per month of full-time
studies
AEDXPMPT     Alta Education Amount per month of part-time
studies
AEICTXC      Alta EI Premium Tax Credit activation flag
AEMXM        Alta equivalent to married amount
```

AEMXMT   Alta equivalent to married turndown level
AFETCAPC   Alberta Family Employment Tax Credit Amount Per
Child [number of children]
AFETCAPCP   Alberta Family Employment Tax Credit Amount Per
Child for 1st half of year
AFETCBR   Alberta Family Employment Tax Credit Benefit Rate
AFETCBRP   Alberta Family Employment Tax Credit Benefit Rate
for 1st half of year
AFETCCI   Alberta Family Employment Tax Credit Benefit Cut-
in Level
AFETCCIP   Alberta Family Employment Tax Credit Benefit Cut-
in Level for 1st half of year
AFETCFLAG   Alberta Family Employment Tax Credit Activation
Flag
AFETCNC   Alberta Family Employment Tax Credit Maximum
Number of Children
AFETCNCP   Alberta Family Employment Tax Credit Maximum
Number of Children for 1st half of year
AFETCPI   Alberta Family Employment Tax Credit phase in
AFETCPIP   Alberta Family Employment Tax Credit phase in for
2nd half of year
AFETCRR   Alberta Family Employment Tax Credit Reduction
Rate
AFETCRRP   Alberta Family Employment Tax Credit Reduction
Rate for 1st half of year
AFETCTD   Alberta Family Employment Tax Credit Turndown
Level
AFETCTDP   Alberta Family Employment Tax Credit Turndown
Level for 1st half of year
AFTAX   Alberta flat surtax rate on taxable income
AHCIPF   Alberta Health Care Insurance Plan Family Premium
AHCIPFLG   Alberta Health Care Insurance Plan activation
flag
AHCIPFSB   Alberta Health Care Insurance Plan Family Subsidy
Table
AHCIPINCFLG Alberta Health Care Insurance Plan flag to give
to highest earner
AHCIPIT   Alberta Health Care Insurance Plan Income
Threshold [family type]
AHCIPS   Alberta Health Care Insurance Plan Single Premium
AHCIPSOPT   Alberta Health Care Insurance Plan Subsidy option
(1=table, 2=flat rate)
AHCIPSPI   Alberta Health Care Insurance Plan Senior
Exemption Phase In
AHCIPSR   Alberta Health Care Insurance Plan Subsidy Rate
AHCIPSSB   Alberta Health Care Insurance Plan Single Subsidy
Table

```
AHEATFLG     Alberta Energy Tax Refund activation flag
AHEATREB     Alberta Energy Tax Refund amount
AINTSLFLG    Alta Interest on Student Loans Tax Credit
activation flag
AMAXDX       Alta Maximum Disability deduction/amount
AMAXET       Alta maximum on transfer of education and tuition
amount
AMEDALL      Alta Medical allowance maximum lower limit
AMEDANF      Alta Medical allowance lower limit net income
fraction
AMEDEXFLG    Alta Medical Expense Tax Credit activation flag
AMXM         Alta married amount
AMXMT        Alta married amount turndown level
AODISTC      Alta Maximum infirm dependent 18 or older tax
credit
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]
ARESREB      Alberta Resource Rebate Amount
ASBEMP       Alberta seniors benefit employment inclusion rate
ASBFLAG      Alberta seniors benefit activation flag
ASCI         Alberta surtax cut-in
ASF          Alberta surtax fraction
ATRBC        Alberta tax reduction basic claim
ATRF         Alberta tax reduction fraction
ATUITFLG     Alta Tuition Tax Credit activation flag
ATXFLG       Alta tax on taxable income activation flag
AYPNDL       Alta Pension Income Deduction Amount
FCBENCAL     Calculate child benefits for calendar year flag
PYINC        Deflator to calculate previous year income
PYINCP       Deflator to calculate income from 2 years prior

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
idcgtc       Caregivers tax credit (database) (315)
iddisab      Disability status (age 16+)
iddisoth     Disability amount for dependants (318)
iddisslf     Disability amount for self (316)
ideducfm     Eligible full-time months of education
ideducpm     Eligible part-time months of education
idestat      Educational status
idialimo     Alimony income received
ididiv       Dividend income (actual)
idiemp       Wages & salaries
idinspo      Person's spouse [pointer]
idintstu     Interest paid on student loans (319)
idise        Self-employed income
idmedgro     Medical expenses, gross (330)
idmincar     Minimum tax carryover (504)
idothpe      Amounts for Infirm Dependants (306)
idprvftc     Provincial foreign tax credit (Form T2036)
idprvpol     Provincial political contributions (565)
idrpp        Registered pension plan contributions (207)
idrrsp       RRSP calculated amount (208)
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)
imcppse      CPP contributions deduction for self-emp
imcqppc      CPP/QPP contributions
imdedfn      All deductions from net income
imdepni      Dependant's net income
imiasb       Alberta seniors benefit
imicnet      Net Income (line 236)
imildivt     Dividend income from large (eligible)
corporations (taxable)
imioas       OAS benefits
imipnst      Taxable pension income (after splitting)
imisdivt     Dividend income from small corporations (taxable)
imitax       Taxable income
```

```
imitot       Total income
imiuccbc     Universal Child Care Benefit amount claimed
imminamt     Minimum Amount due to Federal Minimum Tax
imuic        Employment Insurance 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
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     Provincial Dependent Caregiver Tax Credit Amount
impchrtc     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
imphp        Provincial Health Premium
impintsl     Provincial interest on student loans tax credit
impmartc     Prov Married and Equivalent to Married tax credit
impmeda      Prov Medical expenses allowed (computed)
impmedtc     Prov Medical Expenses tax credit
impminco     Prov Minimum tax carryover
impnit       Provincial net income tax
impothpe     Provincial infirm dependents 18 or older tax
credit
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 EI contributions tax credit
imresreb     Alberta Resource Rebate Amount
imtxp        Provincial income tax payable
```

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 (CPNTCR) 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)
impmartc	Married and equivalent-to-married tax credit	(CMXM, CMXMT, CEMXM, CEMXMT)
impcgtc	Caregiver tax credit	(CCGTC, CCGTCFLG)
impchrtc	Charitable donations	(CCHATL1, CCHATR1, CCHATR2)
impcpptc	CPP/QPP contribution	(CCPPCTXC)
impdistc	Disability tax credit	(CMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(CODISTC)
impdtxc	Dividend tax credit	(CDTCR, CDTCRLC)
impedtxc	Education tax credit	(CEDXPM, CEDXPMPT, CMAXET)
impmedtc	Medical expenses tax credit	(CMEDEXFLG, CMEDANF, CMEDALL)
imppentc	Pension income tax credit	(CYPNDL)
imptutxc	Tuition Tax credit	(CTUITFLG, CMAXET)
impuictc	EI contributions tax credit	(CEICTXC)
impintsl	Interest on Student Loans tax credit	(CINSLFLG)
impminco	Minimum tax carryover	(CAMTOPT, CAMTPCTF, CAMTTX, CAMTPCTM)

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.

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).

British Columbia HST Low Income Tax Credit

The proposed British Columbia HST Low Income Tax Credit has been implemented. This credit will provide annual relief of up to CHSTCA for each adult and CHSTCC for each child aged 18 or younger. It would be reduced by CHSTCRR of adjusted family net income over CHSTCTDS for single people and over CHSTCTDF for families and single parents. This is a July to June program, beginning in July 2010. It is calculated when CHSTCFLG is set to 1 and the calculated value is saved in imbchstc.

British Columbia Climate Action Dividend

The British Columbia one-time Climate Action Dividend has been added. In 2008, all B.C. residents will be entitled to this one-time payment of $100 (CCLIMDIV) to help them make changes to reduce their use of fossil fuels. Children under 18 will also be entitled to this amount which will be allocated to a parent.

British Columbia Low Income Climate Action tax credit

The British Columbia Low Income Climate Action has been implemented. This is a refundable tax credit starting in July 2008. It is activated by setting the flag CCATCFLG to 1. This credit consists of an amount per adult (CCATCA) and amount per dependent under 19 years of age (CCATCC). For single parent families, the first dependent may claim the amount for adults. The value of the credit is then income tested using net income less any UCCB payments from the prior year for the head and spouse, if applicable. The credit is reduced by the reduction rate (CCATCR) for family income in excess of the threshold for couples and single parents (CCATCFL). The income threshold is lower for single individuals (CCATCSL). This is a July to June program that may also be calculated for the calendar year if GSTCYFLG is also activated.

British Columbia Refundable Energy credit

In 2001, persons will receive a Refundable Energy Credit (impheatr) from the British Columbia government for assistance with heating expenses. 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 CHEATFAM and others receive CHEATSNG.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
BCBEIS1      B.C. Earned Income Benefit for first child
BCBEIS1P     B.C. Earned Income Benefit for first child for
1st half of year
BCBEIS2      B.C. Earned Income Benefit for second child
BCBEIS2P     B.C. Earned Income Benefit for second child for
1st half of year
BCBEIS3      B.C. Earned Income Benefit for each additional
child
BCBEIS3P     B.C. Earned Income Benefit for each additional
child for 1st half of year
BCBEITD      B.C. Earned Income Benefit Turndown
BCBEITDP     B.C. Earned Income Benefit Turndown for 1st half
of year
BCBEMX       B.C. Earned Income Benefit Income Reduction
BCBEMXP      B.C. Earned Income Benefit Income Reduction for
1st half of year
BCBERR1      B.C. EIB reduction rate for families with 1 child
BCBERR1P     B.C. EIB reduction rate for families with 1 child
for 1st half of year
```

BCBERR2   B.C. EIB reduction rate for families with 2
children
BCBERR2P   B.C. EIB reduction rate for families with 2
children for 1st half of year
BCBERR3   B.C. EIB reduction rate for families with 3+
children
BCBERR3P   B.C. EIB reduction rate for families with 3+
children for 1st half of year
BCEIBFLG   Activate B.C. Earned Income Benefit Program
BCEIBFLGP   Activate B.C. Earned Income Benefit Program for
1st half of year
BCEIBPI   B.C. Earned Income Benefit Income Phase In
BCEIBPIP   B.C. Earned Income Benefit Income Phase In for
1st half of year
BCFBBAS   B.C. Family Bonus amount per child
BCFBBASP   B.C. Family Bonus amount per child for 1st half
of year
BCFBFLAG   Activate B.C. Family Bonus Program
BCFBIFS   Activate B.C. Family Bonus to include Federal NCS
BCFBIFSP   Activate B.C. Family Bonus to include Federal NCS
for 1st half of year
BCFBNCS1   B.C. Family Bonus National Child Supplement for
first child
BCFBNCS1P   B.C. Family Bonus National Child Supplement for
first child for 1st half of year
BCFBNCS2   B.C. Family Bonus National Child Supplement for
second child
BCFBNCS2P   B.C. Family Bonus National Child Supplement for
second child for 1st half of year
BCFBNCS3   B.C. Family Bonus National Child Supplement for
each additional child
BCFBNCS3P   B.C. Family Bonus National Child Supplement for
each additional child for 1st half of year
BCFBNCSRR1   B.C. Family Bonus NCS reduction rate for families
with 1 child
BCFBNCSRR1P B.C. Family Bonus NCS reduction rate for families
with 1 child for 1st half of year
BCFBNCSRR2   B.C. Family Bonus NCS reduction rate for families
with 2 children
BCFBNCSRR2P B.C. Family Bonus NCS reduction rate for families
with 2 children for 1st half of year
BCFBNCSRR3   B.C. Family Bonus NCS reduction rate for families
with 3+ children
BCFBNCSRR3P B.C. Family Bonus NCS reduction rate for families
with 3+ children for 1st half of year
BCFBNCSTD   B.C. Family Bonus National Child Supplement
Turndown

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BCFBNCSTDP   B.C. Family Bonus National Child Supplement
Turndown for 1st half of year
BCFBRR       B.C. Family Bonus multiple child reduction rate
BCFBRRP      B.C. Family Bonus multiple child reduction rate
for 1st half of year
BCFBRRS      B.C. Family Bonus single child reduction rate
BCFBRRSP     B.C. Family Bonus single child reduction rate for
1st half of year
BCFBTD       B.C. Family Bonus Turndown
BCFBTDP      B.C. Family Bonus Turndown for 1st half of year
CAMTFTCFLG   B.C. amt flag for provincial foreign tax credit
CAMTOPT      B.C. alternative minimum tax option
CAMTPCTF     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
CAXRR        B.C. Age Amount credit reduction rate
CAXTD        B.C. Age Amount net income turndown
CBXM         B.C. Basic Personal Exemption/amount
CCATCA       B.C. Climate Action Tax Credit amount for adults
CCATCAP      B.C. Climate Action Tax Credit amount for adults
for 1st half of year
CCATCC       B.C. Climate Action Tax Credit amount for
children
CCATCCP      B.C. Climate Action Tax Credit amount for
children for 1st half of year
CCATCFL      B.C. Climate Action Tax Credit family reduction
level
CCATCFLG     B.C. Climate Action Tax Credit activation flag
CCATCFLP     B.C. Climate Action Tax Credit family reduction
level for 1st half of year
CCATCR       B.C. Climate Action Tax Credit reduction rate
CCATCRP      B.C. Climate Action Tax Credit reduction rate for
1st half of year
CCATCSL      B.C. Climate Action Tax Credit individual
reduction level
CCATCSLP     B.C. Climate Action Tax Credit individual
reduction level for 1st half of year
CCGTC        B.C. Caregiver Tax Credit
CCGTCFLG     B.C. Caregiver Tax Credit activation flag
CCGTCOPT     B.C. Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
CCGTCTD      B.C. Caregiver Tax Credit income turndown
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
CCLIMDIV   B.C. Climate Action Dividend
CCPPCTXC   B.C. CPP Contribution Tax Credit activation flag
CDTCR   B.C. dividend tax credit rate
CDTCRLC   B.C. dividend tax credit rate from large
(eligible) corporations
CEDXPM   B.C. Education Amount per month of full-time
studies
CEDXPMPT   B.C. Education Amount per month of part-time
studies
CEICTXC   B.C. EI Premium Tax Credit activation flag
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
CHSTCA   B.C. HST Low Income tax credit amount per adult
CHSTCAP   B.C. HST Low Income tax credit amount per adult
for 1st half of year
CHSTCC   B.C. HST Low Income tax credit amount per child
CHSTCCP   B.C. HST Low Income tax credit amount per child
for 1st half of year
CHSTCFLG   B.C. HST Low Income Tax Credit activation flag
CHSTCRR   B.C. HST Low Income tax credit reduction rate
CHSTCRRP   B.C. HST Low Income tax credit reduction rate for
1st half of year
CHSTCTDF   B.C. HST Low Income tax credit income turndown
level for families
CHSTCTDFP   B.C. HST Low Income tax credit income turndown
level for families for 1st half of year
CHSTCTDS   B.C. HST Low Income tax credit income turndown
level for single persons
CHSTCTDSP   B.C. HST Low Income tax credit income turndown
level for single persons for 1st half of year
CINTSLFLG   B.C. Interest on Student Loans Tax Credit
activation flag
CLITR   B.C. Low Income Tax Reduction Credit
CLITRRR   B.C. Low Income Tax Reduction Credit reduction
rate
CLITRTD   B.C. Low Income Tax Reduction Credit net income
turndown
CLVCMAX   Maximum B.C. labour-sponsored funds tax credit
allowed

```
CLVCRT          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
CMEDALL         B.C. Medical allowance maximum lower limit
CMEDANF         B.C. Medical allowance lower limit net income
fraction
CMEDEXFLG       B.C. Medical Expense Tax Credit activation flag
CMSP            B.C. Medical Services Plan Premium [family size,
amount]
CMSPADED        B.C. Medical Services Plan Age 65+ Deduction
CMSPCDED        B.C. Medical Services Plan Child Deduction
CMSPDDED        B.C. Medical Services Plan Disability Deduction
CMSPFLAG        B.C. Medical Services Plan activation flag
CMSPINCFLAG B.C. Medical Services Plan flag to give to
highest earner
CMSPRATE        B.C. Medical Services Plan Subsidy Rate [income,
rate]
CMSPSDED        B.C. Medical Services Plan Spouse Deduction
CMXM            B.C. married amount
CMXMT           B.C. married amount turndown level
CODISTC         B.C. Maximum infirm dependent 18 or older tax
credit
CPNTCR          B.C. provincial non-refundable tax credit rate
CPTCBEN         Maximum B.C. political tax credit allowed
CPTCREF         British Columbia political tax credit refundable
flag
CPTCT           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]
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
CSTCKID         British Columbia stc amount for children
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)
CSUPCR         British Columbia supplemental tax credit
CTCINC         Family income scaling factor
CTUITFLG       B.C. Tuition Tax Credit activation flag
CTXFLG         B.C. tax on taxable income activation flag
CYPNDL         B.C. Pension Income Deduction Amount
FCBENCAL       Calculate child benefits for calendar year flag
GSTCYFLG       GST credit calendar year calculation activation
flag
HEATSNG        Federal relief for heating expenses for singles
PYINC          Deflator to calculate previous year income
PYINCP         Deflator to calculate income from 2 years prior


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
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
idcgtc         Caregivers tax credit (database) (315)
iddisab        Disability status (age 16+)
iddisoth       Disability amount for dependants (318)
iddisslf       Disability amount for self (316)
ideducfm       Eligible full-time months of education
ideducpm       Eligible part-time months of education
idestat        Educational status
ididiv         Dividend income (actual)
idiemp         Wages & salaries
idinspo        Person's spouse [pointer]
idintstu       Interest paid on student loans (319)
idise          Self-employed income
idlabtxg       Gross Labour funds bought (413)
idmedgro       Medical expenses, gross (330)
idmincar       Minimum tax carryover (504)
```

```
idnf         Person's nuclear family [pointer]
idothpe      Amounts for Infirm Dependants (306)
idprvftc     Provincial foreign tax credit (Form T2036)
idprvpol     Provincial political contributions (565)
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
imccea       Child care expenses allowed
imchara      Allowable charitable donations and gifts
(calculated)
imchclm      Number of dependent children claimed
imcppse      CPP contributions deduction for self-emp
imcqppc      CPP/QPP contributions
imdedfn      All deductions from net income
imdepni      Dependant's net income
imfcbene     Total Federal Child Benefit Supplement
imheatrl     Federal relief for heating expenses
imicnet      Net Income (line 236)
imildivt     Dividend income from large (eligible)
corporations (taxable)
imipnst      Taxable pension income (after splitting)
imisdivt     Dividend income from small corporations (taxable)
imitax       Taxable income
imiuccbc     Universal Child Care Benefit amount claimed
immartxc     Married tax credit claimed
imminamt     Minimum Amount due to Federal Minimum Tax
imuic        Employment Insurance 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:
imbchstc     B.C. HST Low Income Credit
imbpt        Basic provincial tax
imcatc       B.C. Refundable Climate Action Tax Credit
imclimdv     B.C. Climate Action Dividend
imcstc       British Columbia Sales Tax Credit
imibceib     B.C. Earned Income Benefit
imibcfb      B.C. Family Bonus
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      Provincial Dependent Caregiver Tax Credit Amount
impchrtc      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
imphp         Provincial Health Premium
impintsl      Provincial interest on student loans tax credit
implvctc      Provincial labour-sponsored funds tax credit
impmartc      Prov Married and Equivalent to Married tax credit
impmeda       Prov Medical expenses allowed (computed)
impmedtc      Prov Medical Expenses tax credit
impminco      Prov Minimum tax carryover
impothpe      Provincial infirm dependents 18 or older tax
credit
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 transferred
imptutxc      Prov Tuition tax credit
impuictc      Prov 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
- Working Income Tax Benefit

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 (idlabtxg). The credit (imlabtxc) is equal to FLVCRT times the gross amount (idlabtxg) 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:

the combined Education and Tuition amount not required to reduce Basic Federal Tax to zero, and
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)
- 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 (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).

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).

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 (amtbft) is calculated as a proportion (AMTTX) of Adjusted Taxable Income (imamtinc).

The second step in this process adjusts the Basic Minimum Tax (amtbft) 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)
– Education Tax Credit (imedtxc)
– Tuition Tax Credit (imtutxc)
– Textbook Tax Credit (imtxttxc)
– 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 (imbtcs)
– Caregiver Tax Credit (imcgtc)
– Canada Employment Credit (imemptxc)
– Federal interest on student loans tax credit (imintsl)
– Non-refundable Child Tax Credit (imchdtxc)
– Public Transit Tax Credit (imtransit)
– Home Renovation Tax Credit (imfhrtc)

If the value of the Basic Minimum Tax (amtbft) exceeds Basic Federal Tax (imbft), Federal Tax Payable (imtxf) is recalculated as Basic Minimum Tax (amtbft) plus any federal surtaxes

on amtbft. 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.

Working Income Tax Benefit

The Federal Refundable Working Income Tax Benefit (WITB) program was implemented in 2007.

SPSM Implementation

WITBFLAG turns on and off the Federal Refundable Working Income Tax Benefit (WITB) program.

The WITB will provide a refundable tax credit equal to WITBPIR of each dollar of earned income in excess of WITBMINE to a maximum credit of WITBSNG for single individuals (at least 19 years of age) without dependants and WITBFAM for families (couples and single parents).

To target assistance to those with low income, the credit will be reduced by WITBRR of net family income in excess of WITBSPO for single individuals and WITBFPO for families, where net family income represents head/spouse net income less UCCB amounts claimed.

Students (as defined for the purpose of the education tax credit), with no dependent children, who are enrolled as full-time students for more than three months in the taxation year will not be eligible for the WITB. If a couple without dependents consists of only one person eligible for the WITB, based on student and/or age eligibility rules, then the income threshold used in the turndown will be that for individuals and the income tests would only include that of the eligible individual.

The amount of the benefit is saved in the variable imwitb. It is also added to other federal refundable credits (imfortc).

WITBFLAG also turns on the Working Income Tax Benefit Supplement for Persons with Disabilities. Individuals eligible for the Disability Tax Credit who are also eligible for the WITB, will be granted an amount equal to WITBSPIR for each dollar of individual earned income in excess of WITBSMINE to a maximum credit of WITBSAMT. This amount will then be reduced by WITBSRR of net family income in excess of WITBSSPO for single individuals and WITBSFPO for single parents and couples, where both are eligible for WITB. The amount of the disability supplement is saved in the variable imwitbs and is also added to other federal refundable credits (imfortc).

Note that the rules for Quebec, Alberta and British Columbia are different than those described above.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
AMTDIV      Alternative minimum tax: percentage of taxable
dividends
AMTDIVLC    Alternative minimum tax: percentage of eligible
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
AWITBFAM    Alberta Working Income Tax Benefit amount for
couples/single parents
AWITBFPO    Alberta WITB Family Net Income Phase-out
Threshold
AWITBMINE   Alberta Working Income Tax Benefit Minimum
Earnings Threshold
AWITBPIR    Alberta Working Income Tax Benefit Phase in Rate
AWITBRR     Alberta Working Income Tax Benefit Reduction Rate
AWITBSAMT   Alberta WITB Supplement for Disabilities Amount
AWITBSCRR   Alberta WITB Supplement for Disabilities
Reduction Rate for eligible couples
AWITBSFPO   Alberta WITB Supplement for Disabilities Family
Net Income Phase-out Threshold
AWITBSMINE  Alberta WITB Supplement for Disabilities Minimum
Earnings Threshold
AWITBSNG    Alberta Working Income Tax Benefit amount for
singles
AWITBSPIR   Alberta WITB Supplement for Disabilities Phase in
Rate
AWITBSPO    Alberta WITB Single Net Income Phase-out
Threshold
AWITBSRR    Alberta WITB Supplement for Disabilities
Reduction Rate
```

AWITBSSPO   Alberta WITB Supplement for Disabilities Single
Net Income Phase-out Threshold
BXM   Basic personal exemption/amount
BXMEXT   Basic personal amount extra top-up
CAPGIR   Capital gains inclusion rate
CGTC   Caregiver Tax Credit
CGTCFLG   Caregiver Tax Credit activation flag
CGTCOPT   Caregiver Tax Credit option (1=max, 2=greenbook,
3=model)
CGTCTD   Caregiver Tax Credit income turndown
CWITBFAM   B.C. Working Income Tax Benefit amount for
couples/single parents
CWITBFPO   B.C. WITB Family Net Income Phase-out Threshold
CWITBMINE   B.C. Working Income Tax Benefit Minimum Earnings
Threshold
CWITBPIR   B.C. Working Income Tax Benefit Phase in Rate
CWITBRR   B.C. Working Income Tax Benefit Reduction Rate
CWITBSAMT   B.C. WITB Supplement for Disabilities Amount
CWITBSCRR   B.C. WITB Supplement for Disabilities Reduction
Rate for eligible couples
CWITBSFPO   B.C. WITB Supplement for Disabilities Family Net
Income Phase-out Threshold
CWITBSMINE   B.C. WITB Supplement for Disabilities Minimum
Earnings Threshold
CWITBSNG   B.C. Working Income Tax Benefit amount for
singles
CWITBSPIR   B.C. WITB Supplement for Disabilities Phase in
Rate
CWITBSPO   B.C. WITB Single Net Income Phase-out Threshold
CWITBSRR   B.C. WITB Supplement for Disabilities Reduction
Rate
CWITBSSPO   B.C. WITB Supplement for Disabilities Single Net
Income Phase-out Threshold
FAMCGTC   Family Caregiver Tax Credit Amount
FAMCGTCFLG   Family Caregiver Tax Credit activation flag
FDTCR   Federal dividend tax credit rate
FDTCRLC   Federal dividend tax credit rate from large
(eligible) corporations
FITEXPFLG   Federal Fitness Tax Credit activation flag
FITEXPMAX   Federal Fitness Tax Credit maximum claim
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
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
HRTCFLAG      Home Renovation Tax Credit Activation Flag
HRTCMAX       Home Renovation Tax Credit maximum eligible
expenses
HRTCMIN       Home Renovation Tax Credit minimum eligible
expenses
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
MEDRTD        Refundable medical expense supplement income
turndown
QTAP          Quebec tax abatement proportion of basic federal
tax
QWITBAMT      Quebec Working Income Tax Benefit amount [family
type]
QWITBMINE     Quebec Working Income Tax Benefit Minimum
Earnings Threshold [family type]
QWITBPIR      Quebec Working Income Tax Benefit Phase in Rate
[family type]
QWITBPOT      Quebec WITB Net Income Phase-out Threshold
[family type]
QWITBRR       Quebec Working Income Tax Benefit Reduction Rate
QWITBSAMT     Quebec WITB Supplement for Disabilities Amount
QWITBSCRR     Quebec WITB Supplement for Disabilities Reduction
Rate for eligible couples
QWITBSMINE    Quebec WITB Supplement for Disabilities Minimum
Earnings Threshold
QWITBSPIR     Quebec WITB Supplement for Disabilities Phase in
Rate [family type]
QWITBSPOT     Quebec WITB Supplement for Disabilities Net
Income Phase-out Threshold [family type]
```

```
QWITBSRR     Quebec WITB Supplement for Disabilities Reduction
Rate
WITBFAM      Working Income Tax Benefit amount for
couples/single parents
WITBFLAG     Working Income Tax Benefit activation flag
WITBFPO      WITB Family Net Income Phase-out Threshold
WITBMINE     Working Income Tax Benefit Minimum Earnings
Threshold
WITBPIR      Working Income Tax Benefit Phase in Rate
WITBRR       Working Income Tax Benefit Reduction Rate
WITBSAMT     WITB Supplement for Disabilities Amount
WITBSCRR     WITB Supplement for Disabilities Reduction Rate
for eligible couples
WITBSFPO     WITB Supplement for Disabilities Family Net
Income Phase-out Threshold
WITBSMINE    WITB Supplement for Disabilities Minimum Earnings
Threshold
WITBSNG      Working Income Tax Benefit amount for singles
WITBSPIR     WITB Supplement for Disabilities Phase in Rate
WITBSPO      WITB Single Net Income Phase-out Threshold
WITBSRR      WITB Supplement for Disabilities Reduction Rate
WITBSSPO     WITB Supplement for Disabilities Single Net
Income Phase-out Threshold

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
fxhrtcpr     Home Renovation Tax Credit eligible expenses on
principal residence
fxhrtcvh     Home Renovation Tax Credit eligible expenses on
vacation home
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
idcgtc       Caregivers tax credit (database) (315)
idclergy     Clergy residential deduction
```

```
idcloss      Allowable other years capital loss (253)
iddisab      Disability status (age 16+)
iddisslf     Disability amount for self (316)
iddues       Union and professional dues (212)
ideducfm     Eligible full-time months of education
idefrh       Relationship to economic family head
idemplo      Employee home relocation loan dedn (248)
idexplor     Exploration and development expenses (224)
idfitexp     Fitness expense amount for children
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]
idise        Self-employed income
iditc        Federal investment tax credits (412)
idiworkc     Workers compensation benefits
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)
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
imcapgex     Modelled capital gains deduction (254)
imchartc     Charitable donations tax credit
imchdtxc     Non-refundable Child Tax Credit
imcppctc     CPP contributions tax credit
imcppse      CPP contributions deduction for self-emp
imcqppc      CPP/QPP contributions
imdedfn      All deductions from net income
imdepni      Dependant's net income
imdisatc     Disability tax credit
imedtxc      Education allowance tax credit
imemptxc     Canada Employment Credit
imfamcgcl    Family Caregiver Amount claimed 0=no 1=yes
imgistsa     Amount of GIST which goes into SA
imicnet      Net Income (line 236)
imigis       GIS benefits
```

```
imildivt     Dividend income from large (eligible)
corporations (taxable)
imiloss      Modelled Business investment losses (217)
imintsl      Federal interest on student loans tax credit
imisa        Social assistance (or replacement program)
imisdivt     Dividend income from small corporations (taxable)
imispa       Spouse's allowance
imitax       Taxable income
imiuccbc     Universal Child Care Benefit amount claimed
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
imqpiptc     Quebec parental insurance plan premium tax credit
for paid workers (federal)
imqpsetc     Quebec parental insurance plan premium tax credit
for self-employed (federal)
imstkded     Modelled Stock option deduction (249)
imtransit    Public Transit Tax Credit
imtutxc      Tuition tax credit
imtxttxc     Federal textbook tax credit
imuic        Employment Insurance contributions
imuictc      EI 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      Dependent Caregiver Tax Credit Amount
imctxcrt     Tax credits transferred from children
imedrcv      Education and tuition transferred from others
imedtrf      Education and tuition transferred to others
imfamcgtc    Family Caregiver Amount
imfcgtcp     Family Caregiver potential amount through
caregivers tax credit
imfdtxc      Federal dividend tax credit
imfedtax     Federal tax before tax credits
imfhrtc      Home Renovation Tax Credit
imfitexp     Fitness tax credit
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
imwitb       Working Income Tax Benefit
imwitbs      Working Income Tax Benefit Supplement for
Disabilities
```

---

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 (GFCCET), 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 (imicnet).

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 (imicnet) to re-allocate the deduction if necessary.

CROSS REFERENCE

Function   **Description**

INPUT PARAMETERS:

```
BXM         Basic personal exemption/amount
BXMEXT      Basic personal amount extra top-up
CCEAEMPF    CCEA fraction of employment income (Limit `B')
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
CCEPTFLG    CCE part-time student flag
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)
ideducfm    Eligible full-time months of education
ideducpm    Eligible part-time months of education
idiemp      Wages & salaries
idise       Self-employed income
idsex       Sex
imccez      Is CCE zeroed?
imictot     Total Income (line 150)

OUTPUT VARIABLES:
imccea      Child care expenses allowed
imccec      Child care expenses claimed on behalf of child
imdedft     Deductions from total income
imicnet     Net Income (line 236)
iminet      Net income
```

SUMMARY

The Child Tax Benefit provides 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 Benefit (CTB) program based upon the number of children in a family and the net income of the family. The level of benefits varies with the number of children.

Program Description

In 1993, the Child Tax Credit 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

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.

Relation to Other SPSM Routines

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

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
ACBC1       Alberta Child benefit per child aged 0 - 6
ACBC1P      Alberta Child benefit per child aged 0 - 6 for
1st half of year
ACBC2       Alberta Child benefit per child aged 7 - 11
ACBC2P      Alberta Child benefit per child aged 7 - 11 for
1st half of year
ACBC3       Alberta Child benefit per child aged 12- 15
ACBC3P      Alberta Child benefit per child aged 12- 15 for
1st half of year
ACBC4       Alberta Child benefit per child aged 16- 17
ACBC4P      Alberta Child benefit per child aged 16- 17 for
1st half of year
CTCINC      Family income scaling factor
FCBBAS      Basic child benefit (per child)
FCBBASP     Basic child benefit (per child) for 1st half of
year
FCBECI      Child benefits earning supplement cut-in level
FCBECIP     Child benefits earning supplement cut-in level
for 1st half of year
FCBEIE      Flag for WIS dependent on number of children
FCBEIEP     Flag for WIS dependent on number of children for
1st half of year
FCBEIS      Child benefits earned income supplement
FCBEIS1     WIS/NCBS for first child
FCBEIS1P    WIS/NCBS for first child for 1st half of year
FCBEIS2     WIS/NCBS for second child
FCBEIS2P    WIS/NCBS for second child for 1st half of year
FCBEIS3     WIS/NCBS for each additional child
FCBEIS3P    WIS/NCBS for each additional child for 1st half
of year
FCBEISP     Child benefits earned income supplement for 1st
half of year
FCBEMX      Earnings where WIS phase-in is at maximum
FCBEMXP     Earnings where WIS phase-in is at maximum for 1st
half of year
```

```
FCBENCAL      Calculate child benefits for calendar year flag
FCBERR        Child benefits earning supplement reduction rate
FCBERR1       WIS/NCBS reduction rate for families with 1 child
FCBERR1P      WIS/NCBS reduction rate for families with 1 child
for 1st half of year
FCBERR2       WIS/NCBS reduction rate for families with 2
children
FCBERR2P      WIS/NCBS reduction rate for families with 2
children for 1st half of year
FCBERR3       WIS/NCBS reduction rate for families with 3+
children
FCBERR3P      WIS/NCBS reduction rate for families with 3+
children for 1st half of year
FCBERRP       Child benefits earning supplement reduction rate
for 1st half of year
FCBESR        Child benefits earned income supplement rate
FCBESRP       Child benefits earned income supplement rate for
1st half of year
FCBETD        WIS/NCBS turndown level
FCBETDP       WIS/NCBS turndown level for 1st half of year
FCBFLAG       Federal Child Tax Benefit activation flag
FCBLRG        Supplement for 3rd and subsequent kids
FCBLRGP       Supplement for 3rd and subsequent kids for 1st
half of year
FCBPI         Federal Child Tax Benefit phase-in rate
FCBPIP        Federal Child Tax Benefit phase-in rate for 2nd
half of year
FCBRR         Multi-children family income reduction rate
FCBRRP        Multi-children family income reduction rate for
1st half of year
FCBRRS        Single-child family income reduction rate
FCBRRSP       Single-child family income reduction rate for 1st
half of year
FCBTD         Federal child benefits family income turndown
FCBTDP        Federal child benefits family income turndown for
1st half of year
FCBUCCB       Flag for Supplement for children age 6
FCBUCCBP      Flag for Supplement for children age 6 for 1st
half of year
FCBYNG        Supplement for children under age 7
FCBYNGP       Supplement for children under age 7 for 1st half
of year
FCBYNGR       Child care expense reduction rate
FCBYNGRP      Child care expense reduction rate for 1st half of
year
PYINC         Deflator to calculate previous year income
PYINCP        Deflator to calculate income from 2 years prior
```

```
QCBC1          Quebec Child benefit for 1st child
QCBC1P         Quebec Child benefit for 1st child for 1st half
of year
QCBC2          Quebec Child benefit for 2nd child
QCBC2P         Quebec Child benefit for 2nd child for 1st half
of year
QCBC3          Quebec Child benefit for 3rd child
QCBC3P         Quebec Child benefit for 3rd child for 1st half
of year
QCBCFLG        Quebec Child benefit flag for Quebec calculation
methodology
QCBCFLGP       Quebec Child benefit flag for Quebec calculation
methodology for 1st half of year
QCBCS          Quebec Child benefit supplement child aged 12- 17
QCBCSP         Quebec Child benefit supplement child aged 12- 17
for 1st half of year


INPUT VARIABLES:
hdprov         Province
hhnnf          Number of nuclear families in household
idage          Age
idiemp         Wages & salaries
idise          Self-employed income
idsex          Sex
imccec         Child care expenses claimed on behalf of child
imicnet        Net Income (line 236)
imiuccbc       Universal Child Care Benefit amount claimed
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:
imfcben        Total Federal Child Benefits
imfcbenb       Total Federal Child Benefits Base
imfcbene       Total Federal Child Benefit Supplement
```

---

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:
FECBFLAG     Federal Energy Cost Benefit activation flag
FECBGIS      Federal Energy Cost Benefit for GIS recipients
FECBNCBS     Federal Energy Cost Benefit for NCBS recipients
FSTCC        Federal sales tax credit amount for dependant
FSTCCP       Federal sales tax credit amount for dependant for
1st half of year
FSTCF        Federal sales tax credit amount for filer
FSTCFP       Federal sales tax credit amount for filer for 1st
half of year
FSTCL        Federal sales tax credit reduction level
FSTCLP       Federal sales tax credit reduction level for 1st
half of year
FSTCR        Federal sales tax credit reduction rate
FSTCRP       Federal sales tax credit reduction rate for 1st
half of year
FSTCS        Federal sales tax credit amount for spouse
FSTCSP       Federal sales tax credit amount for spouse for
1st half of year
GSTAC        GST additional credit amount
GSTACP       GST additional credit amount for 1st half of year
GSTAR        GST additional credit rate of net income
GSTARP       GST additional credit rate of net income for 1st
half of year
GSTASPFLAG   Maximum GST additional credit for single parents
flag
GSTASPFLAGP  Maximum GST additional credit for single parents
flag for 1st half of year
GSTAXM       GST additional credit exemption
GSTAXMP      GST additional credit exemption for 1st half of
year
GSTCTUNC     GST credit take up by number of children
GSTCYFLG     GST credit calendar year calculation activation
flag
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
```

```
PYINCP        Deflator to calculate income from 2 years prior

INPUT VARIABLES:
cfageeld   Age of eldest in census family
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
idrand     Random numbers [array]
imfcbene   Total Federal Child Benefit Supplement
imicnet    Net Income (line 236)
imigis     GIS benefits
imispa     Spouse's allowance
imitax     Taxable income
imiuccbc   Universal Child Care Benefit amount claimed

OUTPUT VARIABLES:
imfecb     Federal Energy Cost Benefit
imfstc     Federal sales tax / GST credit
imheatrl   Federal relief for heating expenses
```

---

txhhexp   Compute and pro-rate household taxes, rent, etc.

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 SHS. The rent and property tax are imputed to heads of census families and census family spouses reporting positive net income.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
```

```
CTFAMSNA      SHS->SNA conceptual conversion factor [com]
CTFCID        Federal custom import duties [com]
CTFEXD        Federal excise duties [com]
CTFEXT        Federal excise taxes [com]
CTFGST        Federal GST [com]
CTPGAS        Provincial gasoline tax [com x prov]
CTPRST        Provincial retail sales tax [com x prov]
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
hhnin         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
```

---

txhstr   Compute family-related deductions or credits

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 Spouse (or Married) Tax Credit
− calculate Spouse (or Married) Equivalent Tax Credit
− calculate Deductions Transferred from Spouse
− calculate Child Tax Credit

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 (imicnet) 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).

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.

Child Tax Credit

The parameter CTCAMTPC contains the amount for the Federal non-refundable Child Tax Credit that will be granted to a parent for each child under age 18. The credit was introduced in 2007. This amount is multiplied by the non-refundable tax credit rate (FNTCR) and saved in the variable imchdtxc. The value of the credit is transferable between parents.

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
CTCAMTPC   Child Tax Credit amount per child
EMXM   Married equivalent exemption/amount
EMXMEXT   Married equivalent amount extra top-up
EMXMT   Married equivalent exemption/amount turndown
level
EMXMTEXT   Married equivalent amount turndown level extra
top-up
FAMCGTC   Family Caregiver Tax Credit Amount
FAMCGTCFLG   Family Caregiver Tax Credit activation flag
FAMCGTCTU   Family Caregiver Tax Credit Take Up
FNTCR   Federal non-refundable tax credit rate
MXM   Married exemption/amount
MXMEXT   Married amount extra top-up
MXMT   Married exemption/amount turndown level
MXMTEXT   Married amount turndown level extra top-up
UCCBSPFLG   Universal child care benefit single parent
transfer to dependent activation flag

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
iddisab   Disability status (age 16+)
iddisslf   Disability amount for self (316)
idrand   Random numbers [array]
imicnet   Net Income (line 236)
imiuccbr   Universal Child Care Benefit amount received

OUTPUT VARIABLES:

```
imbtcs      Basic personal tax credit supplement
imcemc      Child's equivalent to married credit
imchclm     Number of dependent children claimed
imchdtxc    Non-refundable Child Tax Credit
imdepni     Dependant's net income
imfamcgcl   Family Caregiver Amount claimed 0=no 1=yes
imfamcgtc   Family Caregiver Amount
imiuccbc    Universal Child Care Benefit amount claimed
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.

− Split pension income
− Employment Expense Deduction
− Other Allowable Employment Expenses
− Calculate Taxable Dividends
− Calculate Taxable Capital Gains
− Calculate Total Income
− CPP/QPP Contributions Tax Credit
− Employment Insurance Contributions Tax Credit
− Tuition Fees Tax Credit
− Calculate all deductions from total income
− Calculate Net Income

Splitting of pension income

When SPLTPNSFLAG is turned on, pension income can be split between spouses. See SPLTPNSFLAG for more details

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 ididiv. The taxable amount (imidivt) which is added to total income is calculated by multiplying ididiv 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:

idiemp:	Earnings From Employment
idise:	Self-employment Earnings, optionally scaled by the parameter FACTISENF
idiinvnd:	Interest and Other Investment Income
iditrrsp:	Taxable RRSP Withdrawals
idicqp:	CPP/QPP Benefits Received
idialimo:	Alimony and Support Payments Received
idipens:	Pension Income
impentr:	Pension income transferred from spouse
iditoth:	Other Taxable Income
imiuib:	Modeled Unemployment Insurance Benefits Received
imiotg:	Modeled New Taxable Demogrants
imioas:	Modeled OAS Benefits
imidivt:	Modeled Taxable Amount of Dividends
imicapgt:	Modeled Taxable Capital Gains and Losses
imqpipcbn:	Quebec Parental Insurance Plan calendar year benefits
imiuccbc:	Universal Child Care Benefit amount claimed

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 twice the rate of employees.

Although employees have their CPP/QPP contribution deducted from their paycheque, 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 (idise) 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 (imcppctc).

Employment Insurance Contributions

Employment 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 paycheque 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.

The annual EI 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 EI 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 (UIFLAG = 1), 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.

When UIEIREPOPT is set to 1, EI benefit recovery (imuibr) 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.

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
impentrd:	Pension income deduction from transfer to spouse
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)
imcppse:	optionally, CPP/QPP Contributions deduction for self-employed

idexplor: Exploration Expenses
imalexp: Other Employment Allowable Expenses
iddalimo: Alimony Allowance Paid Out
idmovexp: Moving Expenses
imccea: optionally, Child Care Expense Deduction Allowed
              (calculated separately in function txccea)
idclergy: Clergy residential deduction
imqpsedd: Quebec parental insurance plan premium deduction for self-employed
              (federal)
imrepay: Social Benefits Repayment if REPNETFLAG is set to 1

The tax form concept of net income (imicnet) is calculated as Total Income (imictot) minus all deductions from total income (imdedft).

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
FCPPCTXC     CPP Contributions Tax Credit activation flag
FDGUR        Federal dividend gross-up rate
FDGURLC      Federal dividend gross-up rate from large
(eligible) corporations
FNTCR        Federal non-refundable tax credit rate
NETOASFLG    Net the clawback from Old Age Security
```

```
OASRR        OAS reduction rate
OASTD        OAS turndown income
QPIPEMAX     Quebec parental insurance plan maximum insurable
earnings
QPIPEMIN     Quebec parental insurance plan minimum insurable
earnings
QPIPF        Quebec parental insurance plan contribution rate
for paid workers
QPIPFLAG     Quebec parental insurance plan activation flag
QPIPFSE      Quebec parental insurance plan contribution rate
for self-employed
QUIPF        Quebec EI contribution rate
REPNETFLAG   Social program repayments reduce net income flag
SECF         CPP/QPP contribution rate on self-employment
earnings
SPLTPNSFLAG  Flag to split pension income
UIBRA        UI repayment base amount (UI and EI)
UIBRANR      EI repayment base amount for non-repeaters (EI
only)
UIEIBRP      Maximum clawback under EI reform [Past Wks
ben][Rate]
UIEINRT      EI Non repeater level for higher clawback
turndown
UIEIREF      EI contribution refund cut-in
UIEIREFTK    EI contribution refund take up
UIEIREPOPT   EI Benefit repayment option (1=repeaters have
higher rate,2=one rate)
UIEIRPR      EI benefit clawback rate
UIERNMAX     Maximum insurable earnings
UIPF         EI contribution rate on earnings
UITARGET     EI target for the number of cases
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:
cfin         First person in census family [pointer]
cfnpers      Number of persons in census family
cfspoflg     Census family contains married couple
hdprov       Province
hhncf        Number of census families in household
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)
```

```
idcfrh      Relationship to census family head
idclergy    Clergy residential deduction
iddalimo    Alimony paid (220)
iddues      Union and professional dues (212)
idexplor    Exploration and development expenses (224)
idialimo    Alimony income received
idicapg     Capital gains (actual)
idicqp      CPP/QPP income (114)
ididive     Amount of eligible dividend income
ididivie    Amount of other than eligible dividend income
idiemp      Wages & salaries
idiinvnd    Interest and other investment income
idiloss     Business investment losses (217)
idipens     Pension income (115)
idise       Self-employed income
iditoth     Other taxable income (130)
iditrrsp    Taxable RRSP withdrawals
idiworkc    Workers compensation benefits
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)
iduirank    Predicted ranked likelihood of getting EI
imgistsa    Amount of GIST which goes into SA
imigis      GIS benefits
imiotg      Other taxable demogrants
imisa       Social assistance (or replacement program)
imispa      Spouse's allowance
imiuib      Employment Insurance benefits
impnsph     Pension income split for head
impnsps     Pension income split for spouse
imqpipcbn   Quebec parental insurance plan calendar year
benefits
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
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
imcqppc      CPP/QPP contributions
imdedft      Deductions from total income
imicapgt     Capital gains (taxable)
imicnet      Net Income (line 236)
imictot      Total Income (line 150)
imidivt      Dividend income (taxable)
imildivt     Dividend income from large (eligible)
corporations (taxable)
imiloss      Modelled Business investment losses (217)
iminet       Net income
imioas       OAS benefits
imipnst      Taxable pension income (after splitting)
imisdivt     Dividend income from small corporations (taxable)
imitot       Total income
imiuccbc     Universal Child Care Benefit amount claimed
imiuccbr     Universal Child Care Benefit amount received
imnfach      Number of under 18 children claimed for tax
reduction
imoasr       OAS recovery
impentr      Pension income transferred from spouse
impentrd     Pension income deduction from transfer to spouse
imqpipp      Quebec parental insurance plan premiums for paid
workers
imqpippse    Quebec parental insurance plan premiums for self-
employed
imqpiptc     Quebec parental insurance plan premium tax credit
for paid workers (federal)
imqpsedd     Quebec parental insurance plan premium deduction
for self-employed (federal)
imqpsetc     Quebec parental insurance plan premium tax credit
for self-employed (federal)
imrepay      Social Benefits Repayments
imuibr       EI benefit recovery
imuic        Employment Insurance contributions
imuicrf      EI contribution refund
```

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
− EI Benefit Repayment Payable
− 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 transfers 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 (imipnst) 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 (iddisoth). 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 full-time months of education amount (ideducfm) multiplied by the Education Tax Credit per full-time month (EDXPM) plus the number of eligible months of part-time education (ideducpm) multiplied by the Education Tax Credit per part-time month (EDXPMPT). 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.

Employment Insurance Benefit Repayment Payable

If an individual has received Employment 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 of Net Income exceeding the Repayment Level (UIBRA). 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).

OAS Repayments

The SPSM includes optional algorithms which allow the analysis of certain modifications to 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 OAS repayment (imoasr) 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).

The OAS repayment (imoasr) is added to 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
AXRR         Age amount credit reduction rate
AXTD         Age amount net income turndown
BXM          Basic personal exemption/amount
BXMEXT       Basic personal amount extra top-up
CAPGIR       Capital gains inclusion rate
CGTC         Caregiver Tax Credit
CGTCFLG      Caregiver Tax Credit activation flag
CGTCOPT      Caregiver Tax Credit option (1=max, 2=greenbook,
3=model)
```

```
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
EDDISPT      Part time students with disabilities flag
EDXPM        Education amount per month of full-time studies
EDXPMPT      Education amount per month of part-time studies
EMPTXC       Canada Employment Credit
FAMCGTC      Family Caregiver Tax Credit Amount
FAMCGTCFLG   Family Caregiver Tax Credit activation flag
FEICTXC      Employment Insurance Premiums Tax Credit
activation flag
FNTCR        Federal non-refundable tax credit rate
FTUITFLG     Tuition Tax Credit activation flag
INTSLFLG     Interest on Student Loans Tax Credit Activation
Flag
MAXDX        Maximum disability deduction/amount
MEDALL       Medical allowance maximum lower limit
MEDANF       Medical allowance lower limit net income fraction
MEDEXFLG     Medical Expense Non-Refundable Tax Credit
activation flag
ODISTC       Maximum infirm dependent 18 or older tax credit
REPNETFLAG   Social program repayments reduce net income flag
TEXTPMFT     Textbook amount per month of full-time studies
TEXTPMPT     Textbook amount per month of part-time studies
TRANSIT      Public Transit Tax Credit activation flag
YPNDL        Maximum pension income deduction/amount

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
hhncf        Number of census families in household
hhnin        Number of individuals in household
idaddded     Additional deductions from net income (256)
idage        Age
idcapgex     Capital gains exemptions (254)
idcfrh       Relationship to census family head
idcgtc       Caregivers tax credit (database) (315)
idcharit     Charitable donations
idcloss      Allowable other years capital loss (253)
iddisoth     Disability amount for dependants (318)
iddisslf     Disability amount for self (316)
ideducfm     Eligible full-time months of education
ideducpm     Eligible part-time months of education
```

```
idemplo      Employee home relocation loan dedn (248)
idgifts      Gifts to Canada/provinces/culture (342)
idiemp       Wages & salaries
idintstu     Interest paid on student loans (319)
idiworkc     Workers compensation benefits
idmedgro     Medical expenses, gross (330)
idnclos      Allowable other years non-capital loss (252)
idnorth      Northern deductions (255)
idothpe      Amounts for Infirm Dependants (306)
idpartlo     Limited partnership losses (251)
idstkded     Stock option deduction (249)
idtransit    Public Transit
idtuitn      Tuition fees (320)
imgistsa     Amount of GIST which goes into SA
imicapgt     Capital gains (taxable)
imicnet      Net Income (line 236)
imigis       GIS benefits
imipnst      Taxable pension income (after splitting)
imisa        Social assistance (or replacement program)
imispa       Spouse's allowance
imrepay      Social Benefits Repayments
imuic        Employment Insurance contributions

OUTPUT VARIABLES:
imatxc       Age tax credit
imbtc        Basic personal tax credit
imcapgex     Modelled capital gains deduction (254)
imcgtc       Caregiver Tax Credit Level
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
imemptxc     Canada Employment Credit
imfamcgtc    Family Caregiver Amount
imintsl      Federal interest on student loans 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)
imtransit    Public Transit Tax Credit
imtutxc      Tuition tax credit
imtxttxc     Federal textbook tax credit
imuictc      EI contributions tax credit
```

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)
impmartc	Married and equivalent-to-married tax credit	(MMXM, MMXMT, MEMXM, MEMXMT)
impcgtc	Caregiver tax credit	(MCGTC, MCGTCFLG)
impchrtc	Charitable donations	(MCHATL1, MCHATR1, MCHATR2)
impcpptc	CPP/QPP contribution	(MCPPCTXC)
impdistc	Disability tax credit	(MMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(MODISTC)
impdtxc	Dividend tax credit	(MDTCR, MDTCRLC)
impedtxc	Education tax credit	(MEDXPM, MEDXPMPT, MMAXET)
impmedtc	Medical expenses tax credit	(MMEDEXFLG, MMEDANF, MMEDALL)
imppentc	Pension income tax credit	(MYPNDL)
imptutxc	Tuition Tax credit	(MTUITFLG, MMAXET)
impuictc	EI contributions tax credit	(MEICTXC)
impintsl	Interest on Student Loans tax credit	(MINTSLFLG)
impminco	Minimum tax carryover	(MAMTOPT, MAMTPCTF, MAMTTX, MAMTPCTM)

The refundable learning tax credit (immanltc) is equal to MANLTCF times (the tuition amount (idtuitn) plus the education amount ((ideducfm * EDXPM) + (ideducpm * EDXPMPT)) 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).

Manitoba Family Tax Benefit

The Manitoba Family Tax Benefit has been modeled as a replacement for the family tax reduction program. This new non-refundable tax credit provides credits for self, spouse or equivalent to spouse, age for self and spouse, disability for self and spouse, infirm older dependents and dependent children aged 18 and younger. It is reduced by a percentage of net income and then multiplied by the non-refundable tax credit rate. The result is then included with the other non-refundable tax credits.

Manitoba Child Benefit

The Manitoba Child Benefit was introduced in the 2007 Manitoba Budget and implemented in January 2008.

Under the Manitoba Child Benefit program, parents may be entitled to receive a benefit of MCBAMT for the each child under the age of 18. Benefits may be reduced based on adjusted family net income from the previous year. The benefit is reduced at a rate of MCBRR1 for families with 1 child, MCBRR2 for families with 2 children or MCBRR3 for families with 3 or more children for each dollar of adjusted family net income in excess of MCBTD. Adjusted family net income is defined as net income less UCCB amounts claimed for the head plus the spouse if one exists.

The value of the Manitoba Child Benefit (immcb) is added to provincial family programs (impfp).

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
CTCINC      Family income scaling factor
EDXPM       Education amount per month of full-time studies
EDXPMPT     Education amount per month of part-time studies
FCBENCAL    Calculate child benefits for calendar year flag
MAMTFTCFLG  Man. amt flag for provincial foreign tax credit
MAMTOPT     Man. alternative minimum tax option
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
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
MCBAMT      Manitoba child benefit amount per child
MCBAMTP     Manitoba child benefit amount per child for 1st
half of year
MCBFLAG     Manitoba child benefit activation flag
MCBPI       Manitoba Child benefit phase-in rate
MCBPIP      Manitoba Child benefit phase-in rate for calendar
year
MCBRR1      Manitoba Child benefit reduction rate for 1 child
MCBRR1P     Manitoba Child benefit reduction rate for 1 child
for 1st half of year
MCBRR2      Manitoba Child benefit reduction rate for 2
children
MCBRR2P     Manitoba Child benefit reduction rate for 2
children for 1st half of year
MCBRR3      Manitoba Child benefit reduction rate for 3+
children
MCBRR3P     Manitoba Child benefit reduction rate for 3+
children for 1st half of year
```

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MCBTD        Manitoba child benefit turndown
MCBTDP       Manitoba child benefit turndown for 1st half of
year
MCBXM        Manitoba cost-of-living basic credit
MCDISEX      Manitoba cost-of-living disability credit
MCEMXM       Manitoba cost-of-living married equivalent credit
MCFINCRR     Manitoba cost-of-living family income reduction
rate
MCGTC        Man. Caregiver Tax Credit
MCGTCFLG     Man. Caregiver Tax Credit activation flag
MCGTCOPT     Man. Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
MCGTCTD      Man. Caregiver Tax Credit income turndown
MCHATL1      Man. Charitable Donations amount level 1
MCHATR1      Man. Charitable Donations tax credit rate 1
MCHATR2      Man. Charitable Donations tax credit rate 2
MCMINAGE     Manitoba cost-of-living tax credit minimum age
MCMXM        Manitoba cost-of-living married credit
MCODISEX     Manitoba cost-of-living old disabled dependant
credit
MCPPCTXC     Man. CPP Contribution Tax Credit activation flag
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
MDTCRLC      Man. dividend tax credit rate from large
(eligible) corporations
MEDXPM       Man. Education Amount per month of full-time
studies
MEDXPMPT     Man. Education Amount per month of part-time
studies
MEICTXC      Man. EI Premium Tax Credit activation flag
MEMXM        Man. equivalent to married amount
MEMXMT       Man. equivalent to married turndown level
MFITEXPFLG   Manitoba Fitness Tax Credit activation flag
MFITEXPMAX   Manitoba Fitness Tax Credit maximum claim
MFTBAGE      Man. Family Tax Benefit age amount
MFTBDIS      Man. Family Tax Benefit amount for disability for
self or spouse
MFTBFLAG     Man. Family Tax Benefit activation flag
MFTBIOS      Man. Family Tax Benefit net income offset
MFTBKID      Man. Family Tax Benefit amount for kids
MFTBODIS     Man. Family Tax Benefit amount for older infirm
dependents
MFTBSAGE     Man. Family Tax Benefit age amount for spouse
MFTBSELF     Man. Family Tax Benefit amount for self
```

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MFTBSP        Man. Family Tax Benefit amount for spouse or
equivalent to spouse
MHMASOPT      Manitoba homeowner assistance option (1=Model
2=database)
MINTSLFLG     Man. Interest on Student Loans Tax Credit
activation flag
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
MMEDALL       Man. Medical allowance maximum lower limit
MMEDANF       Man. Medical allowance lower limit net income
fraction
MMEDEXFLG     Man. Medical Expense Tax Credit activation flag
MMXM          Man. married amount
MMXMT         Man. married amount turndown level
MNITR         Manitoba net income tax rate
MODISTC       Man. Maximum infirm dependent 18 or older tax
credit
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
```

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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
MTRNIOS       Manitoba tax reduction net income offset
MTUITFLG      Man. Tuition Tax Credit activation flag
MTXFLG        Man. tax on taxable income activation flag
MYPNDL        Man. Pension Income Deduction Amount
PYINC         Deflator to calculate previous year income
PYINCP        Deflator to calculate income from 2 years prior
TARGETYEAR    Year of analysis

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
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
idcgtc        Caregivers tax credit (database) (315)
iddisab       Disability status (age 16+)
iddisoth      Disability amount for dependants (318)
iddisslf      Disability amount for self (316)
ideducfm      Eligible full-time months of education
ideducpm      Eligible part-time months of education
```

```
idfitexp      Fitness expense amount for children
idhomstu      College res/resdnt homeowner assist (558)
ididiv        Dividend income (actual)
idinspo       Person's spouse [pointer]
idintstu      Interest paid on student loans (319)
idiworkc      Workers compensation benefits
idlabtxg      Gross Labour funds bought (413)
idmedgro      Medical expenses, gross (330)
idmincar      Minimum tax carryover (504)
idmschpd      Manitoba school taxes paid
idothpe       Amounts for Infirm Dependants (306)
idprvftc      Provincial foreign tax credit (Form T2036)
idprvpol      Provincial political contributions (565)
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
imatxc        Age tax credit
imbft         Basic federal tax
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
imedrcv       Education and tuition transferred from others
imedtrf       Education and tuition transferred to others
imfcben       Total Federal Child Benefits
imgistsa      Amount of GIST which goes into SA
imicnet       Net Income (line 236)
imigis        GIS benefits
imildivt      Dividend income from large (eligible)
corporations (taxable)
imipnst       Taxable pension income (after splitting)
imisa         Social assistance (or replacement program)
imisdivt      Dividend income from small corporations (taxable)
imispa        Spouse's allowance
imitax        Taxable income
imiuccbc      Universal Child Care Benefit amount claimed
immartxc      Married tax credit claimed
imminamt      Minimum Amount due to Federal Minimum Tax
improptx      Imputed property tax paid
imrentpd      Imputed rent paid
imstxcrt      Tax credits transferred from spouse
```

```
imuic           Employment Insurance 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
immcb           Manitoba Child Benefit
immcoltc        Manitoba Cost of Living Tax Credit
immftb          Manitoba Family Tax Benefit
immhmas         Manitoba Homeowners Assistance
immndc          Manitoba number of dependent children 18 or
younger
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        Provincial Dependent Caregiver Tax Credit Amount
impchrtc        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
impfitexp       Provincial fitness tax credit
impintsl        Provincial interest on student loans tax credit
implvctc        Provincial labour-sponsored funds tax credit
impmartc        Prov Married and Equivalent to Married tax credit
impmeda         Prov Medical expenses allowed (computed)
impmedtc        Prov Medical Expenses tax credit
impminco        Prov Minimum tax carryover
impnit          Provincial net income tax
impothpe        Provincial infirm dependents 18 or older tax
credit
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 transferred
```

```
imptutxc      Prov Tuition tax credit
impuictc      Prov EI contributions tax credit
imtxp         Provincial income tax payable
```

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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)
impmartc	Married and equivalent-to-married tax credit	(BMXM, BMXMT, BEMXM, BEMXMT)
impcgtc	Caregiver tax credit	(BCGTC, BCGTCFLG)
impchrtc	Charitable donations	(BCHATL1, BCHATR1, BCHATR2)
impcpptc	CPP/QPP contribution	(BCPPCTXC)
impdistc	Disability tax credit	(BMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(BODISTC)
impdtxc	Dividend tax credit	(BDTCR, BDTCRLC)
impedtxc	Education tax credit	(BEDXPM, BEDXPMPT, BMAXET)
impmedtc	Medical expenses tax credit	(BMEDEXFLG, BMEDANF, BMEDALL)
imppentc	Pension income tax credit	(BYPNDL)
imptutxc	Tuition Tax credit	(BTUITFLG, BMAXET)
impuictc	EI contributions tax credit	(BEICTXC)
impintsl	Interest on Student Loans tax credit	(BINTSLFLG)
impminco	Minimum tax carryover	(BAMTOPT, BAMTPCTF, BAMTTX, BAMTPCTM)

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.

New Brunswick Home Heating Benefit

When BHEATFLG is turned on, eligible households will receive a home heating benefit (BHEATBEN) from the New Brunswick government for assistance with heating expenses. BHEAPFLG determines the heating source that is eligible for the benefit. When BHEAPFLG is set to 0, households must use home heating oil as the primary source of heat and the family total income (head plus spouse) must be less than BHEATPO. When BHEAPFLG is set to 1, the benefit is geared towards low-income households (income less than BHEATPO) with electricity expenses. When BHEATSA is set to 1, SA recipients will be eligible for the benefit, otherwise they are not. Only one person per household may receive this benefit. The value of the benefit is held in impheatr.

Low Income Tax Reduction

Announced in the 2001 budget, the maximum Low Income Tax Reduction is equal to the sum of a base amount (BTRBAS) and an amount for a spouse or equivalent-to-spouse (BTRSP). It is then reduced for net income over BTRTD at a rate of BTRRR. The reduction cannot be more than taxes owing. The reduction is calculated at a family level but can be split amongst spouses.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
BAMTOPT      N.B. alternative minimum tax option
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
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
BCGTCOPT     N.B. Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
BCGTCTD      N.B. Caregiver Tax Credit income turndown
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
BCPPCTXC     N.B. CPP Contribution Tax Credit activation flag
BDTCR        N.B. dividend tax credit rate
BDTCRLC      N.B. dividend tax credit rate from large
(eligible) corporations
BEDXPM       N.B. Education Amount per month of full-time
studies
BEDXPMPT     N.B. Education Amount per month of part-time
studies
BEICTXC      N.B. EI Premium Tax Credit activation flag
BEMXM        N.B. equivalent to married amount
BEMXMT       N.B. equivalent to married turndown level
BHEAPFLG     New Brunswick Home Energy Assistance Program
activation flag
BHEATBEN     New Brunswick Home Heating Benefit [income,
benefit]
BHEATFLG     New Brunswick Home Heating Benefit activation
flag
BHEATPO      New Brunswick Home Heating Benefit family income
phase out
BHEATSA      New Brunswick Home Heating Benefit for SA
recipients flag
```

```
BINTSLFLG    N.B. Interest on Student Loans Tax Credit
activation flag
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
BMEDALL      N.B. Medical allowance maximum lower limit
BMEDANF      N.B. Medical allowance lower limit net income
fraction
BMEDEXFLG    N.B. Medical Expense Tax Credit activation flag
BMXM         N.B. married amount
BMXMT        N.B. married amount turndown level
BODISTC      N.B. Maximum infirm dependent 18 or older tax
credit
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
BTUITFLG     N.B. Tuition Tax Credit activation flag
BTXFLG       N.B. tax on taxable income activation flag
BYPNDL       N.B. Pension Income Deduction Amount
CTCINC       Family income scaling factor
FCBENCAL     Calculate child benefits for calendar year flag
NBCBBAS      NB Basic child benefit (per child)
NBCBBASP     NB Basic child benefit (per child) for 1st half
of year
NBCBECI      NB Child benefits earning supplement cut-in level
NBCBECIP     NB Child benefits earning supplement cut-in level
for 1st half of year
NBCBEIS      NB Child benefits earned income supplement
NBCBEISP     NB Child benefits earned income supplement for
1st half of year
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```
NBCBERR      NB Child benefits earning supplement reduction
rate
NBCBERRP     NB Child benefits earning supplement reduction
rate for 1st half of year
NBCBESR      NB Child benefits earned income supplement rate
NBCBESRP     NB Child benefits earned income supplement rate
for 1st half of year
NBCBETD      NB Child benefits earning supplement turndown
level
NBCBETDP     NB Child benefits earning supplement turndown
level for 1st half of year
NBCBPI       NB Child benefits phase-in rate
NBCBPI1P     NB Child benefits phase-in rate for 1st half of
year
NBCBPI2P     NB Child benefits phase-in rate for 2nd half of
year
NBCBRR       NB Multi-children family income reduction rate
NBCBRRP      NB Multi-children family income reduction rate
for 1st half of year
NBCBRRS      NB Single-child family income reduction rate
NBCBRRSP     NB Single-child family income reduction rate for
1st half of year
NBCBTD       NB child benefits family income turndown
NBCBTDP      NB child benefits family income turndown for 1st
half of year
NBCTBFLG     NB child benefit activation flag
PYINC        Deflator to calculate previous year income
PYINCP       Deflator to calculate income from 2 years prior

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
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
idcgtc       Caregivers tax credit (database) (315)
```

```
iddisab       Disability status (age 16+)
iddisoth      Disability amount for dependants (318)
iddisslf      Disability amount for self (316)
ideducfm      Eligible full-time months of education
ideducpm      Eligible part-time months of education
ididiv        Dividend income (actual)
idiemp        Wages & salaries
idinspo       Person's spouse [pointer]
idintstu      Interest paid on student loans (319)
idise         Self-employed income
idlabtxg      Gross Labour funds bought (413)
idmedgro      Medical expenses, gross (330)
idmincar      Minimum tax carryover (504)
idothpe       Amounts for Infirm Dependants (306)
idprvftc      Provincial foreign tax credit (Form T2036)
idprvpol      Provincial political contributions (565)
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)
imcppse       CPP contributions deduction for self-emp
imcqppc       CPP/QPP contributions
imdedfn       All deductions from net income
imdepni       Dependant's net income
imgistsa      Amount of GIST which goes into SA
imicnet       Net Income (line 236)
imictot       Total Income (line 150)
imildivt      Dividend income from large (eligible)
corporations (taxable)
imipnst       Taxable pension income (after splitting)
imisa         Social assistance (or replacement program)
imisdivt      Dividend income from small corporations (taxable)
imitax        Taxable income
imiuccbc      Universal Child Care Benefit amount claimed
imminamt      Minimum Amount due to Federal Minimum Tax
imuic         Employment Insurance 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
imnbcbb     NB child tax Benefits base amount
imnbcben    Total NB child tax Benefits
imnbwis     NB child tax Benefits WIS
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    Provincial Dependent Caregiver Tax Credit Amount
impchrtc    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
impintsl    Provincial interest on student loans tax credit
implvctc    Provincial labour-sponsored funds tax credit
impmartc    Prov Married and Equivalent to Married tax credit
impmeda     Prov Medical expenses allowed (computed)
impmedtc    Prov Medical Expenses tax credit
impminco    Prov Minimum tax carryover
impothpe    Provincial infirm dependents 18 or older tax
credit
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 EI contributions tax credit
imtxp       Provincial income tax payable
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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)
impmartc	Married and equivalent-to-married tax credit	(NMXM, NMXMT, NEMXM, NEMXMT)
impcgtc	Caregiver tax credit	(NCGTC, NCGTCFLG)
impchrtc	Charitable donations	(NCHATL1, NCHATR1, NCHATR2)
impcpptc	CPP/QPP contribution	(NCPPCTXC)
impdistc	Disability tax credit	(NMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(NODISTC)
impdtxc	Dividend tax credit	(NDTCR, NDTCRLC)
impedtxc	Education tax credit	(NEDXPM, NEDXPMPT, NMAXET)
impmedtc	Medical expenses tax credit	(NMEDEXFLG, NMEDANF, NMEDALL
imppentc	Pension income tax credit	(NYPNDL)
imptutxc	Tuition Tax credit	(NTUITFLG, NMAXET)
impuictc	EI contributions tax credit	(NEICTXC)
impintsl	Interest on Student Loans tax credit	(NINTSLFLG)
impminco	Minimum tax carryover	(NAMTOPT, NAMTPCTF, NAMTTX, NAMTPCTM)

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.

Newfoundland and Labrador Mother-Baby Nutrition Supplement

The Newfoundland and Labrador Mother-Baby Nutrition Supplement is an amount per child under age 1 to be given to families with net incomes less that NCBPO. The Mother-Baby Nutrition Supplement begins in July 2002. The value of the supplement is saved in the variable imnmbns and added to impfp (provincial family programs).

Progressive Family Growth Benefit

This program provides a lump sum payment to residents of the province who give birth to a baby or have a child placed with them for adoption on or after January 1, 2008. The Parental Support Benefit program was also implemented, which provides a monthly benefit paid for the 12 months after the child's birth on or after January 1, 2008. Eligible individuals must apply for the benefits.

Newfoundland home heating fuel rebate

When NHEATFLG is turned on, eligible households will receive a home heating fuel rebate (NHEATREB) from the Newfoundland government for assistance with heating fuel expenses. When NHEATINC is set to 0, the rebate is payable to households that use home heating fuel as the primary source of heat and where an individual in that household receives any amount of the Newfoundland and Labrador Child Benefit, Newfoundland and Labrador HST credit or the Newfoundland and Labrador Seniors' Benefit or Social assistance (the latter only applies when NHEATSAFLG is turned on). When NHEATINC is set to 1, the maximum rebate is given to households where the head and spouse net income is less than NHEATTD, and the rebate is reduced for incomes between NHEATTD and NHEATPO, with a minimum rebate of NHEATMIN to eligible households with incomes less than NHEATPO. Households that use electricity or wood as the primary heat source are not eligible for the rebate. The value of the rebate is held in impheatr.

Newfoundland and Labrador Home Heating Rebate

This program is an extension of the Home Heating Fuel Rebate, which only offered rebates for fuel oil, now broadened to include electricity expenses. Under the revised program, homeowners may apply for a rebate for their heating expenses, which is income tested. The maximum rebate is granted to homeowners with incomes below the turndown, a partial rebate is granted for incomes between the turndown and phase out income thresholds with a minimum rebate of $100 granted to eligible households with incomes below the phase out threshold.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
CTCINC       Family income scaling factor
FCBENCAL     Calculate child benefits for calendar year flag
NAMTOPT      NFLD alternative minimum tax option
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
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
NCB1P        Nfld. child benefit for first child for 1st half
of year
NCB2         Nfld. child benefit for second child
NCB2P        Nfld. child benefit for second child for 1st half
of year
NCB3         Nfld. child benefit for third child
NCB3P        Nfld. child benefit for third child for 1st half
of year
NCB4         Nfld. child benefit for 4th and subsequent child
NCB4P        Nfld. child benefit for 4th and subsequent child
for 1st half of year
NCBFLG       Newfoundland child benefit activation flag
NCBPO        Nfld. child benefit family income phase out
NCBPOP       Nfld. child benefit family income phase out for
1st half of year
NCBTD        Nfld. child benefit family income turndown
NCBTDP       Nfld. child benefit family income turndown for
1st half of year
NCCFLAG      Newfoundland child care tax credit activation
flag
NCGTC        NFLD Caregiver Tax Credit
NCGTCFLG     NFLD Caregiver Tax Credit activation flag
NCGTCOPT     NFLD Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
NCGTCTD      NFLD Caregiver Tax Credit income turndown
NCHATL1      NFLD Charitable Donations amount level 1
```

```
NCHATR1       NFLD Charitable Donations tax credit rate 1
NCHATR2       NFLD Charitable Donations tax credit rate 2
NCPPCTXC      NFLD CPP Contribution Tax Credit activation flag
NDTCR         NFLD dividend tax credit rate
NDTCRLC       NFLD dividend tax credit rate from large
(eligible) corporations
NEDXPM        NFLD Education Amount per month of full-time
studies
NEDXPMPT      NFLD Education Amount per month of part-time
studies
NEICTXC       NFLD EI Premium Tax Credit activation flag
NEMXM         NFLD equivalent to married amount
NEMXMT        NFLD equivalent to married turndown level
NHEATERB      Newfoundland electricity rebate amount
NHEATERR      Newfoundland electricity rebate reduction rate
NHEATFLG      Newfoundland home heating fuel rebate activation
flag
NHEATINC      Newfoundland home heating fuel rebate - income
test flag
NHEATMIN      Newfoundland home heating fuel rebate minimum
NHEATPO       Newfoundland home heating fuel rebate family
income phase out
NHEATREB      Newfoundland home heating fuel rebate amount
NHEATRR       Newfoundland home heating fuel rebate reduction
rate
NHEATSAFLG    Newfoundland home heating fuel rebate - SA
recipients eligible
NHEATTD       Newfoundland home heating fuel rebate family
income turndown
NHEATTU       Newfoundland home heating fuel rebate take up
NINTSLFLG     NFLD Interest on Student Loans Tax Credit
activation flag
NLITRF        NFLD low income tax reduction family maximum
NLITRFIT      NFLD low income tax reduction family income
threshold
NLITRRR       NFLD low income tax reduction credit reduction
rate
NLITRS        NFLD low income tax reduction single maximum
NLITRSIT      NFLD low income tax reduction single income
threshold
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
```

```
NMBNS          Nfld. Mother-Baby Nutrition Supplement
NMBNSEXT       Nfld. Mother-Baby Nutrition Supplement newborn
extra benefit
NMBNSEXTP      Nfld. Mother-Baby Nutrition Supplement newborn
extra benefit for 1st half of year
NMBNSP         Nfld. Mother-Baby Nutrition Supplement for 1st
half of year
NMEDALL        NFLD Medical allowance maximum lower limit
NMEDANF        NFLD Medical allowance lower limit net income
fraction
NMEDEXFLG      NFLD Medical Expense Tax Credit activation flag
NMXM           NFLD married amount
NMXMT          NFLD married amount turndown level
NODISTC        NFLD Maximum infirm dependent 18 or older tax
credit
NPFGB          Newfoundland Progressive Family Growth Benefit
NPFGBTU        Newfoundland Progressive Family Growth Benefit
Take Up
NPNTCR         NFLD provincial non-refundable tax credit rate
NPSB           Newfoundland Parental Support Benefit
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
NTUITFLG       NFLD Tuition Tax Credit activation flag
NTXFLG         NFLD tax on taxable income activation flag
NYPNDL         NFLD Pension Income Deduction Amount
PYINC          Deflator to calculate previous year income
PYINCP         Deflator to calculate income from 2 years prior

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]
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
idcgtc       Caregivers tax credit (database) (315)
iddisab      Disability status (age 16+)
iddisoth     Disability amount for dependants (318)
iddisslf     Disability amount for self (316)
ideducfm     Eligible full-time months of education
ideducpm     Eligible part-time months of education
idididv      Dividend income (actual)
idinspo      Person's spouse [pointer]
idintstu     Interest paid on student loans (319)
idlabtxg     Gross Labour funds bought (413)
idmedgro     Medical expenses, gross (330)
idmincar     Minimum tax carryover (504)
idothpe      Amounts for Infirm Dependants (306)
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
imccea       Child care expenses allowed
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
imgistsa     Amount of GIST which goes into SA
imicnet      Net Income (line 236)
```

```
imigist      GIS provincial top-up
imildivt     Dividend income from large (eligible)
corporations (taxable)
imipnst      Taxable pension income (after splitting)
imisa        Social assistance (or replacement program)
imisdivt     Dividend income from small corporations (taxable)
imitax       Taxable income
imiuccbc     Universal Child Care Benefit amount claimed
immartxc     Married tax credit claimed
imminamt     Minimum Amount due to Federal Minimum Tax
imuic        Employment Insurance 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
imncb        Newfoundland Child Benefit
imncctc      Newfoundland Child Care Tax Credit
imnmbns      Newfoundland Mother-Baby Nutrition Supplement
imnpfgb      Newfoundland Progressive Family Growth Benefit
imnpsb       Newfoundland Parental Support Benefit
imnptc       Non-refundable provincial tax credits
imnstc       Newfoundland and Labrador Sales Tax Credit
impatxc      Prov Age amount tax credit
impatxcr     Prov total tax credits applied
impbtc       Prov Basic amount
impcgtc      Prov Caregiver Tax Credit Level
impcgtcp     Provincial Dependent Caregiver Tax Credit Amount
impchrtc     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
impintsl     Provincial interest on student loans tax credit
implvctc     Provincial labour-sponsored funds tax credit
impmartc     Prov Married and Equivalent to Married tax credit
impmeda      Prov Medical expenses allowed (computed)
impmedtc     Prov Medical Expenses tax credit
impminco     Prov Minimum tax carryover
impothpe     Provincial infirm dependents 18 or older tax
credit
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 transferred
imptutxc    Prov Tuition tax credit
impuictc    Prov EI contributions tax credit
imtxp       Provincial income tax payable
```

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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
Pharmacare 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)
impmartc	Married and equivalent-to-married tax credit	(VMXM, VMXMT, VEMXM, VEMXMT)
impcgtc	Caregiver tax credit	(VCGTC, VCGTCFLG)
impchrtc	Charitable donations	(VCHATL1, VCHATR1, VCHATR2)
impcpptc	CPP/QPP contribution	(VCPPCTXC)
impdistc	Disability tax credit	(VMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(VODISTC)
impdtxc	Dividend tax credit	(VDTCR, VDTCRLC)
impedtxc	Education tax credit	(VEDXPM, VEDXPMPT, VMAXET)
impmedtc	Medical expenses tax credit	(VMEDEXFLG, MEDANF, MEDALL)
imppentc	Pension income tax credit	(VYPNDL)
imptutxc	Tuition Tax credit	(VTUITFLG, VMAXET)
impuictc	EI contributions tax credit	(VEICTXC)
impintsl	Interest on Student Loans tax credit	(VINTSLFLG)
impminco	Minimum tax carryover	(VAMTOPT, VAMTPCTF, VAMTTX, VAMTPCTM)

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 is 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 (imicnet) 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. There are two turndowns, VPHTD for singles 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.

Nova Scotia Taxpayer Refund

Program Description

The taxpayer refund is payable if the person paid NS provincial taxes in the previous two years.

SPSM Implementation

In the SPSM, the refund, imnstxrf, is payable if the person paid taxes in the current year. The refund amount is NSTXREFAMT and is controlled by the flag NSTXREFFLG.

Nova Scotia Affordable Living Tax Credit

Program Description

The refundable Nova Scotia Affordable Living Tax Credit has been implemented. This credit begins in July 2010 to help offset the restoration of the harmonized sales tax system to 15%.

SPSM Implementation

The activation flag VALTCFLG assigns the calculated credit (imvaltc) to the spouse with the higher taxable income, beginning in July 2010. The Affordable Living Tax Credit consists of a base amount for eligible individuals and families of VALTCAMT, plus VALTCC for each eligible dependent under 19 years of age. The credit will be reduced by VALTCRR for each dollar of adjusted family net income in excess of VALTCTD. The calculated credit is saved in imvaltc and added to refundable provincial tax credits (imptc).

Nova Scotia Home Heating Fuel Rebate

Program Description

Families and individuals who heat their homes with oil or propane may receive a home heating fuel rebate from the Nova Scotia government for assistance with heating fuel expenses.

SPSM Implementation

When VHEATFLG is turned on, families and individuals who heat their homes with oil or propane may receive a home heating fuel rebate from the Nova Scotia government for assistance with heating fuel expenses. The maximum value of the rebate (VHEATREB for users of oil or VHEATERB for users of electricity) will go to families with a net income of VHEATFTD or less, or if single, an income of VHEATSTD or less. Seniors who receive the Guaranteed Income Supplement or Spouse's Allowance and persons receiving social assistance will be eligible for the maximum rebate. The value of the rebate is held in impheatr.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
CTCINC       Family income scaling factor
FCBENCAL     Calculate child benefits for calendar year flag
GSTCYFLG     GST credit calendar year calculation activation
flag
NSTXREFAMT   NS Taxpayer refund amount
NSTXREFFLG   NS Taxpayer refund flag
PYINC        Deflator to calculate previous year income
PYINCP       Deflator to calculate income from 2 years prior
VALTCAMT     N.S. Affordable Living Tax Credit base amount
VALTCAMTP    N.S. Affordable Living Tax Credit base amount for
1st half of year
VALTCC       N.S. Affordable Living Tax Credit child amount
VALTCCP      N.S. Affordable Living Tax Credit child amount
for 1st half of year
VALTCFLG     N.S. Affordable Living Tax Credit activation flag
VALTCRR      N.S. Affordable Living Tax Credit reduction rate
VALTCRRP     N.S. Affordable Living Tax Credit reduction rate
for 1st half of year
VALTCTD      N.S. Affordable Living Tax Credit income turndown
threshold
VALTCTDP     N.S. Affordable Living Tax Credit income turndown
threshold for 1st half of year
VAMTOPT      N.S. alternative minimum tax option
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
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
VCBBAS1P     NS child benefit for first child for 1st half of
year
VCBBAS2      NS child benefit for second child
VCBBAS2P     NS child benefit for second child for 1st half of
year
VCBBAS3      NS child benefit for third or additional child
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VCBBAS3P      NS child benefit for third or additional child
for 1st half of year
VCBFLG        NS child benefit activation flag
VCBPO         NS child benefit family income phase out
VCBPOP        NS child benefit family income phase out for 1st
half of year
VCBTD         NS child benefit turndown
VCBTDP        NS child benefit turndown for 1st half of year
VCGTC         N.S. Caregiver Tax Credit
VCGTCFLG      N.S. Caregiver Tax Credit activation flag
VCGTCOPT      N.S. Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
VCGTCTD       N.S. Caregiver Tax Credit income turndown
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
VCPPCTXC      N.S. CPP Contribution Tax Credit activation flag
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
VDTCRLC       N.S. dividend tax credit rate from large
(eligible) corporations
VEDXPM        N.S. Education Amount per month of full-time
studies
VEDXPMPT      N.S. Education Amount per month of part-time
studies
VEICTXC       N.S. EI Premium Tax Credit activation flag
VEMXM         N.S. equivalent to married amount
VEMXMT        N.S. equivalent to married turndown level
VFITEXPFLG    NS Sport and Recreational Expense Child Tax
Credit activation flag
VFITEXPMAX    NS Sport and Recreational Expense Child Tax
Credit maximum claim
VHEATERB      Nova Scotia home heating fuel rebate amount for
electricity
VHEATFLG      Nova Scotia Home Heating Assistance Rebate
activation flag
VHEATFTD      Nova Scotia home heating fuel rebate income
turndown for families
VHEATREB      Nova Scotia home heating fuel rebate amount for
oil
```

```
VHEATSTD    Nova Scotia home heating fuel rebate income
turndown for singles
VHEATTU     Nova Scotia home heating fuel rebate take up
VINTSLFLG   N.S. Interest on Student Loans Tax Credit
activation flag
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
VMEDALL     N.S. Medical allowance maximum lower limit
VMEDANF     N.S. Medical allowance lower limit net income
fraction
VMEDEXFLG   N.S. Medical Expense Tax Credit activation flag
VMXM        N.S. married amount
VMXMT       N.S. married amount turndown level
VODISTC     N.S. Maximum infirm dependent 18 or older tax
credit
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)
VSENTRFLG   N.S Tax Relief for Seniors receiving GIS
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
VTUITFLG    N.S. Tuition Tax Credit activation flag
VTXFLG      N.S. tax on taxable income activation flag
VYCTCAPM    N.S. Young Child Tax Credit Amount per Month
VYCTCPI     N.S. Young Child Tax Credit Phase in
VYPNDL      N.S. Pension Income Deduction Amount


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+)
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
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
idcf        Person's census family [pointer]
idcfrh      Relationship to census family head
idcgtc      Caregivers tax credit (database) (315)
iddisab     Disability status (age 16+)
iddisoth    Disability amount for dependants (318)
iddisslf    Disability amount for self (316)
ideducfm    Eligible full-time months of education
ideducpm    Eligible part-time months of education
idestat     Educational status
ididiv      Dividend income (actual)
idintstu    Interest paid on student loans (319)
idlabtxg    Gross Labour funds bought (413)
idmedgro    Medical expenses, gross (330)
idmincar    Minimum tax carryover (504)
idnf        Person's nuclear family [pointer]
idothpe     Amounts for Infirm Dependants (306)
idprvftc    Provincial foreign tax credit (Form T2036)
idprvpol    Provincial political contributions (565)
idrand      Random numbers [array]
idsex       Sex
idspoflg    Person has spouse
idsprecpr   Children's Sport & Recrn Expense(Prov)
```

```
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
imgistsa     Amount of GIST which goes into SA
imicnet      Net Income (line 236)
imictot      Total Income (line 150)
imigis       GIS benefits
imildivt     Dividend income from large (eligible)
corporations (taxable)
imipnst      Taxable pension income (after splitting)
imisa        Social assistance (or replacement program)
imisdivt     Dividend income from small corporations (taxable)
imispa       Spouse's allowance
imitax       Taxable income
imiuccbc     Universal Child Care Benefit amount claimed
immartxc     Married tax credit claimed
imminamt     Minimum Amount due to Federal Minimum Tax
imuic        Employment Insurance 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
nfnpers      Number of persons 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
imnptc       Non-refundable provincial tax credits
imnscb       Nova Scotia Child Benefit
imnstxrf     Nova Scotia Taxpayer Refund
impatxc      Prov Age amount tax credit
impatxcr     Prov total tax credits applied
impbtc       Prov Basic amount
impcgtc      Prov Caregiver Tax Credit Level
impcgtcp     Provincial Dependent Caregiver Tax Credit Amount
```

```
impchrtc      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
impeht        Provincial elderly health tax
impehtc       Provincial elderly health tax credit
impfitexp     Provincial fitness tax credit
impheatr      Provincial Home Heating Fuel/Energy Rebate
impintsl      Provincial interest on student loans tax credit
implvctc      Provincial labour-sponsored funds tax credit
impmartc      Prov Married and Equivalent to Married tax credit
impmeda       Prov Medical expenses allowed (computed)
impmedtc      Prov Medical Expenses tax credit
impminco      Prov Minimum tax carryover
impothpe      Provincial infirm dependents 18 or older tax
credit
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 transferred
imptutxc      Prov Tuition tax credit
impuictc      Prov EI contributions tax credit
impyctxc      Prov Young Child tax credit
imtxp         Provincial income tax payable
imvaltc       N.S. Affordable Living Tax Credit
imvsrtxrf     Nova Scotia Seniors' with GIS tax Refund
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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 (OPNTCR) 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)
impmartc	Married and equivalent-to-married tax credit	(OMXM, OMXMT, OEMXM, OEMXMT)
impcgtc	Caregiver tax credit	(OCGTC, OCGTCFLG)
impchrtc	Charitable donations	(OCHATL1, OCHATR1, OCHATR2)
impcpptc	CPP/QPP contribution	(OCPPCTXC)
impdistc	Disability tax credit	(OMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(OODISTC)
impdtxc	Dividend tax credit	(ODTCR, ODTCRLC)
impedtxc	Education tax credit	(OEDXPM, OEDXPMPT, OMAXET)
impmedtc	Medical expenses tax credit	(OMEDEXFLG, OMEDANF, OMEDALL)
imppentc	Pension income tax credit	(OYPNDL)
imptutxc	Tuition Tax credit	(OTUITFLG, OMAXET)
impuictc	EI contributions tax credit	(OEICTXC)
impintsl	Interest on Student Loans tax credit	(OINTSLFLG)
impminco	Minimum tax carryover	(OAMTOPT, OAMTPCTF, OAMTTX, OAMTPCTM)

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. The Ontario Employer Health Tax is calculated as OEHTRR times earnings from self-employment which are greater than the exemption

OEHTEX. It is reduced using a deduction which is calculated as OEHTDRR times the total tax due. The total tax minus the deduction is the tax due (imonteht).

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.

The Ontario Health Premium was announced in the Ontario 2004 Budget, to be implemented in July 2004. Individuals in Ontario are required to pay a health premium based on taxable income as per the table in OHPBASE. The value of the premium is multiplied by the phase in rate OHPPI. The value of the calculated premium is held in imphp and this amount is added to imptax.

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.

Ontario Child Benefit

The Ontario Child Benefit (imocb) was introduced in the 2007 Ontario Budget and implemented in July 2007. Under the Ontario Child Benefit program, parents may be entitled to receive a benefit of OCBAMT for the each child under the age of 18. The benefit is reduced at a rate of OCBRR for each dollar of adjusted family net income in excess of OCBTD. Adjusted family net income is defined as net income less UCCB payments for the head plus the spouse if one exists.

The Ontario Child Benefit for 2007 will be a one-time payment in July 2007. This 2007 one-time payment is subject to a minimum amount of OCBMIN. Beginning in July 2008, payments will be made monthly.

With the introduction of the monthly Ontario Child Benefit beginning in July 2008, the Ontario Child Care Supplement for Working Families begins to be phased out. The amount of the Ontario Child Benefit attributed to children under the age of 7 will be removed from the value of the calculated Ontario Child Care Supplement. The flag OCCSOCB activates

this clawback. Also see OCCSPOYR for more information on the phase out of the Ontario Child Care Supplement.

The value of the Ontario Child Benefit (imocb) is added to provincial family programs (impfp).

Ontario Senior Homeowners' Property Tax Grant

Under the Ontario Senior Homeowners' Property Tax Grant program, seniors may be entitled to receive a grant of OSHPTGAMT for property taxes paid, provided they are at least OSHPTGMPT. Couples where at least one is a senior will receive the maximum benefit provided their income (head + spouse) is less than OSHPTGTDC, and a reduced benefit for income between OSHPTGTDC and OSHPTGPOC. Eligible single seniors will receive the maximum benefit if their income is less than OSHPTGTDS and a partial benefit for income between OSHPTGTDS and OSHPTGPOS.

The income concept used is net income (imicnet) less any UCCB payments claimed (imiuccbc) from the previous year.

The value of the Ontario Senior Homeowners' Property Tax Grant (imoshptg) is added to provincial other government income (impoth).

Ontario Textbook and Technology Grant

Starting in 2008, OTXTGRANT is allocated to all full-time college and university students in Ontario who are in full-time studies for at least 4 months.   The value of the grant is saved in imotxtgr and added to provincial other government income (impoth).

Ontario Sales Tax Transition Benefit

The Ontario Sales Tax Transition Benefit has been implemented for 2010 and 2011. It is activated by the flag OSTTBFLG and grants single individuals an amount OSTTBS provided their adjusted net income is below the threshold of OSTTBTDS, while families are granted an amount OSTTBF where family adjusted net income is less than OSTTBTDF. Partial benefits may be granted to eligible families and individuals, where the benefit is reduced by OSTTBRR for incomes above the threshold.

Ontario Sales Tax Credit

The proposed Ontario Sales Tax Credit has been implemented. This credit will provide annual relief of up to OSTCA for each adult and OSTCC for each child aged 18 or younger. It would be reduced by OSTCRR of adjusted family net income over OSTCTDS for single people and over OSTCTDF for families and single parents. This is a July to June program, beginning in July 2010. It is calculated when OSPTCOPT is set to 2 and the calculated value is saved in imostc.

Ontario Property Tax Credit

The proposed Ontario Property Tax Credit has been implemented. A credit would be provided for occupancy cost, which is property tax paid and/or OPRTCRIR of rent paid and/or OPRTCRA for student residence, of up to OPRTCOCM for non-seniors and OPRTCSOCM for seniors, plus OPRTCOCAR of occupancy cost. The credit would be increased by the energy component of OEPTCENER. It would then be reduced by OPRTCRR of adjusted family net income in excess of OPRTCTDS for single individuals (OPRTCSTDS for single seniors) and OPRTCTDF for families (OPRTCSTDF for senior couples and single parents). It is calculated when OSPTCOPT is set to 2 and the calculated value is saved in imoprtxc. This is a July to June program, beginning in July 2011.

Ontario Home Electricity Relief

When OHEATFLG is turned on, families and individuals who claimed a property tax credit may be eligible for a one-time Ontario Home Electricity Relief payment. For families, the maximum value of the payment OHEATFAM will go to families with a net income of OHEATFTD or less. If single, the maximum value of the payment is OHEATSNG for those with incomes of OHEATSTD or less. Individuals and families with incomes over the threshold, will have see their relief payments reduced by OHEATRR. The value of the relief payment is held in impheatr.

CROSS REFERENCE

Function	Description
INPUT PARAMETERS:	
CAPGIR	Capital gains inclusion rate
EDXPMPT	Education amount per month of part-time studies
FCBENCAL	Calculate child benefits for calendar year flag
GSTCYFLG	GST credit calendar year calculation activation flag
OAMTOPT	Ont. alternative minimum tax option
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
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
OCBAMT	Ontario Child Benefit amount per child

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OCBAMTP      Ontario Child Benefit amount per child for 1st
half of year
OCBFLAG      Ontario Child Benefit activation flag
OCBMIN       Ontario Child Benefit minimum benefit
OCBPIP       Ontario Child Benefit flag for 1st half of year
OCBRR        Ontario Child Benefit reduction rate
OCBRRP       Ontario Child Benefit reduction rate for 1st half
of year
OCBTD        Ontario Child Benefit family income turndown
OCBTDP       Ontario Child Benefit family income turndown for
1st half of year
OCCEAFLG     Ont. Child Care Expense Credit activation flag
OCCEAPCT     Ont. Child Care Expense Credit qualifying
percentage
OCCEAPCTP    Ont. Child Care Expense Credit qualifying
percentage for 1st half of year
OCCEARR      Ont. Child Care Expense Credit benefit reduction
rate
OCCEARRP     Ont. Child Care Expense Credit benefit reduction
rate for 1st half of year
OCCEATD      Ont. Child Care Expense Credit family income
turndown
OCCEATDP     Ont. Child Care Expense Credit family income
turndown for 1st half of year
OCCEAYNG     Ont. Child Care Expense Credit allowance per
child
OCCEAYNGP    Ont. Child Care Expense Credit allowance per
child for 1st half of year
OCCSEXT      Ont. Child Care Supplement One-time payment of
extra benefit
OCCSOCB      Ont. Child Care Supplement reduced by Ontario
Child Benefit flag
OCCSPOPYR    Ont. Child Care Supplement phase out year
proportion born pre July
OCCSPOYR     Ont. Child Care Working Income Supplement phase
out year
OCGIRFLG     Ont. Capital Gains Inclusion Rate Activation Flag
OCGTC        Ont. Caregiver Tax Credit
OCGTCFLG     Ont. Caregiver Tax Credit activation flag
OCGTCOPT     Ont. Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
OCGTCTD      Ont. Caregiver Tax Credit income turndown
OCHATL1      Ont. Charitable Donations amount level 1
OCHATR1      Ont. Charitable Donations tax credit rate 1
OCHATR2      Ont. Charitable Donations tax credit rate 2
OCPPCTXC     Ont. CPP Contribution Tax Credit activation flag
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OCWISFLG      Ont. Child Care Working Income Supplement
activation flag
OCWISFLGP     Ont. Child Care Working Income Supplement
activation flag for 1st half of year
OCWISMIN      Ont. Child Care Working Income Supplement minimum
benefit
OCWISRR       Ont. Child Care Working Income Supplement Rate
[children][rr]
OCWISRRP      Ont. Child Care Working Income Supplement Rate
[children][rr] for 1st half of year
OCWISSP       Ont. Child Care Working Income Supplement maximum
benefit for single parents
OCWISSPP      Ont. Child Care Working Income Supplement maximum
benefit for single parents for 1st half of year
OCWISTD       Ont. Child Care Working Income Supplement minimum
earnings
OCWISTDP      Ont. Child Care Working Income Supplement minimum
earnings for 1st half of year
ODTCR         Ont. dividend tax credit rate
ODTCRLC       Ont. dividend tax credit rate from large
(eligible) corporations
OEDXPM        Ont. Education Amount per month of full-time
studies
OEDXPMPT      Ont. Education Amount per month of part-time
studies
OEHTDRR       OEHT - Income Tax Deduction Rate
OEHTEX        OEHT - Exemption
OEHTFLAG      OEHT - Ontario Employer Health Tax Flag
OEHTRR        OEHT - Rate
OEICTXC       Ont. EI Premium Tax Credit activation flag
OEMXM         Ont. equivalent to married amount
OEMXMT        Ont. equivalent to married turndown level
OEPTCENER     Ontario energy component of the property tax
credit (post 2009)
OEPTCENERP    Ontario energy component of the property tax
credit for 1st half of year
OEPTCOPT      Ontario energy and property tax credit option
OFTCOPT       Ontario foreign tax credit application option
OHEATFAM      Ontario Home Electricity Relief amount for
families
OHEATFLG      Ontario Home Electricity Relief activation flag
OHEATFTD      Ontario Home Electricity Relief income turndown
for families
OHEATMIN      Ontario Home Electricity Relief minimum
OHEATRR       Ontario Home Electricity Relief reduction rate
OHEATSNG      Ontario Home Electricity Relief amount for
singles
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OHEATSTD      Ontario Home Electricity Relief income turndown
for singles
OHPBASE       Ontario Health Premium table [taxable
income,premium]
OHPFLAG       Ontario Health Premium activation flag
OHPPI         Ontario Health Premium program phase in
OINTSLFLG     Ont. Interest on Student Loans Tax Credit
activation flag
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
OMEDALL       Ont. Medical allowance maximum lower limit
OMEDANF       Ont. Medical allowance lower limit net income
fraction
OMEDEXFLG     Ont. Medical Expense Tax Credit activation flag
OMXM          Ont. married amount
OMXMT         Ont. married amount turndown level
OODISTC       Ont. Maximum infirm dependent 18 or older tax
credit
OPCRA         Ontario property tax college residence amount
(pre 2010)
OPNTCR        Ont. provincial non-refundable tax credit rate
OPOCAR        Ontario property tax percent of occupancy cost
(pre 2010)
OPOCM         Ontario property tax maximum occupancy cost (pre
2010)
OPRIR         Ontario property tax credit rental inclusion rate
(pre 2010)
OPRTCBAS      Ontario property tax credit base amount (post
2009)
OPRTCBASP     Ontario property tax credit base amount for 1st
half of year
OPRTCOCAR     Ontario property tax credit percent of occupancy
cost (post 2009)
OPRTCOCARP    Ontario property tax credit percent of occupancy
cost for 1st half of year
OPRTCOCM      Ontario property tax credit maximum occupancy
cost (post 2009)
OPRTCOCMP     Ontario property tax credit maximum occupancy
cost for 1st half of year
OPRTCRA       Ontario property tax credit college residence
amount (post 2009)
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OPRTCRIR   Ontario property tax credit rental inclusion rate
(post 2009)
OPRTCRR   Ontario property tax credit reduction rate (post
2009)
OPRTCRRP   Ontario property tax credit reduction rate for
1st half of year
OPRTCSBAS   Ontario property tax credit base amount for
seniors (post 2009)
OPRTCSBASP   Ontario property tax credit base amount for
seniors for 1st half of year
OPRTCSOCM   Ontario property tax credit maximum occupancy
cost for seniors (post 2009)
OPRTCSOCMP   Ontario property tax credit maximum occupancy
cost for seniors for 1st half of year
OPRTCSTDF   Ontario property tax credit income turndown level
for senior couples (post 2009)
OPRTCSTDFP   Ontario property tax credit income turndown level
for senior couples for 1st half of year
OPRTCSTDS   Ontario property tax credit income turndown level
for senior single persons (post 2009)
OPRTCSTDSP   Ontario property tax credit income turndown level
for senior single persons for 1st half of year
OPRTCTDF   Ontario property tax credit income turndown level
for families (post 2009)
OPRTCTDFP   Ontario property tax credit income turndown level
for families for 1st half of year
OPRTCTDS   Ontario property tax credit income turndown level
for single persons (post 2009)
OPRTCTDSP   Ontario property tax credit income turndown level
for single persons for 1st half of year
OPSMAX   Ontario property/sales tax credit maximum (pre
2010)
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
OSHPTGAMT   Ont. Senior Homeowners' Property Tax Grant amount
OSHPTGFLG   Ont. Senior Homeowners' Property Tax Grant
activation flag
OSHPTGMPT   Ont. Senior Homeowners' Property Tax Grant
minimum property tax allowed

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OSHPTGPOC    Ont. Senior Homeowners' Property Tax Grant income
phase out for senior couples
OSHPTGPOS    Ont. Senior Homeowners' Property Tax Grant income
phase out for single seniors
OSHPTGTDC    Ont. Senior Homeowners' Property Tax Grant income
turndown for senior couples
OSHPTGTDS    Ont. Senior Homeowners' Property Tax Grant income
turndown for single seniors
OSPOCM       Ontario seniors property tax maximum occupancy
cost (pre 2010)
OSPSMAX      Ontario seniors property/sales tax credit maximum
(pre 2010)
OSPTCOPT     Ontario property and sales tax credits option
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 (pre 2010)
OSTCA        Ontario sales tax credit amount per adult (post
2009)
OSTCAP       Ontario sales tax credit amount per adult for 1st
half of year
OSTCB        Ontario sales tax credit basic credit (pre 2010)
OSTCC        Ontario sales tax credit amount per child (post
2009)
OSTCCP       Ontario sales tax credit amount per child for 1st
half of year
OSTCD        Ontario sales tax credit dependant credit (pre
2010)
OSTCFLAG     Ontario seniors tax credit claimed flag
OSTCNIBA     Ontario seniors tax credit net income base amount
OSTCNIBC     Ontario seniors tax credit net income base amount
for couples
OSTCP        Ontario sales tax credit percent of income (pre
2010)
OSTCRR       Ontario sales tax credit reduction rate (post
2009)
OSTCRRP      Ontario sales tax credit reduction rate for 1st
half of year
OSTCS        Ontario sales tax credit spouse credit (pre 2010)
OSTCTDF      Ontario sales tax credit income turndown level
for families (post 2009)
OSTCTDFP     Ontario sales tax credit income turndown level
for families for 1st half of year
OSTCTDS      Ontario sales tax credit income turndown level
for single persons (post 2009)
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OSTCTDSP     Ontario sales tax credit income turndown level
for single persons for 1st half of year
OSTTBF       Maximum Ontario Sales Tax Transition Benefit for
families
OSTTBFLG     Ontario Sales Tax Transition Benefit flag
OSTTBRR      Ontario Sales Tax Transition Benefit Reduction
Rate
OSTTBS       Maximum Ontario Sales Tax Transition Benefit for
single persons
OSTTBTDF     Ontario Sales Tax Transition Benefit Turndown for
families
OSTTBTDS     Ontario Sales Tax Transition Benefit Turndown for
single persons
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
OTUITFLG     Ont. Tuition Tax Credit activation flag
OTXDVMAX     Maximum taxpayer dividend
OTXDVMIN     Minimum taxpayer dividend for people with non-
zero taxes
OTXFLG       Ont. tax on taxable income activation flag
OTXTGRANT    Ontario Textbook and Technology Grant amount
OYPNDL       Ont. Pension Income Deduction Amount
PYINC        Deflator to calculate previous year income
PYINCP       Deflator to calculate income from 2 years prior
TARGETYEAR   Year of analysis

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+)
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)
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idcfrh      Relationship to census family head
idcgtc      Caregivers tax credit (database) (315)
iddisab     Disability status (age 16+)
iddisoth    Disability amount for dependants (318)
iddisslf    Disability amount for self (316)
ideducfm    Eligible full-time months of education
ideducpm    Eligible part-time months of education
idestat     Educational status
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]
idintstu    Interest paid on student loans (319)
idise       Self-employed income
idlabtxg    Gross Labour funds bought (413)
idmedgro    Medical expenses, gross (330)
idmincar    Minimum tax carryover (504)
idnf        Person's nuclear family [pointer]
idothpe     Amounts for Infirm Dependants (306)
idprvftc    Provincial foreign tax credit (Form T2036)
idprvpol    Provincial political contributions (565)
idrand      Random numbers [array]
idschtp     School type
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
imcqppc     CPP/QPP contributions
imdedfn     All deductions from net income
imdedft     Deductions from total income
imdepni     Dependant's net income
imicapgt    Capital gains (taxable)
imicnet     Net Income (line 236)
imictot     Total Income (line 150)
imildivt    Dividend income from large (eligible)
corporations (taxable)
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imipnst      Taxable pension income (after splitting)
imisdivt     Dividend income from small corporations (taxable)
imitax       Taxable income
imiuccbc     Universal Child Care Benefit amount claimed
imminamt     Minimum Amount due to Federal Minimum Tax
improptx     Imputed property tax paid
imrentpd     Imputed rent paid
imuic        Employment Insurance contributions

OUTPUT VARIABLES:
imbpt        Basic provincial tax
imiotax      Ontario taxable income
imnptc       Non-refundable provincial tax credits
imocb        Ontario Child Benefit
imocbyng     Ontario Child Benefit amount for Child Care
Supplement dependents
imoccea      Ont. Child Care Exp. credit allowed (Family)
imoccext     Ont. Child Care Supplement one-time extra benefit
imondc       Ontario number of dependent children 18 or
younger
imonteht     Ontario Employers Heath Tax (Self-employed)
imoprtxc     Ontario Property Tax Credit
imopstc      Ont. Property and Sales Tax Credit
imoshptg     Ontario Senior Homeowners' Property Tax Grant
imostc       Ontario Sales Tax Credit
imosttb      Ontario Sales Tax Transition Benefit
imotxdv      Ontario Taxpayer Dividend
imotxtgr     Ontario Textbook and Technology Grant
impatxc      Prov Age amount tax credit
impatxcr     Prov total tax credits applied
impbtc       Prov Basic amount
impcgtc      Prov Caregiver Tax Credit Level
impcgtcp     Provincial Dependent Caregiver Tax Credit Amount
impchrtc     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
imphp        Provincial Health Premium
impintsl     Provincial interest on student loans tax credit
implvctc     Provincial labour-sponsored funds tax credit
impmartc     Prov Married and Equivalent to Married tax credit
impmeda      Prov Medical expenses allowed (computed)
impmedtc     Prov Medical Expenses tax credit
impminco     Prov Minimum tax carryover
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impothpe      Provincial infirm dependents 18 or older tax
credit
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 transferred
imptutxc      Prov Tuition tax credit
impuictc      Prov EI contributions tax credit
imtxp         Provincial income tax payable
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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 (PPTF) 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 (PPNTCR) 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)
impmartc	Married and equivalent-to-married tax credit	(PMXM, PMXMT, PEMXM, PEMXMT)
impcgtc	Caregiver tax credit	(PCGTC, PCGTCFLG)
impchrtc	Charitable donations	(PCHATL1, PCHATR1, PCHATR2)
impcpptc	CPP/QPP contribution	(PCPPCTXC)
impdistc	Disability tax credit	(PMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(PODISTC)
impdtxc	Dividend tax credit	(PDTCR, PDTCRLC)
impedtxc	Education tax credit	(PEDXPM, PEDXPMPT, PMAXET)

impmedtc	Medical expenses tax credit	(PMEDEXFLG, PMEDANF, PMEDALL)
imppentc	Pension income tax credit	(PYPNDL)
imptutxc	Tuition Tax credit	(PTUITFLG, PMAXET)
impuictc	EI contributions tax credit	(PEICTXC)
impintsl	Interest of Student Loans tax credit	(PINTSLFLG)
impminco	Minimum tax carryover	(PAMTOPT, PAMTPCTF, PAMTTX, PAMTPCTM)

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).

Low Income Tax Reduction

Announced in the 2000 budget, the maximum Low Income Tax Reduction is equal to the sum of a base amount (PTRBAS), an amount for a spouse or equivalent-to-spouse (PTRSP), and an amount for each dependent child (PTRKID). It is then reduced for net income over PTRTD at a rate of PTRRR. The reduction cannot be more than taxes owing. The reduction is calculated at a family level but can be split amongst spouses.

Young Child Tax Credit

The parameter PYCTCAPM represents the amount per month to be allocated per child under 6 years of age for the P.E.I. young child tax credit. The spouse with the lower net income (imicnet) may claim this non-refundable tax credit for each child under 6. This amount per month is multiplied by the number of months in the year, the phase in rate for the tax credit (PYCTCPI), the number of eligible children and the provincial non-refundable tax credit rate (PPNTCR). The value of the non-transferable credit is saved in impyctxc and is included in imptaxcr.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
PAMTOPT     P.E.I. alternative minimum tax option
PAMTPCTF    P.E.I. amt rate as pct of additional fed tax due
to minimum tax
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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
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
PCGTCFLG      P.E.I. Caregiver Tax Credit activation flag
PCGTCOPT      P.E.I. Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
PCGTCTD       P.E.I. Caregiver Tax Credit income turndown
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
PCPPCTXC      P.E.I. CPP Contribution Tax Credit activation
flag
PDTCR         P.E.I. dividend tax credit rate
PDTCRLC       P.E.I. dividend tax credit rate from large
(eligible) corporations
PEDXPM        P.E.I. Education Amount per month of full-time
studies
PEDXPMPT      P.E.I. Education Amount per month of part-time
studies
PEICTXC       P.E.I. EI Premium Tax Credit activation flag
PEMXM         P.E.I. equivalent to married amount
PEMXMT        P.E.I. equivalent to married turndown level
PINTSLFLG     P.E.I. Interest on Student Loans Tax Credit
activation flag
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
PMEDALL       P.E.I. Medical allowance maximum lower limit
PMEDANF       P.E.I. Medical allowance lower limit net income
fraction
PMEDEXFLG     P.E.I. Medical Expense Tax Credit activation flag
PMXM          P.E.I. married amount
PMXMT         P.E.I. married amount turndown level
PODISTC       P.E.I. Maximum infirm dependent 18 or older tax
credit
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
PTUITFLG     P.E.I. Tuition Tax Credit activation flag
PTXFLG       P.E.I. tax on taxable income activation flag
PYCTCAPM     P.E.I. Young Child Tax Credit Amount per Month
PYCTCPI      P.E.I. Young Child Tax Credit Phase in
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
idcgtc       Caregivers tax credit (database) (315)
iddisab      Disability status (age 16+)
iddisoth     Disability amount for dependants (318)
iddisslf     Disability amount for self (316)
ideducfm     Eligible full-time months of education
ideducpm     Eligible part-time months of education
ididiv       Dividend income (actual)
idinspo      Person's spouse [pointer]
idintstu     Interest paid on student loans (319)
idlabtxg     Gross Labour funds bought (413)
idmedgro     Medical expenses, gross (330)
idmincar     Minimum tax carryover (504)
idothpe      Amounts for Infirm Dependants (306)
```

```
idprvftc     Provincial foreign tax credit (Form T2036)
idprvpol     Provincial political contributions (565)
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)
imcppse      CPP contributions deduction for self-emp
imcqppc      CPP/QPP contributions
imdedfn      All deductions from net income
imdepni      Dependant's net income
imicnet      Net Income (line 236)
imildivt     Dividend income from large (eligible)
corporations (taxable)
imipnst      Taxable pension income (after splitting)
imisdivt     Dividend income from small corporations (taxable)
imitax       Taxable income
imiuccbc     Universal Child Care Benefit amount claimed
imminamt     Minimum Amount due to Federal Minimum Tax
imuic        Employment Insurance 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     Provincial Dependent Caregiver Tax Credit Amount
impchrtc     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
impintsl     Provincial interest on student loans tax credit
implvctc     Provincial labour-sponsored funds tax credit
impmartc     Prov Married and Equivalent to Married tax credit
impmeda      Prov Medical expenses allowed (computed)
```

```
impmedtc     Prov Medical Expenses tax credit
impminco     Prov Minimum tax carryover
impothpe     Provincial infirm dependents 18 or older tax
credit
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 EI contributions tax credit
impyctxc     Prov Young Child tax credit
imtxp        Provincial income tax payable
```

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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
```

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. Families who receive SA get their credit zeroed out. If QSTREXT is non-zero and the family is received the sales tax refund (or would have received it if they did not receive SA) then QSTREXT is added to the credit.

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.

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, union and professional dues are treated as a tax credit. The value of the tax credit is imqduetc.

Tuition as non-refundable tax credit

Starting in 1997, tuition costs are treated as a tax credit. The value of the tax credit is imqtuitc.

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 QFATD4KI is increased by QFATD4K 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 grossed up portion of dividends (imqidivt - ididiv), and

.   the allowable taxable portion the capital gains (QAMTCAPR).

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.

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 imqcppse.

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.

Refundable Tax Credit for Home Improvement and Renovation

The Quebec refundable tax credit for home improvement and renovation has been added for the 2009 taxation year. This program provides a credit equal to 20% of eligible renovation costs in excess of $7,500 and up to $20,000, and is assigned to the spouse with the higher taxable income.

Quebec Health Contribution

The Quebec Health Contribution starting in 2010 has been implemented. Adults pay the base amount of QHCAMT if their family net income is above the income threshold of QHCINCT, which varies by family type.

Solidarity Tax Credit

The Quebec Solidarity Tax Credit has been implemented. It replaces the tax credit for the QST (imqstr), the property tax refund (imqptr) and the tax credit for individuals living in a northern village (which is currently out of scope for the SPSD/M). For the SPSD/M, only the QST and the housing components will be implemented as the northern village component is out of scope. The QST component consists of a basic amount in regard to the individual (QSTCSBAS), plus an amount in regard of the individual's spouse (QSTCSSP) if a spouse exists, or an amount for individuals who live in a household without any other eligible individuals for the Quebec Solidarity Tax Credit (QSTCSLA). The housing component is granted to individuals and families who pay property taxes or rent. Married couples who live in a single family household may claim QSTCHSF. Individuals or families that who

contribute towards rent or property taxes in households with multiple contributing individuals may claim an amount of QSTCHMF that is split amongst all the contributing members. Unmarried individuals who are the sole contributors to rent or property taxes may claim the amount for living alone (QSTCHLA). The housing component also consists of an amount per dependent eligible for the refundable Child Assistance amount (under 18) of QSTCHC. Families and individuals with family net incomes in excess of the turndown threshold of QSTCTD will receive a reduced tax credit. The credit is reduced by QSTCRRF for incomes over the threshold for those eligible for both components, and by QSTCRRP if eligible for only the QST component. The value of the refundable credit is saved in imqstc and added to provincial refundable tax credits (imptc).

CROSS REFERENCE

Function	Description

INPUT PARAMETERS:

```
CCEAOAGE     CCEA Maximum eligible age for oldest child
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
PYINCP       Deflator to calculate income from 2 years prior
QAMTCAPR     Quebec Alternative Minimum Tax Capital inclusion
rate
QAMTDIV      Quebec Alternative Minimum Tax Taxable Dividend
Limit
QAMTDIVFLG   Quebec Alternative Minimum Tax - dividend level
triggers AMT flag
QAMTRITC     Quebec Alternative Minimum Tax Retirement Income
Credit Deduction
QAMTRPFLG    RRSP/RPP included in Quebec Alternative Minimum
Tax (1=include)
QAMTSTTC     Quebec Alternative Minimum Tax Spouse Transfer of
Tax Credits Flag
QAMTTX       QAMTX tax rate
QAMTX        QAMTX exemption level
QAMTXFLG     Quebec alternative minimum tax, QAMTX, activation
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
```

QAWPCR   Quebec Adapted Work Premium for Disabled Credit
Rate [family type]
QAWPEIPI   Quebec Adapted Work Premium for Disabled
Employment Income Phase In [family type]
QAWPFLAG   Quebec Adapted Work Premium for Disabled
refundable tax credit flag
QAWPMAX   Quebec Adapted Work Premium for Disabled Maximum
[family type]
QAWPRR   Quebec Adapted Work Premium for Disabled
Reduction Rate
QAWPTD   Quebec Adapted Work Premium for Disabled Income
Turndown [family type]
QAXM   Quebec age exemption/amount
QBXM   Quebec basic personal exemption/amount
QCAFLAG   Quebec Child Assistance refundable tax credit
flag
QCALRFLG   Quebec combined age, living alone retirement
credit
QCAMAX   Quebec Child Assistance Maximum [number of
children]
QCAMIN   Quebec Child Assistance Minimum [number of
children]
QCARR   Quebec Child Assistance Reduction Rate
QCASPMAX   Quebec Child Assistance Maximum Single Parent
additional credit
QCASPMIN   Quebec Child Assistance Minimum Single Parent
additional credit
QCATDC   Quebec Child Assistance Income Turndown for
couples
QCATDS   Quebec Child Assistance Income Turndown for
single parents
QCCEAOLD   Quebec CCEA old child limit
QCCEAYNG   Quebec CCEA young child limit
QCCEEIFLG   Quebec Refundable CCE EI Benefits in Earned
Income flag
QCCEEITST   Quebec Refundable CCE Earned Income Test flag
QCCEFLAG   Quebec Refundable Child Care Expense tax credit
flag
QCCEINCDF   Quebec Refundable CCE Income Definition flag
QCCETCR   Refundable CCE credit rate [net income, % cce
claimable]
QCMPOPT   Quebec Complementary Credit option
QDTCR   Quebec dividend tax credit rate
QDTCRLC   Quebec dividend tax credit rate from large
(eligible) corporations
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
QEMPDEDP      Quebec earned income deduction percent of income
QESSNEEDS     Quebec essential needs for transfer of parental
contributions
QEWAGE        Quebec eligible age for Tax Credit for
Experienced Worker
QEWEINC       Quebec Eligible earning amount for Tax Credit for
Experienced Worker
QEWERNM       Quebec Minimum eligible earnings for Tax Credit
for Experienced Worker
QEWFLAG       Quebec flag for Tax Credit for Experienced Worker
QEWTCR        Quebec tax credit rate for Tax Credit for
Experienced Worker
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
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
QHCAMT   Quebec Health Contribution base amount
QHCFLAG   Quebec Health Contribution activation flag
QHCINCT   Quebec Health Contribution Income Threshold
[family type]
QHPTC   Quebec Housing Parent Tax Credit
QHPTCFLG   Quebec Housing Parent Tax Credit activation flag
QHPTCOPT   Quebec Housing Parent Tax Credit Calculation
option
QHRTCFLAG   Quebec Tax Credit for Home Improvement and
Renovation activation flag
QHRTCMAX   Quebec Tax Credit for Home Improvement and
Renovation maximum eligible expenses
QHRTCMIN   Quebec Tax Credit for Home Improvement and
Renovation minimum eligible expenses
QHRTCR   Quebec Tax Credit for Home Improvement and
Renovation 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
QLAXOLDDEP   Quebec living alone amount if all dependents 18
or over
QLVCMAX   Maximum Quebec labour-sponsored funds tax credit
allowed
QLVCRT   Percent of Quebec labour-sponsored funds cost
allowed as credit
QMEDEXFLG   Quebec Medical Expense non-refundable Tax Credit
activation flag
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

```
QNORFAMI     Quebec Northern Deductions from Family Tax Credit
Income flag
QNTCR        Quebec nominal tax credit rate
QPCOPT       Quebec political contribution option
QPCTR        Quebec political contribution tax rates
QPSXM        Quebec post-secondary exemption/amount
QPTC         Quebec political contribution table [total
donations,donation allowed]
QPTCBEN      Maximum Quebec political tax credit allowed
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
QREPFAMI     Quebec repayment of UI/OAS benefits deduct from
income flag
QRNCGFLG     Quebec Natural Caregivers Tax Credit activation
flag
QRNCGMR      Quebec Natural Caregivers Tax Credit maximum
reduction
QRNCGOPT     Quebec Natural Caregivers Tax Credit option
(1=max, 2=model)
QRNCGTC      Quebec Natural Caregivers Tax Credit
QRNCGTCR     Quebec Natural Caregivers Tax Credit rate
QRNCGTD      Quebec Natural Caregivers Tax Credit income
turndown
QRTRFLAG     Quebec real estate rebate activation flag
QSFDED       Quebec Simplified Form - additional deductions
for net income calculation flag
QSFDISFLAG   Quebec Simplified Form Disability tax credit
inclusion flag
QSFMEDFLAG   Quebec Simplified Form medical expense tax credit
inclusion flag
QSFOPT       Quebec Simplified Form Option (1=general
2=simplified 3=optimized)
QSFTC        Quebec Simplified Form tax credit
QSFTXCR      Quebec Simplified Form - transfer unused credits
to spouse under either tax system
QSTCFLAG     Quebec Solidarity Tax Credit activation flag
QSTCHC       Quebec Solidarity Tax Credit housing component
child amount
QSTCHLA      Quebec Solidarity Tax Credit housing component
living alone amount
QSTCHMF      Quebec Solidarity Tax Credit housing component
multiple family amount
QSTCHSF      Quebec Solidarity Tax Credit housing component
single family amount
```

```
QSTCRRF      Quebec Solidarity Tax Credit reduction rate if
eligible for both QST and housing
QSTCRRP      Quebec Solidarity Tax Credit reduction rate if
eligible for only QST component
QSTCSBAS     Quebec Solidarity Tax Credit QST component base
amount
QSTCSLA      Quebec Solidarity Tax Credit QST component living
alone amount
QSTCSSP      Quebec Solidarity Tax Credit QST component spouse
amount
QSTCTD       Quebec Solidarity Tax Credit income turndown
threshold
QSTRBCRD     Quebec sales tax rebate base credit
QSTRCHILD    Quebec sales tax rebate children dependent credit
QSTREXT      Quebec sales tax rebate extra amount
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
QSTRMAGE     Quebec sales tax rebate minimum age flag
QSTRRR       Quebec sales tax rebate reduction rate
QSTSCA       Quebec Single Tax System Complementary Amount
QTPCFLG      Quebec transfer of recognized parental
contribution to education activation flag
QTRBE        Quebec Tax Reduction Breakeven
QTRP         Quebec tax Reduction proportion
QTUITRFFLG   Quebec flag to allow transfer of tuition tax
credit to parents
QTX          Quebec income tax table [taxable income,basic
provincial tax]
QWPCR        Quebec Work Premium Credit Rate [family type]
QWPEIPI      Quebec Work Premium Employment Income Phase In
[family type]
QWPEXPFLG    Quebec Work Premium employment deductions
application flag
QWPFLAG      Quebec Work Premium refundable tax credit flag
QWPMAX       Quebec Work Premium Maximum [family type]
QWPRR        Quebec Work Premium Reduction Rate
QWPSEINC     Quebec Work Premium self-employment income
concept flag
QWPTD        Quebec Work Premium Income Turndown [family type]
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]
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
fxhrtcpr     Home Renovation Tax Credit eligible expenses on
principal residence
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
hhnin        Number of individuals 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
idcgtc       Caregivers tax credit (database) (315)
idclergy     Clergy residential deduction
idcloss      Allowable other years capital loss (253)
iddisab      Disability status (age 16+)
ideducfm     Eligible full-time months of education
idefrh       Relationship to economic family head
idemplo      Employee home relocation loan dedn (248)
idexplor     Exploration and development expenses (224)
idicapg      Capital gains (actual)
ididiv       Dividend income (actual)
idiemp       Wages & salaries
idiloss      Business investment losses (217)
idinspo      Person's spouse [pointer]
idise        Self-employed income
idlabtxg     Gross Labour funds bought (413)
idnorth      Northern deductions (255)
idothpe      Amounts for Infirm Dependants (306)
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
idtuitn      Tuition fees (320)
imgistsa     Amount of GIST which goes into SA
imisa        Social assistance (or replacement program)
```

```
imitax      Taxable income
imiuib      Employment Insurance benefits
improptx    Imputed property tax paid
imqalexp    Quebec allowable employment expenses
imqatc      Quebec age tax credit
imqbtc      Quebec basic tax credit
imqcapgt    Quebec taxable capital gains
imqcchc     Quebec child's non-refundable credit
imqchatc    Quebec allowable charitable donations tax credit
imqcppse    Quebec self-employ. QPP/CPP 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
imqintsl    Quebec student loan interest tax credit
imqipnst    Quebec taxable pension income (after splitting)
imqitax     Quebec taxable income
imqitot     Quebec total income
imqlatc     Quebec living alone tax credit
imqldivt    Quebec taxable dividends from large (eligible)
corporations
imqmeda     Quebec medical expenses allowed
imqmtc      Quebec married tax credit
imqndc      Quebec number of dependent children
imqpipcbn   Quebec parental insurance plan calendar year
benefits
imqqpiptc   Quebec parental insurance plan premium tax credit
for paid workers (Quebec)
imqqpsedd   Quebec parental insurance plan premium deduction
for self-employed (Quebec)
imqqpsetc   Quebec parental insurance plan premium tax credit
for self-employed (Quebec)
imqritc     Quebec retirement income tax credit
imqsdivt    Quebec taxable dividends from small corporations
imqsfflg    Quebec simplified tax form flag 0=general
1=simplified
imqstkdd    Quebec modelled Stock option deduction (249)
imqtuitc    Quebec Tuition Tax Credit
imquictc    Quebec EI contributions tax credit
imrentpd    Imputed rent paid
imrepay     Social Benefits Repayments
```

```
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
imqawrkpr     Quebec Adapted Work Premium for Disabled
refundable tax credit
imqbtax       Quebec tax before credits
imqca         Quebec Child Assistance refundable tax credit
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
imqctpc       Quebec child's transfer of recognized parental
contribution
imqdtxc       Quebec dividend tax credit
imqei         Quebec eligible income for tax reduction
imqewtc       Quebec tax credit for experienced workers
imqfatc       Quebec Family Allowance Tax Credit
imqfs         Quebec family situation (1-5)
imqftr        Quebec family tax reduction
imqhcont      Quebec health contribution amount
imqhptc       Quebec Home Parent Tax Credit level
imqhptcp      Quebec Home Parent Tax Credit potential level
imqhrtc       Quebec Home Renovation Tax Credit
imqidc        Quebec income of designated dependent child
imqittr       Quebec income tested tax reduction
imqmedrc      Quebec refundable tax credit for medical expenses
imqncgtc      Quebec Refundable Natural Caregivers Tax Credit
imqnctcp      Quebec Refundable Natural Caregivers Tax Credit
potential amount
imqptr        Quebec property tax refund
imqstc        Quebec Solidarity Tax Credit amount
imqstr        Quebec sales tax refund
imqtca        Quebec tax credits applied
```

```
imqtct       Quebec tax credits transferable
imqtctc      Quebec tax credits transferred from child
imqtcts      Quebec tax credits transferred from spouse
imqtottc     Quebec total tax credits
imqtpcn      Quebec number of children who transferred
parental contribution
imqtuitt     Quebec amount of tuition transferred to parents
imqwrkpr     Quebec Work Premium refundable tax credit
imtxp        Provincial income tax payable
```

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 tax credits for dependent children
– calculate and allocate the married tax credit
– calculate the living alone tax credit

Calculate and Allocate Dependent Children Tax Credit

If a spouse is present, the one with the higher Net Income (imqinet) receives the full amount of the tax credit for all dependent children (imqdctc).

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 adjusted net income.

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.

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:
QCAFLAG     Quebec Child Assistance refundable tax credit
flag
QCALRFLG    Quebec combined age, living alone retirement
credit
QDTCNCA1    Quebec Dependent Tax Credit Amount for first
dependent without child assistance
QDTCNCA2    Quebec Dependent Tax Credit Amount for other
dependents without child assistance
QDTCSPA     Quebec Dependent Tax Credit Single Parent Amount
(no child assistance)
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
QODISTC     Quebec infirm dependent amount (18 and over)
QPSXM       Quebec post-secondary exemption/amount
QPSXMINC    Quebec income ratio for post-secondary
exemption/amount
QREPFAMI    Quebec repayment of UI/OAS benefits deduct from
income flag
QTPCFLG     Quebec transfer of recognized parental
contribution to education activation 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+)
cfnkids      Number of children in census family
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
ideducfm     Eligible full-time months of education
idestat      Educational status
idothpe      Amounts for Infirm Dependants (306)
idrpp        Registered pension plan contributions (207)
idrrsp       RRSP calculated amount (208)
idschtp      School type
imqcppse     Quebec self-employ. QPP/CPP Cont. deduction
imqinet      Quebec net income
imqitot      Quebec total income
imrepay      Social Benefits Repayments

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.

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 (imqidivt) 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
idise:	Self-employment Earnings, optionally scaled by the parameter FACTISENF
idiinvnd:	Interest Income
imqidivt:	Modeled Taxable Amount of Dividends for Quebec
idicqp:	CPP/QPP Benefits Received
idipens:	Pension Income
imqpentr:	Quebec Pension Income Transferred from spouse
iditrrsp:	Taxable RRSP withdrawals
iditoth:	Other Taxable Income
imiuib:	Modeled Unemployment Insurance Benefits Received
imqpipcbn:	Quebec Parental Insurance Plan calendar year benefits
imiotg:	Modeled New Taxable Demogrants
imioas:	Modeled OAS Benefits
imqcapgt:	Modeled Taxable Capital Gains and Losses for Quebec

idialimo   Alimony Income Received
imisa   Social assistance benefits
imgistsa   Amount of GIST which goes into SA
idiworkc   Worker's compensation
imigis   GIS benefits
imispa   Spouse's allowance

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 (imqdedft) is calculated as the sum of:

imqempdd: Quebec earned income deduction for workers
idrpp: Registered Pension Plan Contributions
idrrsp: Registered Retirement Savings Plan Contributions
imqpentrd: Quebec Pension income deduction from transfer to spouse
imqiloss: Allowable Business Investment Loss
idmovexp: Moving Expenses
iddalimo: Alimony Paid
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)
imqalexp: optionally, Other Allowable Employment Expenses
idclergy   optionally, Clergy residence deduction
idexplor: Exploration and development expenses
idnorth: optionally, Northern Deductions
imqcppse: optionally, Quebec self-employ. QPP/CPP Cont. deduction
imrepay: optionally, Social Benefits Repayment
imqqpsedd: Quebec parental insurance plan premium deduction for self-employed

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
QCMPOPT     Quebec Complementary Credit option
QDGUR       Quebec dividend gross-up rate
QDGURLC     Quebec dividend gross-up rate from large
(eligible) corporations
QDTCR       Quebec dividend tax credit rate
QDTCRLC     Quebec dividend tax credit rate from large
(eligible) corporations
QEEXPDED    Quebec employment expenses deduction application
flag
QEMPDEDM    Quebec earned income deduction for workers
maximum
QEMPDEDP    Quebec earned income deduction percent of income
QHSCL1      Quebec Health Services Fund Contribution Lower
Level Income Threshold
QHSCL2      Quebec Health Services Fund Contribution Upper
Level Income Threshold
QHSCM1      Quebec Health Services Fund Contribution Lower
Level Maximum
QHSCM2      Quebec Health Services Fund Contribution Upper
Level Maximum
QHSCR1      Quebec Health Services Fund Contribution Lower
Level Inclusion Rate
QHSCR2      Quebec Health Services Fund Contribution Upper
Level Inclusion Rate
QINTSLTC    Quebec student loan interest tax credit 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
QNORTHDED   Quebec northern deductions - 0=for taxable
income, 1=for net income
QNTCR       Quebec nominal tax credit rate
```

```
QPIPF        Quebec parental insurance plan contribution rate
for paid workers
QPIPFLAG     Quebec parental insurance plan activation flag
QPIPFSE      Quebec parental insurance plan contribution rate
for self-employed
QREPFAMI     Quebec repayment of UI/OAS benefits deduct from
income flag
QREPNETFG    Social program repayments reduce Quebec net
income flag
QRNCGFLG     Quebec Natural Caregivers Tax Credit activation
flag
QSFDED       Quebec Simplified Form - additional deductions
for net income calculation flag
QSFDISFLAG   Quebec Simplified Form Disability tax credit
inclusion flag
QSFMEDFLAG   Quebec Simplified Form medical expense 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
QSPLTPNSFLAG   Quebec flag to split pension income
QTX          Quebec income tax table [taxable income,basic
provincial tax]
WSCF         CPP/QPP contribution rate on employment earnings
YMPE         CPP/QPP maximum pensionable earnings

INPUT VARIABLES:
cfin         First person in census family [pointer]
cfnpers      Number of persons in census family
cfspoflg     Census family contains married couple
hhncf        Number of census families in household
hhnin        Number of individuals in household
idalexp      Other allowable employment expenses (229)
idcapgex     Capital gains exemptions (254)
idcarry      Carrying charges (221)
idcfrh       Relationship to census family head
idclergy     Clergy residential deduction
idcloss      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)
idialimo     Alimony income received
```

```
idicapg      Capital gains (actual)
idicqp       CPP/QPP income (114)
ididiv       Dividend income (actual)
ididive      Amount of eligible dividend income
ididivie     Amount of other than eligible dividend income
idiemp       Wages & salaries
idiinvnd     Interest and other investment income
idiloss      Business investment losses (217)
idinspo      Person's spouse [pointer]
idintstu     Interest paid on student loans (319)
idipens      Pension income (115)
idise        Self-employed income
iditoth      Other taxable income (130)
iditrrsp     Taxable RRSP withdrawals
idiworkc     Workers compensation benefits
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)
imcqppc      CPP/QPP contributions
imgistsa     Amount of GIST which goes into SA
imicnet      Net Income (line 236)
imictot      Total Income (line 150)
imigis       GIS benefits
imioas       OAS benefits
imiotg       Other taxable demogrants
imisa        Social assistance (or replacement program)
imispa       Spouse's allowance
imiuib       Employment Insurance benefits
imqpipcbn    Quebec parental insurance plan calendar year
benefits
imqpipp      Quebec parental insurance plan premiums for paid
workers
imqpippse    Quebec parental insurance plan premiums for self-
employed
imqpnsph     Quebec pension income split for head
imqpnsps     Quebec pension income split for spouse
imrepay      Social Benefits Repayments
imuibr       EI benefit recovery
imuic        Employment Insurance 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
imqdedft    Quebec deductions from total income
imqduetc    Quebec Dues Tax Credit
imqempdd    Quebec earned income deduction for workers
imqidivt    Quebec taxable dividends
imqiloss    Quebec Modelled Business investment losses (234)
imqinet     Quebec net income
imqintsl    Quebec student loan interest tax credit
imqipnst    Quebec taxable pension income (after splitting)
imqitot     Quebec total income
imqldivt    Quebec taxable dividends from large (eligible)
corporations
imqpentr    Quebec Pension income transferred from spouse
imqpentrd   Quebec Pension income deduction from transfer to
spouse
imqqpiptc   Quebec parental insurance plan premium tax credit
for paid workers (Quebec)
imqqpsedd   Quebec parental insurance plan premium deduction
for self-employed (Quebec)
imqqpsetc   Quebec parental insurance plan premium tax credit
for self-employed (Quebec)
imqsdivt    Quebec taxable dividends from small corporations
imqsfflg    Quebec simplified tax form flag 0=general
1=simplified
imqtuitc    Quebec Tuition Tax Credit
imquictc    Quebec EI 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. When the general tax form is used (imqsfflg), all deductions are calculated and allowed (imqdedfn). These deductions are calculated and subtracted from Net Income (imqinet) to derive a tentative value for Taxable Income (imqitax). When the simplified form is used, depending on the year, only certain deductions are allowed.

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.

The function txqitax also calculates tax credits which are applied in txqcalc.

Calculate Deductions from Net Income

The variable imqdedfn stores the value of All Deductions from Net Income. It is calculated as the sum of:

idcloss   /* allowable other years capital loss   */
idnclos   /* allowable prior years non-capital loss */
idemplo   /* home relocation loan deduction include in other deductions */
idpartlo   /* Limited partnership losses */
imqstkdd   /* stock option deduction as part of other deduction */
idnorth   /* Northern deduction used as designated remote area if QNORTHDED is set to 0 */
imisa   /* Social assistance or replacement program if QSADED is set to 1 */
imgistsa   /* Amount of GIST which goes into SA if QSADED is set to 1 */
imigis   /* Guaranteed income supplement benefits */
imispa   /* Spouse's allowance */
idiworkc   /* Worker's Compensation Benefits */
imqcapgx   /* Quebec modelled capital gains deduction */

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, or the Société de placements dans l'entreprise québecoise Deduction.

Medical exemption calculation

Starting in 1997, the calculation of the medical exemption is transferred to txqhstr and the exemption is based on net family income. 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. 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.

Quebec Health Services Fund Contribution

It is calculated when QHSCFLAG is set to 1.

Individuals with eligible income less than QHSCL1 are not required to pay the Quebec Health Services Fund contribution. For incomes greater than QHSCL2, the contribution is calculated as follows:

((income less QHSCL2) * QHSCR2) + QHSCM1, not to exceed the maximum contribution value of QHSCM2.

For incomes between QHSCL1 and QHSCL2, the contribution is calculated as follows:

-    ((income less QHSCL1) * QHSCR1), up to the lower level maximum of QHSCM1.

The net income used to lookup an individual's contribution is defined as:

imqitot	Total Income
less	
idiemp	Wages and salaries
idialimo	Alimony Received
imqidivt - ididiv	Grossed up portion of dividends
imioas	Optional exemption of OAS benefits
imuibr	UI Repayments
iddalimo	Alimony Paid
idcarry	Carrying charges
imqiloss	Allowable investment losses
imqalexp * !QEEXPDED	Allowable employment expenses
imqcppse * QITSFSEW	CPP/QPP contributions on self-employment
imisa	Social Assistance (if included in total income)
imgistsa	Amount of GIST included in sa (if included in total income)
imigis	GIS Benefits (if included in total income)
imispa	Spouse's Allowance Benefits (if included in total income)
idiworkc	Worker's Compensation Benefits (if included in total income)

Under the simplified tax form system, imuibr is deducted only when QHSSFUIR is set to 1, imqiloss is deducted only when QHSSFLSS is set to 1, idcarry is deducted only when QHSSFCAR is set to 1 and iddalimo is deducted only when QHSSFALM is set to 1. The value of the contribution is imqhsfc.

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
QBXM         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
QHSCFLAG     Quebec Health Services Fund Contribution
calculation flag
QHSCL1       Quebec Health Services Fund Contribution Lower
Level Income Threshold
QHSCL2       Quebec Health Services Fund Contribution Upper
Level Income Threshold
QHSCM1       Quebec Health Services Fund Contribution Lower
Level Maximum
QHSCM2       Quebec Health Services Fund Contribution Upper
Level Maximum
QHSCR1       Quebec Health Services Fund Contribution Lower
Level Inclusion Rate
QHSCR2       Quebec Health Services Fund Contribution Upper
Level Inclusion Rate
QHSSFALM     Quebec Health Services Fund Contrib. Alimony Paid
Deduction flag
QHSSFCAR     Quebec Health Services Fund Contrib. Carrying
Charges Deduction flag
QHSSFLSS     Quebec Health Services Fund Contrib. Allowable
Losses Deduction flag
QHSSFUIR     Quebec Health Services Fund Contrib. UI/EI
Repayment Deduction flag
QITSFSEW     Quebec improved tax system for self-employed
worker activation flag
QMAXDX       Quebec maximum disability deduction/amount
QMEDANF      Quebec medical allowance lower limit net income
fraction
QMEDINC      Income definition for Que. refundable tax credit
for medical expenses
```

```
QNORTHDED    Quebec northern deductions - 0=for taxable
income, 1=for net income
QNTCR        Quebec nominal tax credit rate
QREPFAMI     Quebec repayment of UI/OAS benefits deduct from
income flag
QRNCGFLG     Quebec Natural Caregivers Tax Credit activation
flag
QSADED       Quebec deduction of social assistance benefits
from net 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
idcapgex     Capital gains exemptions (254)
idcarry      Carrying charges (221)
idcfrh       Relationship to census family head
idcharit     Charitable donations
idclergy     Clergy residential deduction
idcloss      Allowable other years capital loss (253)
iddalimo     Alimony paid (220)
iddisoth     Disability amount for dependants (318)
iddisslf     Disability amount for self (316)
idemplo      Employee home relocation loan dedn (248)
idgifts      Gifts to Canada/provinces/culture (342)
idialimo     Alimony income received
ididiv       Dividend income (actual)
idiemp       Wages & salaries
idinspo      Person's spouse [pointer]
idiworkc     Workers compensation benefits
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)
imgistsa     Amount of GIST which goes into SA
imigis       GIS benefits
imioas       OAS benefits
imisa        Social assistance (or replacement program)
imispa       Spouse's allowance
```

```
imiuccbr     Universal Child Care Benefit amount received
imqalexp     Quebec allowable employment expenses
imqcapgt     Quebec taxable capital gains
imqcppse     Quebec self-employ. QPP/CPP Cont. deduction
imqidivt     Quebec taxable dividends
imqiloss     Quebec Modelled Business investment losses (234)
imqinet      Quebec net income
imqipnst     Quebec taxable pension income (after splitting)
imqitot      Quebec total income
imqqpsedd    Quebec parental insurance plan premium deduction
for self-employed (Quebec)
imqsfflg     Quebec simplified tax form flag 0=general
1=simplified
imrepay      Social Benefits Repayments
imuibr       EI benefit recovery

OUTPUT VARIABLES:
imqatc       Quebec age tax credit
imqbtc       Quebec basic tax credit
imqcapgx     Quebec modelled capital gains deduction (254)
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).

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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 (SPNTCR) 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)
impmartc	Married and equivalent-to-married tax credit	(SMXM, SMXMT, SEMXM, SEMXMT)
impcgtc	Caregiver tax credit	(SCGTC, SCGTCFLG)
impchrtc	Charitable donations	(SCHATL1, SCHATR1, SCHATR2)
impcpptc	CPP/QPP contribution	(SCPPCTXC)
impdistc	Disability tax credit	(SMAXDX)
impothpe	Infirm dependents 18 or older tax credit	(SODISTC)
impdtxc	Dividend tax credit	(SDTCR, SDTCRLC)
impedtxc	Education tax credit	(SEDXPM, SEDXPMPT, SMAXET)
impmedtc	Medical expenses tax credit	(SMEDEXFLG, SMEDANF, SMEDALL)
imppentc	Pension income tax credit	(SYPNDL)
imptutxc	Tuition Tax credit	(STUITFLG, SMAXET)
impuictc	EI contributions tax credit	(SEICTXC)
impintsl	Interest on Student Loans tax credit	(SINTSLFLG)
imsctxc	Saskatchewan Non-refundable child tax credit	(SCNTC)

imssstxc	Saskatchewan senior supplement tax credit	(SSSTC)
impminco	Minimum tax carryover	(SAMTOPT, SAMTPCTF, SAMTTX, SAMTPCTM)

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 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).

Saskatchewan Child Benefit

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.

Saskatchewan Sales Tax Credit

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.

Saskatchewan Low Income Tax Credit

Program Description

The Saskatchewan Low Income Tax Credit was introduced in July 2008, replacing the Saskatchewan Sales Tax Credit. The Saskatchewan Low Income Tax Credit (imslitc) will consist of an adult component and a child component. This credit will be fully refundable and is assigned to the spouse with the higher income.

SPSM Implementation

The adult component of the Saskatchewan Low Income Tax Credit (SLITCBAS) will be granted to the first adult in the couple, and SLITCSP will be granted to the spouse. In the case of single parent families, SLITCBAS will be granted to the single parent and SLITCSP will be granted to the first child. The child component of the Saskatchewan Low Income Tax Credit will provide an additional SLITCKID per child, up to the maximum number of eligible children, SLITCNKID. In the case of single parent families, the maximum allowable children will be reduced by 1 if a child has been granted the adult amount.

The maximum credit is then reduced at a rate of SLITCRR as family net income rises over SLITCTD.

The value of the Saskatchewan Low Income Tax Credit is also added to provincial refundable credits (imptc).

Saskatchewan Home Heating Assistance Rebate

In 2001, persons will receive a direct cash rebate (impheatr) from the Saskatchewan government for assistance with heating expenses. 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 SHEATFAM and others receive SHEATSNG.

CROSS REFERENCE

Function   **Description**

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INPUT PARAMETERS:
CTCINC      Family income scaling factor
FCBENCAL    Calculate child benefits for calendar year flag
GSTCYFLG    GST credit calendar year calculation activation
flag
HEATSNG     Federal relief for heating expenses for singles
PYINC       Deflator to calculate previous year income
PYINCP      Deflator to calculate income from 2 years prior
SAMTOPT     Sask. alternative minimum tax option
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
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
SCB1P       Sask Child Benefit max for 1st child for 1st half
of year
SCB2        Sask Child Benefit max for 2nd child
SCB2P       Sask Child Benefit max for 2nd child for 1st half
of year
SCB3        Sask Child Benefit max for 3rd and additional
child
SCB3P       Sask Child Benefit max for 3rd and additional
child for 1st half of year
SCBFLG      Sask Child Benefit activation flag
SCBRR1      Sask Child Benefit 1st reduction rate [number of
kids]
SCBRR1P     Sask Child Benefit 1st reduction rate [number of
kids] for 1st half of year
SCBRR2      Sask Child Benefit 2nd reduction rate [number of
kids]
SCBRR2P     Sask Child Benefit 2nd reduction rate [number of
kids] for 1st half of year
SCBSPA      Sask Child Benefit Single Parent Amount
SCBSPAP     Sask Child Benefit Single Parent Amount for 1st
half of year
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SCBTD1        Sask Child Benefit 1st turndown
SCBTD1P       Sask Child Benefit 1st turndown for 1st half of
year
SCBTD2        Sask Child Benefit 2nd turndown
SCBTD2P       Sask Child Benefit 2nd turndown for 1st half of
year
SCGTC         Sask. Caregiver Tax Credit
SCGTCFLG      Sask. Caregiver Tax Credit activation flag
SCGTCOPT      Sask. Caregiver Tax Credit Option (1=max,
2=greenbook, 3=model)
SCGTCTD       Sask. Caregiver Tax Credit income turndown
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
SCPPCTXC      Sask. CPP Contribution Tax Credit activation flag
SDSF          Saskatchewan provincial deficit surtax fraction
SDSRA         Saskatchewan deficit surtax reduction rate
SDTCR         Sask. dividend tax credit rate
SDTCRLC       Sask. dividend tax credit rate from large
(eligible) corporations
SEDXPM        Sask. Education Amount per month of full-time
studies
SEDXPMPT      Sask. Education Amount per month of part-time
studies
SEICTXC       Sask. EI Premium Tax Credit activation flag
SEMXM         Sask. equivalent to married amount
SEMXMT        Sask. equivalent to married turndown level
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
SINTSLFLG     Sask. Interest on Student Loans Tax Credit
activation flag
SLITCBAS      Sask. low Income Tax Credit base amount
SLITCBASP     Sask. low Income Tax Credit base amount for 1st
half of year
SLITCFLAG     Sask. Low Income Tax Credit activation flag
SLITCKID      Sask. low Income Tax Credit child amount
SLITCKIDP     Sask. low Income Tax Credit child amount for 1st
half of year
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SLITCNKID     Sask. low Income Tax Credit Maximum Number of
Children
SLITCNKIDP    Sask. low Income Tax Credit Maximum Number of
Children for 1st half of year
SLITCRR       Sask. low Income Tax Credit reduction rate
SLITCRRP      Sask. low Income Tax Credit reduction rate for
1st half of year
SLITCSP       Sask. low Income Tax Credit spousal amount
SLITCSPP      Sask. low Income Tax Credit spousal amount for
1st half of year
SLITCTD       Sask. low Income Tax Credit turndown
SLITCTDP      Sask. low Income Tax Credit turndown for 1st half
of year
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
SMEDALL       Sask. Medical allowance maximum lower limit
SMEDANF       Sask. Medical allowance lower limit net income
fraction
SMEDEXFLG     Sask. Medical Expense Tax Credit activation flag
SMXM          Sask. married amount
SMXMT         Sask. married amount turndown level
SODISTC       Sask. Maximum infirm dependent 18 or older tax
credit
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
SSTC1KIDTDP   Sask. sales tax credit child amount turndown if
only 1 child for 1st half of year
SSTC2KIDTD    Sask. sales tax credit child amount turndown if
more than 1 child
SSTC2KIDTDP   Sask. sales tax credit child amount turndown if
more than 1 child for 1st half of year
```

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SSTCBAS       Sask. sales tax credit base amount
SSTCBASP      Sask. sales tax credit base amount for 1st half
of year
SSTCBASPIR    Sask. sales tax credit base amount phase in rate
SSTCBASPIRP   Sask. sales tax credit base amount phase in rate
for 1st half of year
SSTCBASTD     Sask. sales tax credit base amount turndown
SSTCBASTDP    Sask. sales tax credit base amount turndown for
1st half of year
SSTCFLAG      Sask. sales tax credit activation flag
SSTCKID       Sask. sales tax credit child amount
SSTCKIDP      Sask. sales tax credit child amount for 1st half
of year
SSTCPI        Sask. sales tax credit phase in
SSTCPI1P      Sask. sales tax credit phase in for 1st half of
year
SSTCPI2P      Sask. sales tax credit phase in for 2nd half of
year
SSTCRR        Sask. sales tax credit reduction rate
SSTCRRP       Sask. sales tax credit reduction rate for 1st
half of year
SSTCSP        Sask. sales tax credit spousal amount
SSTCSPP       Sask. sales tax credit spousal amount for 1st
half of year
SSTCSPTD      Sask. sales tax credit spousal amount turndown
SSTCSPTDP     Sask. sales tax credit spousal amount turndown
for 1st half of year
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
STUITFLG      Sask. Tuition Tax Credit activation flag
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
```

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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
idcgtc       Caregivers tax credit (database) (315)
iddisab      Disability status (age 16+)
iddisoth     Disability amount for dependants (318)
iddisslf     Disability amount for self (316)
ideducfm     Eligible full-time months of education
ideducpm     Eligible part-time months of education
ididiv       Dividend income (actual)
idinspo      Person's spouse [pointer]
idintstu     Interest paid on student loans (319)
idiworkc     Workers compensation benefits
idlabtxg     Gross Labour funds bought (413)
idmedgro     Medical expenses, gross (330)
idmincar     Minimum tax carryover (504)
idothpe      Amounts for Infirm Dependants (306)
idprvftc     Provincial foreign tax credit (Form T2036)
idprvpol     Provincial political contributions (565)
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)
imcppse      CPP contributions deduction for self-emp
imcqppc      CPP/QPP contributions
imdedfn      All deductions from net income
imdepni      Dependant's net income
imheatrl     Federal relief for heating expenses
imicnet      Net Income (line 236)
imigis       GIS benefits
imildivt     Dividend income from large (eligible)
corporations (taxable)
imipnst      Taxable pension income (after splitting)
imisa        Social assistance (or replacement program)
imisdivt     Dividend income from small corporations (taxable)
```

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imispa        Spouse's allowance
imitax        Taxable income
imiuccbc      Universal Child Care Benefit amount claimed
immartxc      Married tax credit claimed
imminamt      Minimum Amount due to Federal Minimum Tax
imnfach       Number of under 18 children claimed for tax
reduction
imuic         Employment Insurance 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      Provincial Dependent Caregiver Tax Credit Amount
impchrtc      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
impintsl      Provincial interest on student loans tax credit
implvctc      Provincial labour-sponsored funds tax credit
impmartc      Prov Married and Equivalent to Married tax credit
impmeda       Prov Medical expenses allowed (computed)
impmedtc      Prov Medical Expenses tax credit
impminco      Prov Minimum tax carryover
impnit        Provincial net income tax
impothpe      Provincial infirm dependents 18 or older tax
credit
imppentc      Prov Pension Income tax credit
imppptc       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 transferred
imptutxc      Prov Tuition tax credit
```

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impuictc      Prov EI contributions tax credit
imscb         Saskatchewan Child Benefit
imsctxc       Saskatchewan Non-refundable child tax credit
imslitc       Saskatchewan refundable low income tax credit
imssstxc      Saskatchewan senior supplement tax credit
imsstc        Saskatchewan refundable sales tax credit
imtxp         Provincial income tax payable
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ui   Compute UI benefits

SUMMARY

This module calculates Employment Insurance (EI) and the Quebec Parental Insurance Plan (QPIP).

Employment Insurance (EI) benefits are calculated by a set of functions which mimic application of EI regulations to individual employment and claim histories. These histories are summaries of administrative data from a 10% sample of persons with some 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

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 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 EI regulations to each claim and each 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 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 EI algorithm has almost no behavioural 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. This 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, UIBEHAVOPT, UIBEHAVREGFLG, UIEXTWKS. Unless these parameters are modified, the assumption is that individuals would not increase their duration on claim, even if their entitlements were increased.

There are several sub-functions contained in the ui function. The first called is uiclm which calculates benefits for a single claim. It first performs a test for eligibility requirements based on claim type. uiclm next determines the weeks of entitlement in the Initial Phase. The ui function then calls uitrnclm which calculates training and other benefits (excluding regular, fishing, sickness, maternity, and parental which are calculated in uiclm). If a second claim is required uiclm and uitrnclm 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 EI claim in a household to uiclm. 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 uiclm when the second claim is processed. EI benefits for a calendar year are returned.

uiclm

The sub-function uiclm 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 EI regulations may produce important differences in first claim activity, thereby effectively changing the status of the second claim.

The uiclm function operates at a claim rather than an individual level. Eligibility tests are applied based on the minimum 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. It then changes the type of eligible claims, where appropriate.

Once a claim is established, uiclm then determines the weeks of entitlement in each of 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. The claim is represented by four pointers which identify:

Pointer #1 - 1st week of benefits (following waiting period)
Pointer #2 - 1st week of other benefits
Pointer #5 - 1st week of training benefits
Pointer #6 - week after end of training 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. uiclm then calls a utility function uisqz which ensures that interval between #1 and #2 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 uiclm 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), and the family supplement (see UIEIFSFLG).

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. The pointers ubp5 and ubp6 were created to signify the end of these benefit phases.

SPSM Limitations

The SPSM is a static first round model. It does not model behavioural responses to policy changes. The model is also constrained by the data which is available to it.

The database contains EI histories from an administrative database. This means that the histories on the SPSD are from people who received EI in the base year of the database. Therefore, modeling an expansion to the program, say by reducing the number of hours or weeks worked in order to become eligible for benefits, will not result in new claims as everyone on the database had already qualified for benefits under the more restricted rules. In order to model new claims, more people with claims are imputed in the base year than was necessary. So you can increase then number of people with EI by modifying the UITARGET and UIEITKP parameters. See the *User's Guide* for more information about how to modify those parameters.

The duration of modeled claims will not exceed observed durations, except when the following parameters are used: UIREGWKFCT, UITRNWKFCT, UIOTHWKFCT, UIEXTMATWKS, UIBEHAVOPT, UIBEHAVREGFLG, and UIEXTWKS. As people on the database may have found work after their claim, by expanding their claims internal inconsistencies may arise. However, users may modify the value of the above adjustment parameters to allow longer durations.

UIBEHAVOPT controls the adjustment of the duration of regular, sickness, maternity, parental and fishing claims so they may exceed observed durations on the database without exceeding the maximum duration. When UIBEHAVOPT is set to 1, then the length of the benefit can be lengthened by UIREGWKFCT times the number of unused weeks. When UIBEHAVOPT is set to 2, people who have exhausted their benefits on the database will have their claim duration extended by all unused weeks. And when UIBEHAVOPT is set to 3, people will take up to UIEXTWKS weeks more than seen on the database (without exceeding the maximum number of weeks allowed). When UIBEHAVREGFLG is turned on, the above adjustments only occur for regular claims (e.g. the duration of sickness, maternity, parental and fishing claims are no longer modified).

Further adjustments to the duration of EI claims can be made using UIEXTMATWKS which extends the duration of maternity benefits, UITRNWKFCT which extends the duration of training weeks, and UIOTHWKFCT which extends the duration of other types of benefits.

Quebec Parental Insurance Plan

The Quebec Parental Insurance Plan (QPIP) began in 2006. This plan provides for payment of financial benefits to all eligible workers who take maternity, paternity or parental leave. It replaces the maternity and parental benefits offered under the Employment Insurance program for people in Quebec. It is based on the employment status prior to having the child.

To be eligible for QPIP benefits, one must be a parent of a child born after January 1, 2006 and be paid worker or a self-employed with an insurable income of at least QPIPEMIN. Parents who are eligible for the QPIP can choose between the basic and special plan (idqptype). They may decide on the number of weeks for which they will receive benefits

and the rate of their insurable income. In the SPSM, the following QPIP benefits are available – maternity (paid exclusively to the mother), paternity (paid exclusively to the father) and parental (payable to either parent).

When QPIPMODELFLG is turned off, QPIP benefits are not modelled but the value from the database (idiqpip) is used and is saved under imqpipcbn.

When QPIPMODELFLG is turned on, the amount of QPIP is calculated using the rules set out below. QPIP benefits start in the week idqpstrt. The first type of benefit received (maternity, paternity or parental) is idqpfrst. The total amount of weeks of QPIP a person will received in the SPSM is limited by the maximum available given the rules seen below, and the number of weeks of QPIP a person received in the database (idqpweek). The weekly amount of benefit is calculated using the weekly earnings prior to claim (idqpern) and the rate which depends on the rules below.

Basic Plan:

Under the basic plan, the maximum number of maternity weeks is QPIPBMTW payable at a rate of QPIPBMTR, and the maximum number of paternity weeks is QPIPBPTW payable at a rate of QPIPBPTR. Parental benefits are split into two phases under the basic plan. In the first phase, the maximum number of parental weeks is QPIPBPRW1 payable at a rate of QPIPBPRR1 and in the second phase, the maximum number of parental weeks is QPIPBPRW2 payable at a rate of QPIPBPRR2.

Special Plan:

Under the special plan, the maximum number of maternity weeks is QPIPSMTW payable at a rate of QPIPSMTR, and the maximum number of paternity weeks is QPIPSPTW payable at a rate of QPIPSPTR. The maximum number of parental weeks is QPIPSPRW payable at a rate of QPIPSPRR.

Low income supplement:

This supplement provides a weekly top up (not to exceed QPIPSFR of average weekly earnings) based on a look up table QPIPSBN that allocates a weekly amount based on net income. The net income used is previous year's (using PYINC) for claims starting in the last half of the year; and net income from 2 years prior (using PYINCP) for claims starting in the first half of the year. The weekly amount is then assigned to the QPIP recipient for each eligible week of QPIP benefits.

QPIP benefits collected in the calendar year is held in the variable imqpipcbn, while the total amounts of QPIP benefits collected for the period of leave is represented in imqpiptbn. As well, the total number of weeks of QPIP benefits collected in the calendar year is contained in the variable imqpipcwk and the total weeks collected for the period of leave is held in the variable imqpiptwk.

Benefits and weeks by type (maternity, paternity or parental) are also captured.

CROSS REFERENCE

Function   **Description**

```
INPUT PARAMETERS:
PYINC       Deflator to calculate previous year income
PYINCP      Deflator to calculate income from 2 years prior
QPIPBMTR    Quebec parental insurance plan maternity weeks
benefit rate - basic plan
QPIPBMTW    Quebec parental insurance plan maximum maternity
weeks - basic plan
QPIPBPRR1   Quebec parental insurance plan parental initial
weeks benefit rate - basic plan
QPIPBPRR2   Quebec parental insurance plan parental
additional weeks benefit rate - basic plan
QPIPBPRW1   Quebec parental insurance plan maximum parental
initial weeks - basic plan
QPIPBPRW2   Quebec parental insurance plan maximum parental
additional weeks - basic plan
QPIPBPTR    Quebec parental insurance plan paternity benefit
rate - basic plan
QPIPBPTW    Quebec parental insurance plan maximum paternity
weeks - basic plan
QPIPEMIN    Quebec parental insurance plan minimum insurable
earnings
QPIPFLAG    Quebec parental insurance plan activation flag
QPIPMODELFLG  Quebec parental insurance plan model flag
QPIPSBN     Quebec parental insurance plan low income
supplement table [net income, weekly benefit]
QPIPSFR     Quebec parental insurance plan supplement
fraction of weekly earnings
QPIPSMTR    Quebec parental insurance plan maternity benefit
rate - special plan
QPIPSMTW    Quebec parental insurance plan maximum maternity
weeks - special plan
QPIPSPRR    Quebec parental insurance plan parental benefit
rate - special plan
QPIPSPRW    Quebec parental insurance plan maximum parental
weeks - special plan
QPIPSPTR    Quebec parental insurance plan paternity benefit
rate - special plan
```

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QPIPSPTW      Quebec parental insurance plan maximum paternity
weeks - special plan
TARGETYEAR    Year of analysis
UIBASFLAG     Basic phase calculation flag
UIBEHAVOPT    EI behavioural response option for benefit
duration
UIBEHAVREGFLG  Apply behavioural option only to regular
benefits
UIEFFFLAG     Observed effective weekly benefit rate flag
UIEIDIV       EI minimum divisor [uer][divisor]
UIEIDIVFLG    EI minimum divisor flag
UIEIFIFLG     EI intensity rule exemption for family supplement
receivers
UIEIFS1       Max fam supplement 1 child
UIEIFS2       Max fam supplement 2 children
UIEIFS3       Max fam supplement 3+ children
UIEIFSFLG     UI EI calculate family supplement flag
UIEIFSOPT     UI EI calculate family supplement option
UIEIFSRL      UI EI family supplement reduction level
UIEIFSRR      UI EI family supplement reduction rate
UIEIFSTOPUP   Max fam supplement top up for more than 3 kids
UIEIFSYNG     Max fam supplement top up for young children
UIEIMFSP      EI Maximum family supplement percent of earnings
UIEIMTYPFLG   Flag to model main benefit type
UIEINEREFLG   Flag to check for hours for new entrants and re-
entrants
UIEIRATE      Benefit rate under EI reform [Past Wks ben][Rate]
UIEITKP       EI takeup rate [index] : index based on prov,
sex, age, weeks
UIEIYRS       Number of years of previous EI benefits
calculated
UIENTFLAG     Basic entrance requirements flag
UIERNMAX      Maximum insurable earnings
UIEWK         Entitlement (weeks) [wkwrk, uer]
UIEXTMATWKS   Additional weeks for maternity - behavioural
response
UIEXTWKS      Additional weeks for any type of benefit -
behavioural response
UIFLAG        EI Activation flag
UIFSHERMIN    Min. earnings to qualify for fish. benefits
[unempl. rate]
UIMATHRMIN    Minimum hours to qualify for maternity benefits
UIMAXDUR      Maximum duration of an EI claim
UIMAXFSHWKS   Maximum number of weeks - fishing
UIMAXMATWKS   Maximum number of weeks - maternity
UIMAXPARWKS   Maximum number of weeks - parental
UIMAXSICWKS   Maximum number of weeks - sickness
```

```
UINEREHRMIN  Minimum hours to qualify for new entrant or re-
             entrant
UIOTHBNFCT   EI other benefits per week adjustment factor
UIOTHWKFCT   EI other benefits weeks adjustment factor
UIREGHRMIN   Min. hours to qualify for reg. benefits [unempl.
             rate]
UIREGWKFCT   EI regular benefit weeks adjustment factor
UISICHRMIN   Minimum hours to qualify for sickness benefits
UITARGET     EI target for the number of cases
UITRNBNFCT   EI training benefit per week adjustment factor
UITRNWKFCT   EI training benefit weeks adjustment factor
UIWAITWKS    Minimum waiting period all claims

INPUT VARIABLES:
cfineld      Eldest person in census family [pointer]
cfinspo      Spouse of eldest [pointer]
hdprov       Province
hhncf        Number of census families in household
hhnin        Number of individuals in household
hhnnf        Number of nuclear families in household
idage        Age
idcfrh       Relationship to census family head
idinspo      Person's spouse [pointer]
idiqpip      Original amount of QPIP
idnf         Person's nuclear family [pointer]
idqpern      Weekly earnings to qualify for QPIP
idqpfrst     First type of QPIP claim
idqpstrt     Week of QPIP start
idqptype     Type of QPIP claim
idqpweek     Weeks of QPIP
idrand       Random numbers [array]
idspoflg     Person has spouse
iduirank     Predicted ranked likelihood of getting EI
imfcben      Total Federal Child Benefits
imicnet      Net Income (line 236)
imiuccbc     Universal Child Care Benefit amount claimed
imqinet      Quebec net income
imqpipcwk    Quebec parental insurance plan calendar year
             weeks
imqpiptwk    Quebec parental insurance plan total weeks
imqptprw     Quebec parental insurance plan total parental
             weeks
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
ubp2         Week # of start of other type of EI
```

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ubp2c          Week # of start of other type of EI (windowed)
ubp2mx         Week # of start of other type of EI if not
limited to known weeks
ubp2mxc        Week # of start of other type of EI (windowed) if
not limited to known weeks
ucbtyp         Claim type
ucdivwk        Minimum divisor weeks
uceff          Effective weekly rate
ucern          Insurable weekly earnings
ucexhas        Exhaustee flag
ucgotpa        Received parental 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
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
ucwwork        Weeks of work prior to claim
ucy1           Weeks on EI in first year before claim
ucy2           Weeks on EI in second year prior to claim
ucy3           Weeks on EI in third year prior to claim
ucy4           Weeks on EI in fourth year prior to claim
ucy5           Weeks on EI in fifth year prior to claim

OUTPUT VARIABLES:
imiuib         Employment Insurance benefits
imqpcmtb       Quebec parental insurance plan calendar year
maternity benefits
imqpcmtw       Quebec parental insurance plan calendar year
maternity weeks
imqpcprb       Quebec parental insurance plan calendar year
parental benefits
imqpcprw       Quebec parental insurance plan calendar year
parental weeks
imqpcptb       Quebec parental insurance plan calendar year
paternity benefits
imqpcptw       Quebec parental insurance plan calendar year
paternity weeks
imqpcsb        Quebec parental insurance plan calendar year
supplemental benefits
```

```
imqpipcbn     Quebec parental insurance plan calendar year
benefits
imqpipcwk     Quebec parental insurance plan calendar year
weeks
imqpiptbn     Quebec parental insurance plan total benefits
imqpiptwk     Quebec parental insurance plan total weeks
imqptmtb      Quebec parental insurance plan total maternity
benefits
imqptmtw      Quebec parental insurance plan total maternity
weeks
imqptprb      Quebec parental insurance plan total parental
benefits
imqptprw      Quebec parental insurance plan total parental
weeks
imqptptb      Quebec parental insurance plan total paternity
benefits
imqptptw      Quebec parental insurance plan total paternity
weeks
imqptsb       Quebec parental insurance plan total supplemental
benefits
imuibr        EI benefit recovery
imuiydep      Number of dependents under 7 for family
supplement
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 other type of EI
ubp2c         Week # of start of other type of EI (windowed)
ubp2mx        Week # of start of other type of EI if not
limited to known weeks
ubp2mxc       Week # of start of other type of EI (windowed) if
not limited to known weeks
ubp5          Week # of last other type of EI
ubp5c         Week # of last other type of EI (windowed)
ubp5mx        Week # of last other type of EI if not limited to
known weeks
ubp5mxc       Week # of last other type of EI (windowed) if not
limited to known weeks
ubp6          Week # of last training payment
ubp6c         Week # of last training payment (windowed)
```

```
ubp6mx      Week # of last training payment if not limited to
known weeks
ubp6mxc     Week # of last training payment (windowed) if not
limited to known weeks
```

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vardef   Define structure member as an SPSM variable

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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.