

EUROMOD/SOUTHMOD Help Sheet

Functions

System functions (definitional functions)

= used to define general settings

DefConst	allows to define constants that can be used for policy parameters
Defll	to aggregate several variables into an income list (income lists are used like variables in the model)
DefOutput	define variables to be included in microdata output file
DefTu	define group(s) of household members to be considered in tax/benefit policies
DefVar	define intermediate (i.e. temporary) variables used in policy calculations
SetDefault	set alternative values for a variable that is used in the model but not included in all input datasets (or included in a policy that is switched off in the baseline but can be switched on by the user)
Uprate	defines indices to be used to uprate monetary variables in the input data to the level of the policy year

Policy functions

= used to implement tax-benefit policies

ArithOp	arithmetic calculator
BenCalc	usually used to calculate benefits, combines functionalities of Elig and ArithOp
Elig	implement conditions that can be used in the "who_must_be_elig" parameter of another function
SchedCalc	usually used for progressive taxes
Allocate	to allocate amounts to specified members of assessment units (not used in DEVMOD)
Min, Max	calculate the maximum and minimum, respectively, of a number of values (not used in DEVMOD)

Special functions

= advanced functions to perform complicated tasks, not used in DEVMOD

RandSeed	sets the starting point for generating a series of pseudorandom numbers to ensure that the random numbers are the same for each run of the model
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Parameters

Common parameters

= parameters that are not specific to one policy function

Footnotes	to further specify other parameters (limits, amounts, assessment units)
LowLim and UpLim	to define lower and upper limits
Output_var Output_add_var	implement conditions that can be used in the "who_must_be_elig" parameter of another function
Tax_Unit	defines the assessment unit of a function (individual, specific family unit, household)
Who_must_be_elig	calculation of the function is carried out if the eligibility condition is fulfilled

Content of parameters

Amount parameters	monetary amounts followed by their period (e.g. #m for monthly)
Query parameters	frequently used ready-made calculations (e.g. nPersInUnit for the number of members in a tax unit)
Formula parameters	operations (+, -, <min>) and operands (variables, income lists, queries)

SOUTHMOD terminology

Constant	Mostly used to define benefit amounts and tax rates. Such parameters change more frequently and storing them in a constant function makes it easier to update and follow changes.
Extension	Synonym of "Switch". Extensions allow the user to change specified default settings. E.g. changing from the severe poverty line to the moderate poverty line.
Income list	Saves the aggregate of several variables into a new variable (name of the new variable is il_*), used to define income concepts (e.g. disposable income).
LMA	Labour Market Adjustments. Such adjustments are necessary to take into account the COVID-specific shock on labour market incomes in most SOUTHMOD models. The policy randomly selects workers in different sectors and reduces their labour market incomes to zero.
Policy system	Policy year, referring to the tax and benefit policy rules as they were in place as of 1 st July of that specific year.
Run dialog	Selecting "Run SOUTHMOD" opens a box where the user can specify which systems to be run, which dataset to be used and which extensions should be changed.
Spine	List of policies simulated by a given model in the order listed in the model.
Statistics presenter	Tool in the EUROMOD software to analyse the output of the model.
Tax unit	Tax units group household members together, for example: each individual, two individuals to a couple, several household members to a family, or all household members to the household.
Uprating	To inflate monetary values in the input data to the year of the policy system. The default inflator (uprating factor) is the Consumer Price Index.

EUROMOD and SOUTHMOD models

EUROMOD	The software used to access DEVMOD and all SOUTHMOD models. In the European context, EUROMOD additionally refers to the tax-benefit models for all EU countries.
SOUTHMOD	A joint project between UNU-WIDER, SASPRI and the International Inequalities Institute at LSE, under which all SOUTHMOD models and DEVMOD have been developed. It also refers to a family of microsimulation models listed below. All models can be accessed through the EUROMOD software.
DEVMOD	SOUTHMOD training model
BOLMOD	Tax-benefit microsimulation model for Bolivia
COLMOD	Tax-benefit microsimulation model for Colombia
ECUAMOD	Tax-benefit microsimulation model for Ecuador
ETMOD	Tax-benefit microsimulation model for Ethiopia
GHAMOD	Tax-benefit microsimulation model for Ghana
MOZMOD	Tax-benefit microsimulation model for Mozambique
PERUMOD	Tax-benefit microsimulation model for Peru
RWAMOD	Tax-benefit microsimulation model for Rwanda
TAZMOD	Tax-benefit microsimulation model for Mainland Tanzania
UGAMOD	Tax-benefit microsimulation model for Uganda
VNMOD	Tax-benefit microsimulation model for Viet Nam
MicroZAMOD	Tax-benefit microsimulation model for Zambia
ZANMODD	Tax-benefit microsimulation model for Zanzibar

Documentation

Input dataset and variables	<ul style="list-style-type: none"> • Data Requirement Document (DRD) provided together with the input datasets of a given model. Includes information on how variables are coded. The DRD for DEVMOD is available on the course page. • VarConfig.xml in the model folder: includes all variable names, automatic labels and country-specific comments (EUROMOD software → Administrative Tools → Variables)
Policy rules	<ul style="list-style-type: none"> • Country Reports (CR): https://www.wider.unu.edu/publications?query=country%20report&f[0]=bib_project%3A236949&f[1]=biblio_type%3Areport • SOUTHMOD User Manual: https://www.wider.unu.edu/sites/default/files/SOUTHMOD_UserManual_20240307.pdf • Comment columns in the models
SOUTHMOD	<ul style="list-style-type: none"> • Project description: https://www.wider.unu.edu/project/southmod-simulating-tax-and-benefit-policies-development-phase-3 • Accessing the latest SOUTHMOD models and input datasets: https://www.wider.unu.edu/about/accessing-southmod-models • List of SOUTHMOD publications (Country Reports, journal articles, working papers: https://www.wider.unu.edu/about/southmod-publications)
Model concepts and functionalities	<ul style="list-style-type: none"> • EUROMOD manual (EUROMOD software → Help & Info → Help) • SOUTHMOD Modelling Conventions: https://www.wider.unu.edu/sites/default/files/SOUTHMOD_Modelling_Conventions_20240307.pdf

How to

Run DEVMOD or any SOUTHMOD model

1. Click on the *Countries* tab
2. Click on *Run SOUTHMOD* (green arrow) to open the run dialog
3. Select systems that should be run
4. If necessary, change an extension
 - Navigate to *View / Filter / Add-Ons* Tab
 - Select the extension that you want to change
 - Switch to on/off for the system that you want to run
5. Click on *Run* (green arrow)
6. In case you have not saved changes yet, a dialog box appears requesting you to save changes prior to running, select *Yes*
7. The output file and log file are saved in the output folder of the project

Run the Statistics Presenter

1. Click on the *Applications* tab
2. Click on *EUROMOD Statistics* and then *Statistics Presenter*
3. Select the template:
 - *Default* to analyse one system
 - *Baseline/Reform* to compare a reform system or multiple reform systems with the baseline
4. Select the output files that you would like to focus on (hold down the control button to select more than one system)
5. Select the concept that distributional statistics should be based on
 - *Consumption based* for most analysis concerning developing countries (*Latin American countries and Viet Nam are exceptions, where income-based distributional statistics should generally be used*)
 - *Post-fiscal consumption (consumption based net of indirect taxes)* for reforms that focus on indirect taxes (*Latin American countries and Viet Nam are exceptions, where 'income based net of indirect taxes' distributional statistics should generally be used*)
6. Start the generation of results
7. Results can be outputted to Excel by selecting the disc and saving the tables to the computer

Add a new system

1. Right-click on the system that you want to copy
2. Select "copy/paste system"
3. Name the new system (e.g. use the original name but add "_reform" or, if adding a new year, name the system according to the new year) and specify the year it relates to.
4. The original system is automatically defined as the base system. Differences between the original system and the reform system are automatically marked in yellow. To change the base system go to:
 - *Display* → *Conditional formatting* → *Change base system*

- Or select *Expand differences* if you want EUROMOD to show how the base and the reform system differ by automatically expanding all functions with differences.

Add a new policy

1. Add a new system for the reform scenario
2. Select where in the spine you want to add the new policy
3. Right-click on the policy after which (or before which) you want to add the new policy
4. Add *Policy After* (or *Policy Before*)
5. Choose which policy you want to add (e.g. *Benefit* for a new benefit)
6. Name the benefit using the variable name that you are going to specify for the new benefit plus "_dv" (e.g. bch_dv for a new child benefit in DEVMOD)

Add a new function

Method 1:

1. Right-click on the function after (or before) which you want to add the new function
2. Click on *Add Function After* (or *Add Function Before*)
3. Choose which function you want to add (e.g. *BenCalc* for an eligibility condition and a benefit formula); it should be noted that this sub-menu varies slightly depending on the policy that the new function will be a part of.

Method 2:

1. Alternatively, you can right-click the name of the policy in which you want to add the function
2. Click on *Add Function*
3. Choose which function you want to add; note that the selected function will be added as the very last function of the policy.

Add a new parameter to a function

1. Open the function where the parameter should be added
2. Right-click on the parameter after which you want to add a new parameter
3. Click on *Show Add Parameter Form*
4. Select which parameter or parameters you want to add (Remember "Placeholder" is used to add new constants or new elements to an income list"); to add one or more parameters to the function, select them by ticking the corresponding check boxes.
5. Click on *Add* with the green plus