

# SOUTHMOD

Exercises with solutions

# Ecuador

ECUAMOD v1.3

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*Note: The exercises and solutions presented below are applicable to ECUAMOD model v1.3.*

## Exercise 1: Execution of ECUAMOD and production of descriptive statistics

### Task:

1. Run EUROMOD for Ecuador (systems: 2012 and 2013);
2. Use the Statistics Presenter tool to generate income distribution information in these years;
3. Compare statistics of income distribution and decomposition of net income in these years and interpret the results.

### Description:

The Statistics Presenter tool, which is part of the EUROMOD software, allows us to calculate a range of indicators and statistics commonly used to analyze the output database of EUROMOD. Among others, it calculates basic poverty and inequality indexes for the population in general and for selected groups; distribution of household income, taxes and bonuses by income groups; and household demographic information by income group.

The calculations use the output database of EUROMOD, which contains variables of net income and its components (labor income, bonds and transfers, taxes and contributions to social security).

### Purpose of the exercise:

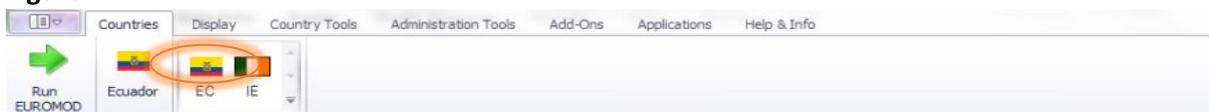
The objective of this exercise is to learn how to run the ECUAMOD model and use the Descriptive Statistics tool of the model. The exercise also introduces basic options such as hiding systems, expanding and collapsing policies and functions, Conditional formatting, etc.

### Solution – Task 1: Production of the output database for the 2012 and 2013 systems of Ecuador

The model can be executed for one country or you can select several countries (and systems) and execute all of them at the same time. Since our first task is to produce the output database for Ecuador (2012 and 2013 systems), we will execute systems only for Ecuador.

When we open EUROMOD, the Countries tab is automatically displayed (Figure 1.1)

**Figure 1.1**



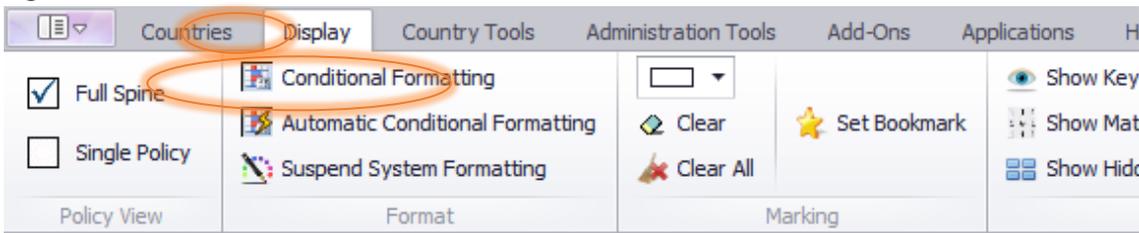
We can produce the output database for Ecuador in two ways: with the Run EUROMOD button or we can click on the country that interests us, in this case Ecuador. We simply click on the Ecuador flag (EC) in the flags bar and EUROMOD will open it (Figure 1.2).

**Figure 1.2**

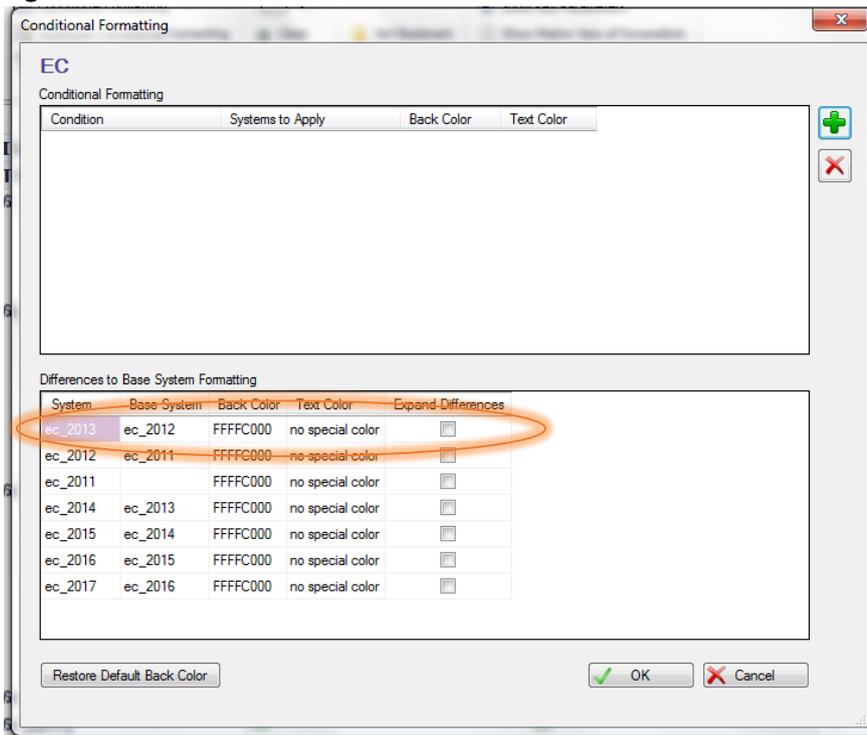


Our first task is to produce the output database for the 2012 and 2013 systems. Before doing that, we must take a quick look at the differences between these two systems. In most cases, the changes stand out between two consecutive years in which the previous year of the system is the base year. To be sure, we can check it using the **Conditional Formatting** tool found on the **Display tab** (Figure 1.3 and Figure 1.4).

**Figure 1.3**



**Figure 1.4**



Having verified that we are comparing 2012 and 2013, we must return to our systems and have a quick look to identify what changes have been made. The model of Ecuador has simulations for seven years and in this exercise, we are interested only in two years - 2012 and 2013. To facilitate the comparison and follow-up of the changes, we only have to keep these two years visible. For that, we place the cursor in the year that interests us (for example, 2012) and with a right click we obtain several options. In this case, we need to select the option *Move to Hidden System Box* and then we must choose *All Systems but Selected* (Figure 1.5).

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**Figure 1.5**

|    | Policy        | Grp/No | ec_2011 | ec_2012 | ec_2013 | ec_2014 | ec_2015 |
|----|---------------|--------|---------|---------|---------|---------|---------|
| 1  | ▶ Uprate_ec   |        | on      | on      |         |         | on      |
| 2  | ▶ ConstDef_ec |        | on      | on      |         |         | on      |
| 3  | ▶ Ilsdef_ec   |        | on      | on      |         |         | on      |
| 4  | ▶ Ildef_ec    |        | on      | on      |         |         | on      |
| 5  | ▶ TUDef_ec    |        | on      | on      |         |         | on      |
| 6  | ▶ yem_ec      |        | off     | off     |         |         | off     |
| 7  | ▶ neg_ec      |        | on      | on      |         |         |         |
| 8  | ▶ tscee_ec    |        | on      | on      |         |         |         |
| 9  | ▶ bxcee_ec    |        | on      | on      |         |         |         |
| 10 | ▶ tsce_ec     |        | on      | on      |         |         | on      |
| 11 | ▶ tscrc_ec    |        | on      | on      |         |         | on      |

After choosing this option, only the 2012 system is shown. However, we also need the 2013 system. In the lower right corner, we have **Hidden System Box** that contains all the hidden systems (Figure 1.6). We double click on the system that we want to be displayed and it will be added next to the 2012 system.

**Figure 1.6**

| Hidden Systems Box |  |
|--------------------|--|
| ec_2011            |  |
| ec_2013            |  |
| ec_2014            |  |
| ec_2015            |  |
| ec_2016            |  |

If, for some reason, this box closes, simply repeat the previous step (click with the right mouse button on the system year => **Move To Hidden System Box**) and choose the **Show Hidden System Box** option. In addition, you can hide / show the years in different ways by choosing other available options.

If you do not like the order of the years after hiding them (for example, 2013 is before 2012), you can also change it. Go to the year you want to move and with a left click and keeping it pressed, you can move it. When you see two white arrows (Figure 1.7), can free it.

**Figure 1.7**

|   | loaded        | Grp/No | ec_2012 | ec_2013 |
|---|---------------|--------|---------|---------|
| 1 | ▶ Uprate_ec   |        | on      | on      |
| 2 | ▶ ConstDef_ec |        | on      | on      |
| 3 | ▶ Ilsdef_ec   |        | on      | on      |

All countries follow the **EUROMOD modeling agreements** that define how the base policy should be created. As you can see (Figure 1.8), the first thing to determine are the predefined values (this policy is not present in the case of Ecuador), based on different data sets that can be used, then we have the policies and factors of change, and then we have definite constants. After that, we have the implementation of the lists of income and tax units and the minimum wage (originally deactivated). Before making any change / analysis, it is always good to know how certain data or specific concepts are defined, what type of income is collected and observed by EUROMOD (for each specific country), what type of tax units exist and are used, etc.

**Figure 1.8**

|   | Policy        | Grp/No | ec_2012 | ec_2013 | Comment   |
|---|---------------|--------|---------|---------|---|
| 1 | ▶ Uprate_ec   |        | on      | on      | DEF: UPDATING FACTORS                               |
| 2 | ▶ ConstDef_ec |        | on      | on      | DEF: CONSTANTS                                      |
| 3 | ▶ IIsdef_ec   |        | on      | on      | DEF: STANDARD INCOME CONCEPTS                       |
| 4 | ▶ IIdf_ec     |        | on      | on      | DEF: INCOME CONCEPTS                                |
| 5 | ▶ TUDef_ec    |        | on      | on      | DEF: ASSESSMENT UNITS                               |
| 6 | ▶ yem_ec      |        | off     | off     | DEF: Minimum Wage                                   |
| 7 | ▶ neg_ec      |        | on      | on      | DEF: recode negative self-employment income to zero |

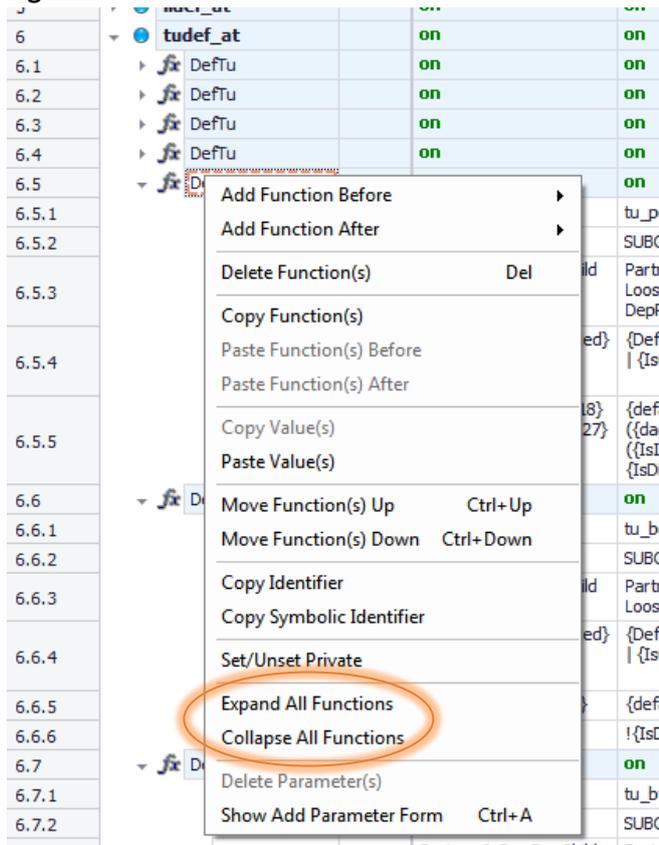
If we want to see how a specific policy is defined, we click with the left mouse button on the gray arrow next to it and the policy expands its functions. If we want to expand the function, we repeat the same process for the function that interests us. If we want to collapse it, we must do the same, we click with the left button on the gray arrow. The tax units are important, in such a way that learning to expand / collapse the policies / functions, allows us to see, at the same time, how some of the main tax units are defined (Figure 1.9).

**Figure 1.9**

|       | Policy         | Grp/No | ec_2012  | ec_2013  | Comment               |
|-------|----------------|--------|--|--|-----------------------|
| 4     | ▶ IIdf_ec      |        | on   | on   | DEF: INCOME CONCEPTS  |
| 5     | ▶ TUDef_ec     |        | on   | on   | DEF: ASSESSMENT UNITS |
| 5.1   | ▶ DefTu        |        | on   | on   |                       |
| 5.1.1 | Name           |        | tu_hh_oecd_co  | tu_hh_oecd_co  |                       |
| 5.1.2 | Type           |        | HH   | HH   |                       |
| 5.1.3 | DepChildCond   |        | {dag<14}   | {dag<14}   |                       |
| 5.2   | ▶ DefTu        |        | on   | on   |                       |
| 5.2.1 | Name           |        | tu_household_ec  | tu_household_ec  |                       |
| 5.2.2 | Type           |        | HH   | HH   |                       |
| 5.2.3 | DepChildCond   |        | {dag<=15}   (((dag<=18) & {dec>=2} & {dec<=4})) & !{IsWithPartner} & !{IsMarried}) | {dag<=15}   (((dag<=18) & {dec>=2} & {dec<=4})) & !{IsWithPartner} & !{IsMarried}) |                       |
| 5.2.4 | LoneParentCond |        | {Default} & !{IsMarried}   | {Default} & !{IsMarried}   |                       |
| 5.3   | ▶ DefTu        |        | on   | on   |                       |
| 5.3.1 | Name           |        | tu_sben_family_ec  | tu_sben_family_ec  |                       |
| 5.3.2 | Type           |        | SUBGROUP   | SUBGROUP   |                       |
| 5.3.3 | Members        |        | Partner & OwnDepChild  | Partner & OwnDepChild  |                       |
| 5.3.4 | DepChildCond   |        | {dag<=15}   (((dag<=18) & {dec>=2} & {dec<=4})) & !{IsWithPartner} & !{IsMarried}) | {dag<=15}   (((dag<=18) & {dec>=2} & {dec<=4})) & !{IsWithPartner} & !{IsMarried}) |                       |
| 5.3.5 | LoneParentCond |        | {Default} & !{IsMarried}   | {Default} & !{IsMarried}   |                       |
| 5.4   | ▶ DefTu        |        | on   | on   |                       |
| 5.5   | ▶ DefTu        |        | on   | on   |                       |

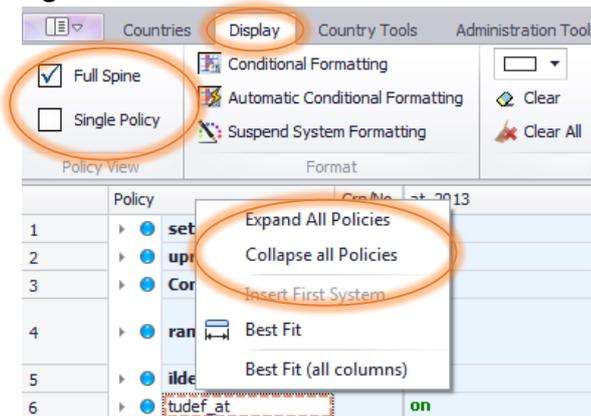
To speed up the process, we have some additional options depending on what we want to do: for example, if we want to expand / contract only one policy, or we want to expand / contract all. If we want to focus on a single policy, we can point to any function in this policy or in the name of the policy and with a right click we will obtain several different options (Figure 1.10).

Figure 1.10



On the other hand, if we want to expand / collapse all policies, we must go to the main row, right click on the **Policy** cell and choose the option **Expand All Policies / Collapse All Policies**. In addition, we can choose between showing the options **Full Spine** and **Single Policy** in the tab **Display** (Figure 1.11).

Figure 1.11



For the purpose of this task, we expanded all the policies to see all the differences between the 2012 and 2013 systems, highlighted in yellow.

When we expand all policies, we can see the policy changes highlighted in yellow. Since the programming of the basic policy can be very long and the name of the policy is at the beginning of the list up, by clicking on any cell the name of the policy is shown at the bottom of the gray bar (Figure 1.12).

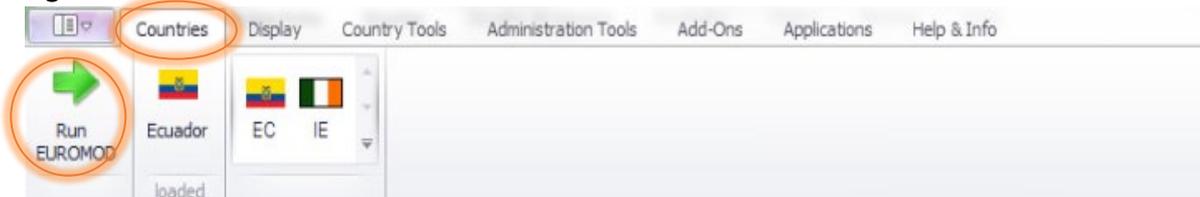
Figure 1.12

|        |            |   |                  |                  |  |
|--------|------------|---|------------------|------------------|--|
| 13     | tin_ec     |   | on               | on               | TAX: Personal Income Tax (Impuesto a la renta personas naturales)      |
| 13.1   | DefVar     |   | on               | on               |  |
| 13.2   | BenCalc    |   | on               | on               | Exemptions for disability  |
| 13.2.1 | Comp_Cond  | 1 | {ddi=1}          | {ddi=1}          | 3 times the first band threshold until 2012 then 2 times the threshold |
| 13.2.2 | Comp_perTU | 1 | 3*\$ITThresh1    | 2*\$ITThresh1    |  |
| 13.2.3 | Comp_Cond  | 2 | {ddi!=1}         | {ddi!=1}         |  |
| 13.2.4 | Comp_perTU | 2 | 0                | 0                |  |
| 13.2.5 | Output_Var |   | i_IT_Exe1        | i_IT_Exe1        |  |
| 13.2.6 | TAX_UNIT   |   | tu_individual_ec | tu_individual_ec |  |
| 13.3   | BenCalc    |   | on               | on               | Exemptions for old age   |
| 13.4   | ArithOn    |   | on               | on               | Deductions from food expenditures                                      |

After checking the changes from one year to the next, we can execute them using the input database of Ecuador. Note that for the other countries, the training data (hypothetical data) are the only data available in the model. In order to have access to the input database, access must be requested following the detailed instructions in <https://www.euromod.ac.uk/using-euromod/access/data-permissions>.

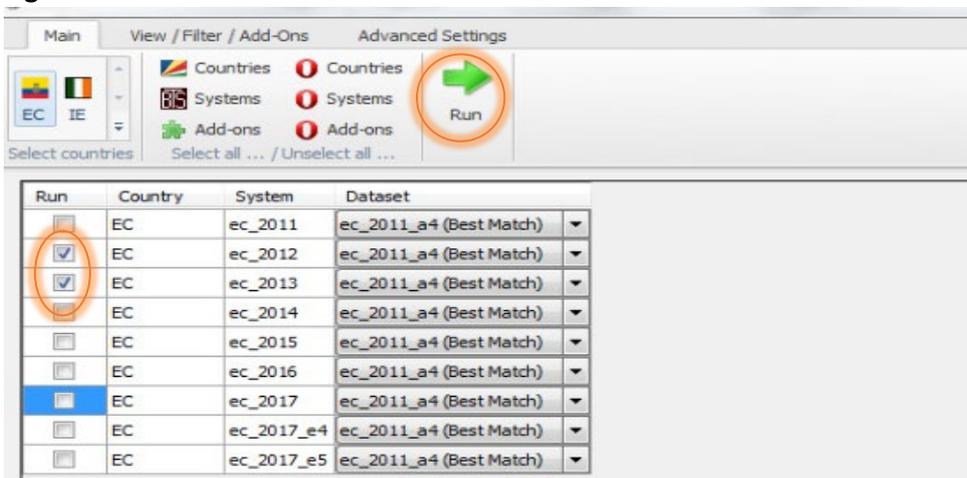
To run the model, we must go back to the **Countries tab** and click on the button **Run EUROMOD** (Figure 1.13).

Figure 1.13



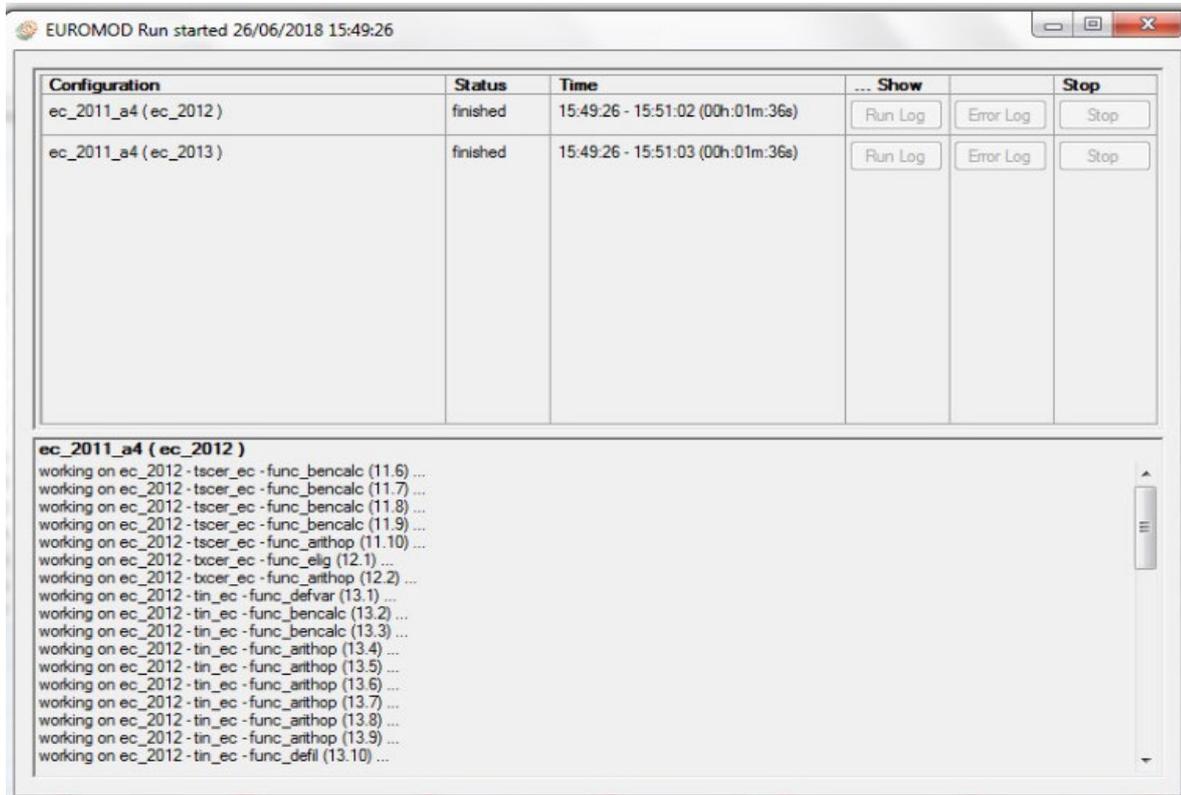
Since we open Ecuador, when we press **Run EUROMOD**, EUROMOD automatically presents the Ecuadorian systems with the available data sets (Figure 1.14). We have to execute EUROMOD only for 2012 and 2013, so we select only those years. At the moment, the Ecuador model uses a single input data base, EC\_2011\_a4, which contains information from the National Urban and Rural Income and Expenditure Survey, ENIGHUR 2011-2012. In all the exercises this is the input database that will be used. Check (and if necessary, modify) the output path where EUROMOD will write the output files. After selecting and changing everything, we must press the Run button in the dialog box.

Figure 1.14



While it is running, EUROMOD will indicate the progress of the calculations as well as the selected systems and the chosen data sets (Figure 1.15). If you want to see the progress "line by line", simply click on the **Run Log** button and each process will be shown in the box below. If you want to stop processing before finalizing (if, for example, you have chosen the wrong systems / data), press the **Stop** button. If there is an error / warning, processing stops and displays the error message. If the execution was made without errors / warnings, **Status** will change from *running* a *finished*.

**Figure 1.15**

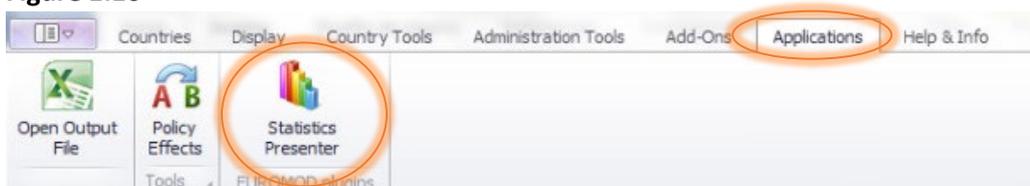


## Solution – Task 2: Descriptive statistics

After executing EUROMOD, the output files (output database) are stored in the output folder (if you have not specified it in a different way). The summary statistics tool will use these databases, so it is very important that your system is working without errors and warnings.

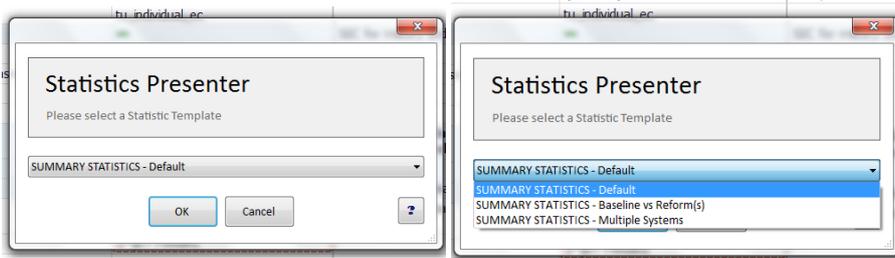
To access the descriptive statistics plug-in, you must go to the **Applications** tab and click on the **Statistics Presenter** button to start the tool (Figure 1.16).

**Figure 1.16**



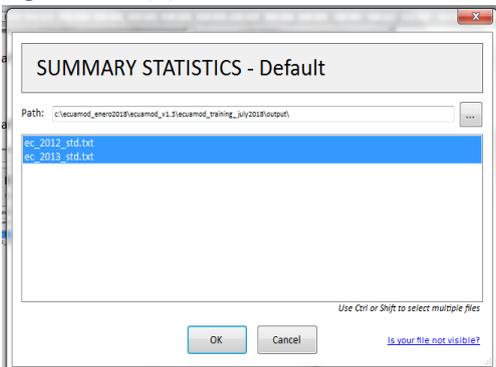
A new window is automatically displayed as shown in Figure 1.17. When you open the menu you have 3 options (we are going to use the first two).

**Figure 1.17**

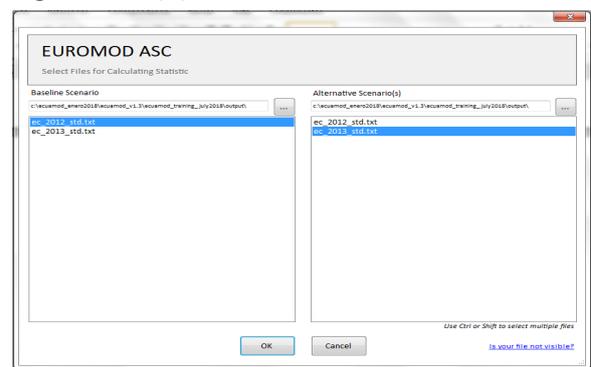


Default.- You can select one or more files of the output you want to use for calculations (Figure 1.18 (a)). You can, for example, choose the output databases for Ecuador - ec\_2012\_std and ec\_2013\_std, which must be indicated. Baseline vs Reform (s).- Allows you to compare between two scenarios and the program calculates the differences automatically (Figure 1.18 (b)).

**Figure 1.18 (a)**

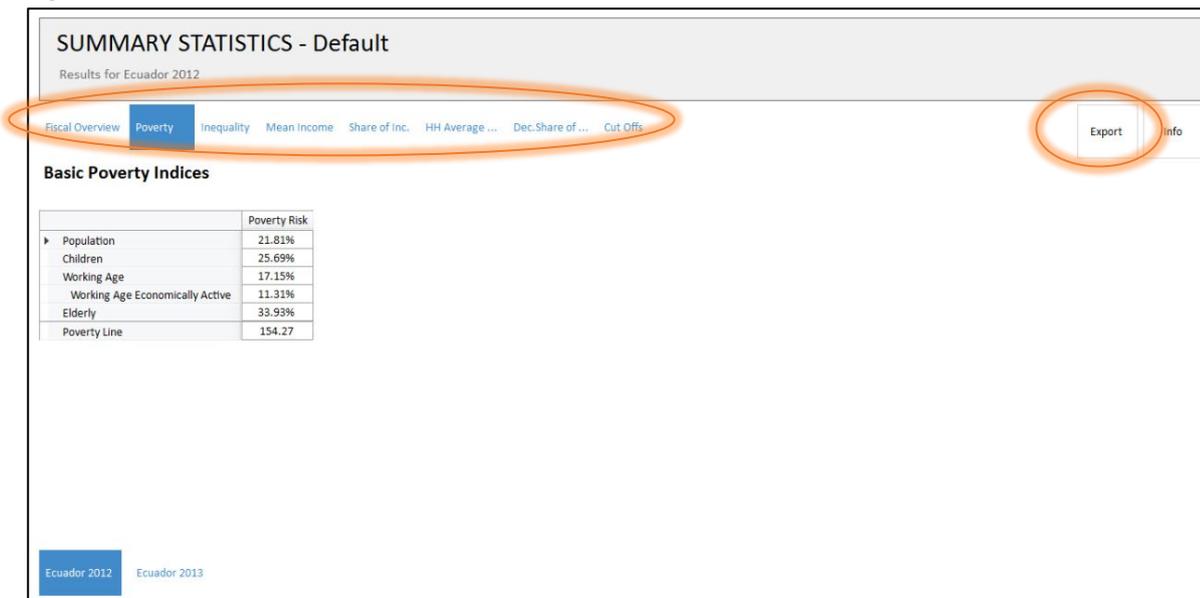


**Figure 1.18 (b)**

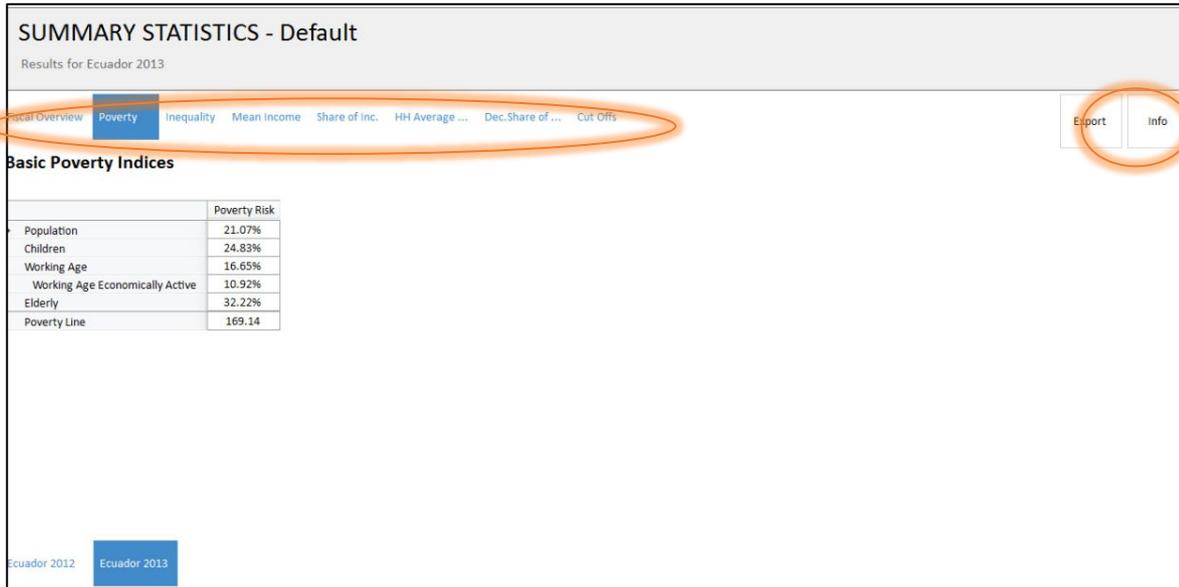


**Statistics Presenter** tool produces one sheet for each system. Since we run two systems - 2012 and 2013, the results are shown in two sheets - ec\_2012\_std and ec\_2013\_std, respectively. This tool also produces different statistics shown in eight different tables (Figure 1.19 and Figure 1.20). The results are not saved automatically, so you can use the **Export** option and save where you want.

**Figure 1.19**



**Figure 1.20**



### Solution – Task 3: Results analysis

It is important to mention that the current Statistics Presenter tool calculates **relative poverty** rates using as a poverty line 60% of the average household disposable income using the modified OECD equivalence scale. The relative poverty rate (**At risk of poverty rate**) is 21.81% in 2012 and it decreases to 21.07% in 2013. On the other hand, the Gini coefficient (disposable income) decreased from 0.4743 to 0.4741.

*\*\*\* If you need additional information about the functions used during the exercise, you can access the EUROMOD help menu: EUROMOD Help & Info (in the last tab of the option bar). Click on Help and type the words you want to search.*

## Exercise 2: Increase of the Human Development Bonus

### Task:

1. Create a new system in Ecuador based on the year 2014 and name it as EC\_2014\_E2;
2. Increase the bonus amount from USD 50 per month to USD 75 per month;
3. Run EUROMOD to produce the output database for EC\_2014 and EC\_2014\_E2 systems;
4. Analyze the results.

### Description:

Since 2013, the amount of the Human Development Bonus (BDH) has been maintained at USD 50 per month. The objective of this exercise is to analyze the effect of a BDH increase to USD 75 per month in 2014.

### Purpose of the exercise:

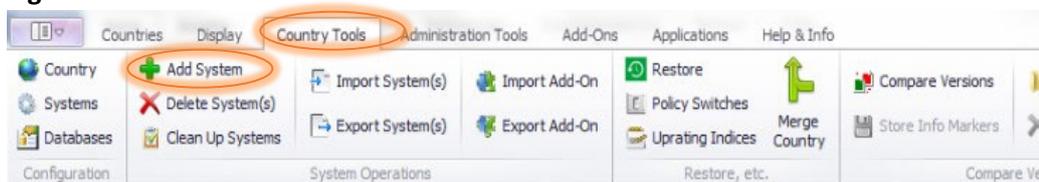
The goal of this exercise is to learn how to create a new system and use the Elig and ArithOp functions. The exercise also introduces basic options such as renaming and deleting systems, searching and replacing, queries, etc.

### Solution – Task 1: Create a new system

To create a new system (add a new system), we must know what existing system should be taken as a basis. When we need to create a system for a new year, it is desirable that the previous year be used as the basis. If we want to change or modify an existing system for a given year (to analyze it separately) we use the original system as a base. How do we do this?

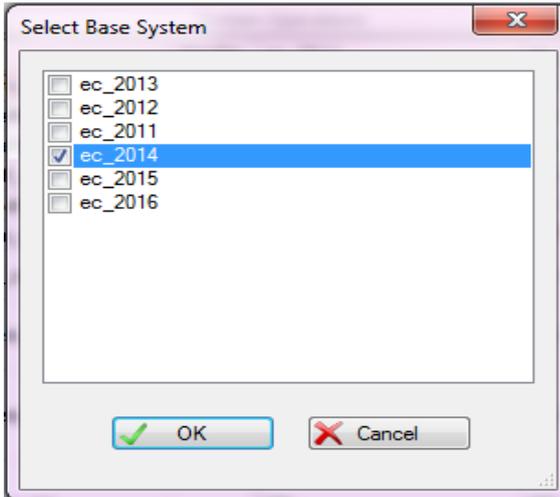
The first step is to open Ecuador. When we go to *Country Tools*, we see the option *Add System* (Figure 2.1)

**Figure 2.1**



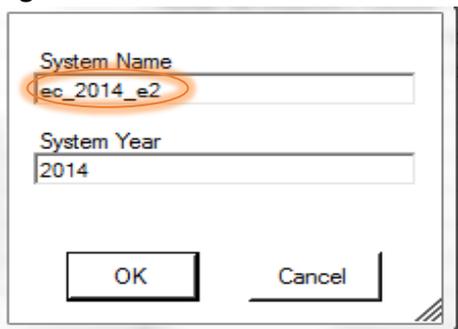
When we click, a dialogue box is opened with the country systems with which we are working (that is, the asset). Now you must choose one of them. In our case we will take the system for the year 2014.

**Figure 2.2**



As we need to create a new system, we must give it another name EC\_2014\_E2 (Figure 2.3). Since we do not need other systems, we hide all except ec\_2014 and EC\_2014\_E2. We also ask that the differences between these two systems be highlighted, where the one corresponding to 2014 is taken as a basis.

**Figure 2.3**

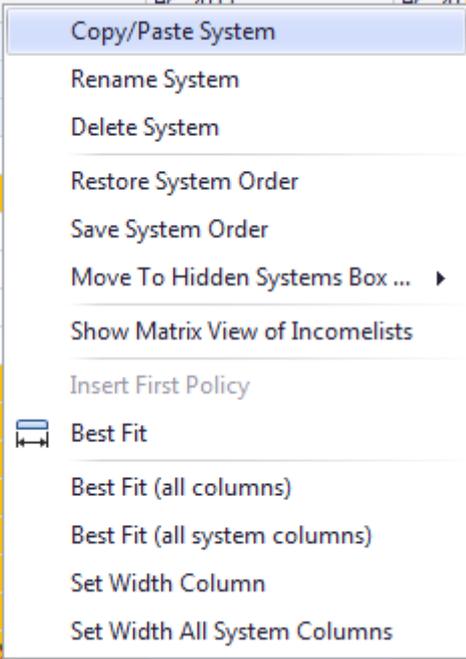


If we want, we can create another system and call it for example EC\_2014\_test repeating the same process. We can also change the order of our systems. After modifying and running the system, we can decide to remove it if it is no longer necessary. For this, use the Delete System (s) option in the Country Tools menu (See Figure 2.1). Clicking we are going to a table with the systems in the country. Select one or more systems to be deleted and clicking is left (n) deleted (s).

Another way to do this task is going to the system that I want to copy / paste / delete, right click and the options will be displayed (Figure 2.4). We can also change the name of the system with the Rename System option.

Figure 2.4

| Grp/No | ec_2014   | ec_2011 | ec_201 |
|--------|-----------|---------|--------|
|        | on        |         |        |
|        | on        |         |        |
|        | on        |         |        |
| 1      | 60        |         |        |
| 2      | 340 #m    |         |        |
| 3      | 50 #m     |         |        |
| 4      | n/a       |         |        |
| 5      | n/a       |         |        |
| 6      | 240 #m    |         |        |
| 7      | 10410 #y  |         |        |
| 8      | 13270 #y  |         |        |
| 9      | 16590 #y  |         |        |
| 11     | 19920 #y  |         |        |
| 12     | 39830 #y  |         |        |
| 13     | 59730 #y  |         |        |
| 14     | 79660 #y  |         |        |
| 15     | 106220 #y |         |        |

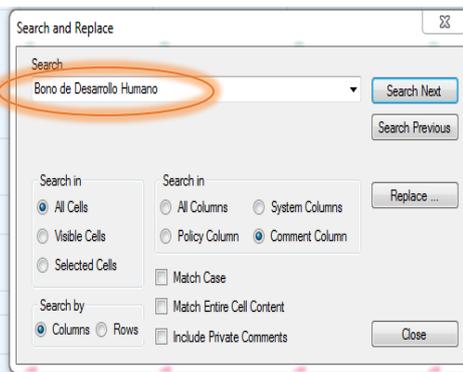


Solution – Task 2: Implement the reform

After creating the new system, the next task to implement the reform is to find the policy regarding the Human Development Bond in the policy column. For this we use the search command and we look at the Comment column (Figure 2.5).

Figure 2.5

|    |                  |     |  |
|----|------------------|-----|--|
| 12 | bxcer_ec         | on  | SIC: Government Social Insurance Contributions for armed forces and police (Aportaciones patronales ISSFA/ISPOL) |
| 13 | tin_ec           | on  | TAX: Personal Income Tax (Impuesto a la renta personas naturales)  |
| 14 | bsa_ec           | on  | BEN: Human Development Cash Transfer (Bono de Desarrollo Humano)   |
| 15 | bcrdi_ec         | on  | BEN: Disability carer benefit (Bono Joaquin Gallegos Lara)   |
| 16 | tex_ec           | on  | TAX: Special Consumption Tax - Excise and ad valorem (Impuesto a los Consumos Especiales)                        |
| 17 | tva_ec           | on  | TAX: Value Added Tax (IVA)   |
| 18 | output_std_ec    | on  | DEF: STANDARD OUTPUT INDIVIDUAL LEVEL  |
| 19 | output_std_hh_ec | off | DEF: STANDARD OUTPUT   |



As you can see, the name of the policy is **bsa\_ec**. To see how it is calculated, we use the expand option (see exercise 1 for explanation). Functions with **n / a** (= not applicable) are not used for the calculation, like the functions in **OFF**. Figure 2.6 shows the implementation of the simulation of the Human Development Bonus in ECUAMOD. ECUAMOD simulates the amount of the bonus for each year for the people who are observed receiving the bonus in the database, as indicated by the *Elig* function ( $bsa > 0$ ). The amount of the bonus is attributed to the *ArithOp* function using the constant **\$BSAmain** that is equal to 50#m in 2014.

Figure 2.6

|        | Policy       | Grp/No | ec_2014          | Comment   |
|--------|--------------|--------|------------------|---|
| 14     | bsa_ec       |        | on               | <b>BEN: Human Development Cash Transfer (Bono de Desarrollo Humano)</b> |
| 14.1   | Elig         |        | on               | Part-simulation: eligibility rule                                       |
| 14.1.1 | elig_cond    |        | {bsa>0}          | if observed to receive in the data                                      |
| 14.1.2 | TAX_UNIT     |        | tu_individual_ec |   |
| 14.2   | ArithOp      |        | on               | Part-simulation: benefit calculation                                    |
| 14.2.1 | Who_Must_... |        | one              |   |
| 14.2.2 | Formula      |        | \$BSAmain        |   |
| 14.2.3 | Output_Var   |        | bsa_s            |   |
| 14.2.4 | TAX_UNIT     |        | tu_individual_ec |   |

The value of the \$BSAmain constant is defined in the ConstDef\_ec policy. For this reason, the change we make is in the policy ConstDef\_ec in the part corresponding to \$BSAmain and instead of 50#m, we put 75#m, as shown in the Figure 2.7.

Figure 2.7

|        | Policy       | Grp/No | ec_2014  | ec_2014_E2 | Comment                                 |
|--------|--------------|--------|----------|------------|---|
| 1      | Uprate_ec    |        | on       | on         | DEF: UPDATING FACTORS                   |
| 2      | ConstDef_ec  |        | on       | on         | DEF: CONSTANTS                          |
| 2.1    | DefConst     |        | on       | on         | Constants                               |
| 2.1.1  | \$PensionAge | 1      | 60       | 60         | pension age                             |
| 2.1.2  | \$Minwage    | 2      | 340#m    | 340#m      | minimum wage (salario basico unificado) |
| 2.1.3  | \$BSAmain    | 3      | 50#m     | 75#m       | human development transfer -main        |
| 2.1.4  | \$BSAage65   | 4      | n/a      | n/a        | human development transfer -old age     |
| 2.1.5  | \$BSAdisab   | 5      | n/a      | n/a        | human development transfer -disability  |
| 2.1.6  | \$BCRDImain  | 6      | 240#m    | 240#m      | disability carer benefit                |
| 2.1.7  | \$ITThresh1  | 7      | 10410#y  | 10410#y    |   |
| 2.1.8  | \$ITThresh2  | 8      | 13270#y  | 13270#y    |   |
| 2.1.9  | \$ITThresh3  | 9      | 16590#y  | 16590#y    |   |
| 2.1.10 | \$ITThresh4  | 11     | 19920#y  | 19920#y    |   |
| 2.1.11 | \$ITThresh5  | 12     | 39830#y  | 39830#y    |   |
| 2.1.12 | \$ITThresh6  | 13     | 59730#y  | 59730#y    |   |
| 2.1.13 | \$ITThresh7  | 14     | 79660#y  | 79660#y    |   |
| 2.1.14 | \$ITThresh8  | 15     | 106220#y | 106220#y   |   |

### Solution – Task 3: Produce the output database

Run the EUROMOD model to produce the output database for System EC\_2014 and EC\_2014\_E2 (see Exercise 1 for more information)

### Solution – Task 4: Analyze the results

Use the Statistics Presenter tool to analyze the impact of the reform on the level of poverty and inequality (see Exercise 1 for more information).

| <b>Basic Poverty Indices</b>    |                                 |                             |                    |  |
|---------------------------------|---------------------------------|-----------------------------|--------------------|--|
|                                 | Poverty Risk for ec_2014 (base) | Poverty Risk for ec_2014_e2 | Difference to base |  |
| Population                      | 0,22                            | 0,21                        | -0,88              |  |
| Children                        | 0,26                            | 0,25                        | -1,24              |  |
| Working Age                     | 0,17                            | 0,16                        | -0,67              |  |
| Working Age Economically Active | 0,11                            | 0,11                        | -0,53              |  |
| Elderly                         | 0,33                            | 0,32                        | -0,45              |  |
| Fixed Poverty Line              | 178,61                          |                             |                    |  |
| <b>Basic Inequality Indices</b> |                                 |                             |                    |  |
|                                 | ec_2014 (base)                  | ec_2014_e2                  | Difference to base |  |
| Gini Original Income            | 0,47                            | 0,47                        | 0,0                |  |
| Gini Disposable Income          | 0,43                            | 0,43                        | 0,0                |  |

\*\*\* If you need additional information about the functions used during the exercise, you can access the EUROMOD help menu: *EUROMOD Help & Info* (in the last tab of the option bar). Click on *Help* and type the words you want to search.

## Exercise 3: Increase in the contribution rate to the IESS for pensions

### Task:

1. Create a new system based on the year 2015 and name it as EC\_2015\_E3;
2. Increase the personal contribution rate of employees for pensions;
3. Run EUROMOD to produce the output database for EC\_2015 and EC\_2015\_E3 systems;
4. Analyze the impacts of the reform.

### Description:

The objective of this exercise is to increase the personal contribution rate to the IESS for pensions in 2015. In this year, the personal contribution rates for disability, old-age and death insurance for dependent workers are: ( i ) 6.64% for workers in the private sector; ( ii ) 8.64% for bank employees; ( iii ) 8.64% for public servants.

The task is to increase the contribution rate for disability, old age and death insurance to 10% for these three categories of workers using the BenCalc function.

### Purpose of the exercise:

The objective of this exercise is to learn how to use the BenCalc function.

### Solution – Task 1: Create a new system

Our first task is to create a new system based on the year 2015 of Ecuador. Name this system EC\_2015\_E3 (see Exercise 2 for more information). Also use the Conditional formatting option so that the base of the new system is EC\_2015 and hide all other systems except EC\_2015 and EC\_2015\_E3 (see Exercise 1 for more information)

### Solution – Task 2: Implement the reform

Before implementing our reform, it is necessary to analyze the structure of simulation of personal contributions to the IESS of employees for pensions in ECUAMOD (see Figure 3.1). The policy **tscee\_ec** simulates personal contributions to the IESS of employees. Within this policy, the first BenCalc function is responsible for simulating pension contributions. As can be seen in the following Figure, ECUAMOD simulates contributions to the IESS for three categories of workers: (i) workers in the private sector, except the banking sector ( $lcs = 0$  &  $lindi = 7$ ); (ii) workers in the banking sector ( $lcs = 0$  &  $lindi = 7$ ); and (iii) public sector workers ( $lcs = 1$ ). Contribution rates vary by employee category and apply to the **il\_tscee\_base** revenue base.

**Figure 3.1**

| Policy | Grp/No           | ec_2015                | Comment                             |
|--------|------------------|------------------------|-------------------------------------|
| 8.3    | Elig             | on                     | Eligibility condition for employees |
| 8.4    | BenCalc          | on                     | Pension insurance                   |
| 8.4.1  | Who_Must_Be_Elig | one                    |                                     |
| 8.4.2  | Comp_Cond        | 1 {lcs=0} & {lindi!=7} | private sector (category A)         |
| 8.4.3  | Comp_perTU       | 1 0.0664*i_tscee_base  |                                     |
| 8.4.4  | Comp_Cond        | 2 {lcs=0} & {lindi=7}  | banking sector (category B)         |
| 8.4.5  | Comp_perTU       | 2 0.0864*i_tscee_base  |                                     |
| 8.4.6  | Comp_Cond        | 3 {lcs=1}              | public sector (category C)          |
| 8.4.7  | Comp_perTU       | 3 0.0864*i_tscee_base  |                                     |
| 8.4.8  | Output_Var       | tsceepi_s              |                                     |
| 8.4.9  | TAX_UNIT         | tu_individual_ec       |                                     |
| 8.5    | BenCalc          | on                     | Severance pay insurance             |
| 8.6    | BenCalc          | on                     | Rural worker social insurance       |
| 8.7    | BenCalc          | on                     | Disability insurance                |
| 8.8    | BenCalc          | on                     | Administration costs                |

The next step is to modify the contribution rates of these three categories by a single 10% rate for pensions (Figure 3.2).

**Figure 3.2**

| Policy | Grp...           | ec_2015                | ec_2015_e3           | Comment                             |
|--------|------------------|------------------------|----------------------|-------------------------------------|
| 8.3    | Elig             | on                     | on                   | Eligibility condition for employees |
| 8.4    | BenCalc          | on                     | on                   | Pension insurance                   |
| 8.4.1  | Who_Must_Be_Elig | one                    | one                  |                                     |
| 8.4.2  | Comp_Cond        | 1 {lcs=0} & {lindi!=7} | {lcs=0} & {lindi!=7} | private sector (category A)         |
| 8.4.3  | Comp_perTU       | 1 0.0664*i_tscee_base  | 0.1*i_tscee_base     |                                     |
| 8.4.4  | Comp_Cond        | 2 {lcs=0} & {lindi=7}  | {lcs=0} & {lindi=7}  | banking sector (category B)         |
| 8.4.5  | Comp_perTU       | 2 0.0864*i_tscee_base  | 0.1*i_tscee_base     |                                     |
| 8.4.6  | Comp_Cond        | 3 {lcs=1}              | {lcs=1}              | public sector (category C)          |
| 8.4.7  | Comp_perTU       | 3 0.0864*i_tscee_base  | 0.1*i_tscee_base     |                                     |
| 8.4.8  | Output_Var       | tsceepi_s              | tsceepi_s            |                                     |
| 8.4.9  | TAX_UNIT         | tu_individual_ec       | tu_individual_ec     |                                     |
| 8.5    | BenCalc          | on                     | on                   | Severance pay insurance             |
| 8.6    | BenCalc          | on                     | on                   | Rural worker social insurance       |
| 8.7    | BenCalc          | on                     | on                   | Disability insurance                |
| 8.8    | BenCalc          | on                     | on                   | Administration costs                |

### Solution – Task 3: Produce the output database

Run the EUROMOD model to produce the output database for the EC\_2015 and EC\_2015\_E3 systems (see Exercise 1 for more information)

### Solution – Task 4: Analyze the results

Use the *Statistics Presenter* tool to analyze the impact of the reform on the level of poverty and inequality (see Exercise 1 for more information)

| <b>Basic Poverty Indices</b>           |  |                                    |                           |  |
|--|--|------------------------------------|---------------------------|--|
|  | <i>Poverty Risk for ec_2015 (base)</i> | <i>Poverty Risk for ec_2015_e3</i> | <i>Difference to base</i> |  |
| <i>Population</i>                      | 0,22                                   | 0,22                               | 0,20                      |  |
| <i>Children</i>                        | 0,26                                   | 0,26                               | 0,27                      |  |
| <i>Working Age</i>                     | 0,17                                   | 0,17                               | 0,15                      |  |
| <i>Working Age Economically Active</i> | 0,11                                   | 0,11                               | 0,14                      |  |
| <i>Elderly</i>                         | 0,33                                   | 0,33                               | 0,07                      |  |
| <i>Fixed Poverty Line</i>              | 185,78                                 |                                    |                           |  |
| <b>Basic Inequality Indices</b>        |  |                                    |                           |  |
|  | <i>ec_2015 (base)</i>                  | <i>ec_2015_e3</i>                  | <i>Difference to base</i> |  |
| <i>Gini Original Income</i>            | 0,47                                   | 0,47                               | 0,0                       |  |
| <i>Gini Disposable Income</i>          | 0,43                                   | 0,43                               | 0,0                       |  |

\*\*\* If you need additional information about the functions used during the exercise, you can access the EUROMOD help menu: *EUROMOD Help & Info* (in the last tab of the option bar). Click on *Help* and type the words you want to search.

## Exercise 4: Modification of the lower and upper band of income tax

### Task:

1. Create a new system based on the year 2017 and name it as EC\_2017\_e4;
2. Increase the value of the lower band and reduce the value of the upper band of the income tax of natural persons;
3. Run EUROMOD to produce the output database for EC\_2017 and EC\_2017\_E4 systems;
4. Analyze the impacts of the reform.

### Description:

The objective of this exercise is to modify the lower band and the upper band of the income tax of individuals in 2017, in order to increase the number of low-paid people exempt from the payment of income tax and increase the number of taxpayers who would be subject to the higher rate of tax. In 2017, the lower band was set at USD 11,290 per year and the upper band was set at USD 115,140 per year.

The task is to increase the value of the band lower than 12,000 USD per year and decrease the value of the band above 90,000 USD per year, using the SchedCalc function.

For your information, the values of the bands of the income tax of natural persons are defined as constants in the policy ConstDef\_ec.

### Purpose of the exercise:

The goal of this exercise is to learn how to use the SchedCalc function.

### Solution – Task 1: Create a new system

Our first task is to create a new system based on the year 2016 of Ecuador. Name this system EC\_2017\_E4 (see Exercise 2 for more information). Also use the option of Conditional formatting so that the base of the new system is EC\_2017 and hide all other systems except EC\_2017 and EC\_2017\_E4 (see Exercise 1 for more information)

### Solution – Task 2: Implement the reform

Before implementing our reform, it is necessary to analyze the simulation structure of the personal income tax in ECUAMOD. The figure 4.1 shows the definition of the bands of the income tax as constants in the policy **ConstDef\_ec**. The constants \$ITThresh1 and \$ITThresh8, define the values of the cuts of the first and last band, respectively.

Figure 4.1

| Policy | Grp/No       | ec_2017     | Comment                                 |
|--------|--------------|-------------|---|
| 2      | ConstDef_ec  | on          | DEF: CONSTANTS                          |
| 2.1    | DefConst     | on          | Constants                               |
| 2.1.1  | \$PensionAge | 1 60        | pension age                             |
| 2.1.2  | \$Minwage    | 2 375#m     | minimum wage (salario basico unificado) |
| 2.1.3  | \$BSAmain    | 3 50#m      | human development transfer -main        |
| 2.1.4  | \$BSAage65   | 4 50#m      | human development transfer -old age     |
| 2.1.5  | \$BSAadisab  | 5 50#m      | human development transfer -disability  |
| 2.1.6  | \$BCRDImain  | 6 240#m     | disability carer benefit                |
| 2.1.7  | \$ITThresh1  | 7 11290#y   |   |
| 2.1.8  | \$ITThresh2  | 8 14390#y   |   |
| 2.1.9  | \$ITThresh3  | 9 17990#y   |   |
| 2.1.10 | \$ITThresh4  | 11 21600#y  |   |
| 2.1.11 | \$ITThresh5  | 12 43190#y  |   |
| 2.1.12 | \$ITThresh6  | 13 64770#y  |   |
| 2.1.13 | \$ITThresh7  | 14 86370#y  |   |
| 2.1.14 | \$ITThresh8  | 15 115140#y |   |
| 2.1.15 | \$Povline    | 16 84.49#m  | poverty line                            |
| 2.1.16 | \$FxtPovline | 17 47.62#m  | extreme poverty line                    |

The simulation of income tax can be found in the policy **tin\_ec**. In particular, the *SchedCalc* function calculates the amount of income tax that people must pay (Figure 4.2).

Figure 4.2

| Policy   | Grp/No     | ec_2017          | Comment                              |
|----------|------------|------------------|--------------------------------------|
| 13.12    | SchedCalc  | on               | Tax schedule                         |
| 13.12.1  | base       | i_IT_baseY       |                                      |
| 13.12.2  | band_rate  | 1 0              |                                      |
| 13.12.3  | Band_UpLim | 1 \$ITThresh1    | i.e. general tax exemption/allowance |
| 13.12.4  | Band_Rate  | 2 0.05           |                                      |
| 13.12.5  | Band_UpLim | 2 \$ITThresh2    |                                      |
| 13.12.6  | Band_Rate  | 3 0.1            |                                      |
| 13.12.7  | Band_UpLim | 3 \$ITThresh3    |                                      |
| 13.12.8  | Band_Rate  | 4 0.12           |                                      |
| 13.12.9  | Band_UpLim | 4 \$ITThresh4    |                                      |
| 13.12.10 | Band_Rate  | 5 0.15           |                                      |
| 13.12.11 | Band_UpLim | 5 \$ITThresh5    |                                      |
| 13.12.12 | Band_Rate  | 6 0.2            |                                      |
| 13.12.13 | Band_UpLim | 6 \$ITThresh6    |                                      |
| 13.12.14 | Band_Rate  | 7 0.25           |                                      |
| 13.12.15 | Band_UpLim | 7 \$ITThresh7    |                                      |
| 13.12.16 | Band_Rate  | 8 0.3            |                                      |
| 13.12.17 | Band_UpLim | 8 \$ITThresh8    |                                      |
| 13.12.18 | Band_Rate  | 9 0.35           |                                      |
| 13.12.19 | output_var | tin_s            |                                      |
| 13.12.20 | TAX_UNIT   | tu_individual_ec |                                      |

Since the constants of the bands are defined in the **ConstDef\_ec** policy at the beginning of the model and since these constants can be used within the model before using the *SchedCalc* function, it is safest to modify the value of the bands directly in the **ConstDef\_ec** function (Figure 4.3).

**Figure 4.3**

|        | Policy       | Grp/No | ec_2017  | ec_2017_e4 | Comment                                 |
|--------|--------------|--------|----------|------------|---|
| 1      | Uprate_ec    |        | on       | on         | DEF: UPDATING FACTORS                   |
| 2      | ConstDef_ec  |        | on       | on         | DEF: CONSTANTS                          |
| 2.1    | DefConst     |        | on       | on         | Constants                               |
| 2.1.1  | \$PensionAge | 1      | 60       | 60         | pension age                             |
| 2.1.2  | \$Minwage    | 2      | 375#m    | 375#m      | minimum wage (salario basico unificado) |
| 2.1.3  | \$BSAmain    | 3      | 50#m     | 50#m       | human development transfer -main        |
| 2.1.4  | \$BSAage65   | 4      | 50#m     | 50#m       | human development transfer -old age     |
| 2.1.5  | \$BSAdisab   | 5      | 50#m     | 50#m       | human development transfer -disability  |
| 2.1.6  | \$BCRDImain  | 6      | 240#m    | 240#m      | disability carer benefit                |
| 2.1.7  | \$ITThresh1  | 7      | 11290#y  | 12000#y    |   |
| 2.1.8  | \$ITThresh2  | 8      | 14390#y  | 14390#y    |   |
| 2.1.9  | \$ITThresh3  | 9      | 17990#y  | 17990#y    |   |
| 2.1.10 | \$ITThresh4  | 11     | 21600#y  | 21600#y    |   |
| 2.1.11 | \$ITThresh5  | 12     | 43190#y  | 43190#y    |   |
| 2.1.12 | \$ITThresh6  | 13     | 64770#y  | 64770#y    |   |
| 2.1.13 | \$ITThresh7  | 14     | 86370#y  | 86370#y    |   |
| 2.1.14 | \$ITThresh8  | 15     | 115140#y | 90000#y    |   |

### Solution – Task 3: Produce the output database

Run the EUROMOD model to produce the output database for System EC\_2017 and EC\_2017\_E4 (see Exercise 1 for more information)

### Solution – Task 4: Analyze the results

Use the *Statistics Presenter* tool to analyze the impact of the reform on the level of poverty and inequality (see Exercise 1 for more information)

| <b>Basic Poverty Indices</b>    |                                 |                             |                    |
|---------------------------------|---------------------------------|-----------------------------|--------------------|
|                                 | Poverty Risk for ec_2017 (base) | Poverty Risk for ec_2017_e4 | Difference to base |
| Population                      | 0,22                            | 0,22                        | 0,0                |
| Children                        | 0,26                            | 0,26                        | 0,0                |
| Working Age                     | 0,17                            | 0,17                        | 0,0                |
| Working Age Economically Active | 0,11                            | 0,11                        | 0,0                |
| Elderly                         | 0,34                            | 0,34                        | 0,0                |
| Fixed Poverty Line              | 196,71                          |                             |                    |
| <b>Basic Inequality Indices</b> |                                 |                             |                    |
|                                 | ec_2017 (base)                  | ec_2017_e4                  | Difference to base |
| Gini Original Income            | 0,47                            | 0,47                        | 0,0                |
| Gini Disposable Income          | 0,43                            | 0,43                        | 0,0                |

\*\*\* If you need additional information about the functions used during the exercise, you can access the EUROMOD help menu: *EUROMOD Help & Info* (in the last tab of the option bar). Click on *Help* and type the words you want to search.

## Exercise 5: Introduction of the bond for the children of Ireland in Ecuador

### Task:

1. Create a new system based on the year 2016 and name it as EC\_2017\_e5;
2. Introduce a new bond for children in Ecuador, following the structure of the bond for children in Ireland
3. Run EUROMOD and produce the output database for systems EC\_2017 and EC\_2017\_e5;
4. Analyze the results.

### Description:

Despite progress in the fight against poverty in Ecuador, there are groups of the population such as children and adolescents for whom the level of poverty is higher than the national average. In its publication Social Panorama of Latin America 2013 (ECLAC 2013), the Economic Commission for Latin America and the Caribbean shows that the incidence of child poverty in Ecuador is 40.7% in 2011. With the aim of protecting children and adolescents against poverty, most European countries have implemented bonds for children that could serve as an example for the design of such programs in Latin America.

The objective of this exercise is to implement in Ecuador a bond for children based on the design of the universal bond for children that exists in Ireland and to evaluate the impact of such a program at the level of poverty and inequality.

### Additional Information:

- EUROMOD allows directly copying policies from other countries in the Ecuadorian model. However, the implementation of other countries' policies should be done with caution and taking into account the specificities of each country.
- The tax unit (or family unit) used in Ireland for the child bond (tu\_bch\_fa\_ie) must be replaced by a family unit with the same definition for Ecuador (tu\_bch\_fa\_ec);
- In Ireland the amount of the childhood bonus in 2016 is equal to 140 EUR per month. In Ecuador, we want to implement a bonus of USD 40 per month for the first and second child (per each) of the family unit; \$ 30 for the third child; and of 20 USD for each boy or girl from the third son or daughter of the family unit.
- Remember to include the new bonus within the corresponding entry list.

### Purpose of the exercise:

The objective of this exercise is to learn how to implement an exchange of policies.

## Solution – Task 1: Create a new system

Our first task is to create a new system based on the year 2016 of Ecuador. Name this system EC\_2017\_e5 (see Exercise 2 for more information). Also use the option of Conditional formatting so that the base of the new system is EC\_2016 and hide all other systems except EC\_2017 and EC\_2017\_e5 (see Exercise 1 for more information)

## Solution – Task 2: Implement the reform

Before implementing the bond for the children of Ireland in Ecuador, we must analyze the design of this policy. For this we open the model of Ireland (IE) and analyze the design of the bond for children (**bch\_ie**) in the year 2016. We can for example observe that the bond for children in Ireland is simulated after the income tax so that We deduct that said bonus is not subject to taxes.

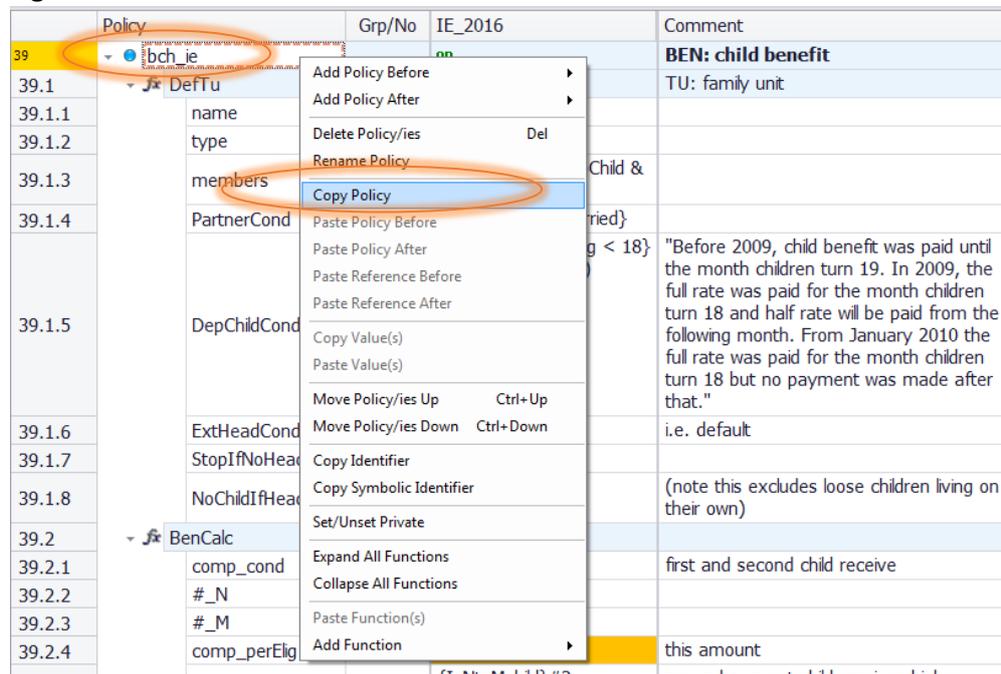
Let's also analyze the definition of the family unit used (**tu\_bch\_fa\_ie**). The **DefTu** function defines the characteristics of the family unit, which in this case represents a subgroup of the household composed of married couples and their corresponding children under 16 years of age or under 18 if they are students. Additionally, we can see that the amount of the bonus is equal to 140 EUR per month for each child (Figure 5.1.)

Figure 5.1

|         | Policy           | Grp/No | IE_2016                                     | Comment   |
|---------|------------------|--------|---|---|
| 39      | • <b>bch_ie</b>  |        | on  | <b>BEN: child benefit</b>   |
| 39.1    | ↳ DefTu          |        | on  | TU: family unit   |
| 39.1.1  | name             |        | tu_bch_fa_ie                                |   |
| 39.1.2  | type             |        | SUBGROUP                                    |   |
| 39.1.3  | members          |        | Partner & OwnDepChild & LooseDepChild       |   |
| 39.1.4  | PartnerCond      |        | {default} & {IsMarried}                     |   |
| 39.1.5  | DepChildCond     |        | {dag < 16}   ({dag < 18} & {IsInEducation}) | "Before 2009, child benefit was paid until the month children turn 19. In 2009, the full rate was paid for the month children turn 18 and half rate will be paid from the following month. From January 2010 the full rate was paid for the month children turn 18 but no payment was made after that." |
| 39.1.6  | ExtHeadCond      |        | !{IsDepChild}                               | i.e. default  |
| 39.1.7  | StopIfNoHeadF... |        | no  |   |
| 39.1.8  | NoChildIfHead    |        | yes   | (note this excludes loose children living on their own)   |
| 39.2    | ↳ BenCalc        |        | on  |   |
| 39.2.1  | comp_cond        | 1      | {IsNtoMchild}#1                             | first and second child receive  |
| 39.2.2  | #_N              | 1      | 1   |   |
| 39.2.3  | #_M              | 1      | 2   |   |
| 39.2.4  | comp_perElig     | 1      | 140#m                                       | this amount   |
| 39.2.5  | comp_cond        | 2      | {IsNtoMchild}#2                             | any subsequent child receives higher amount (until 2010)  |
| 39.2.6  | #_N              | 2      | 3   |   |
| 39.2.7  | #_M              | 2      | 3   |   |
| 39.2.8  | comp_perElig     | 2      | 140#m                                       | "since 2011, third child receives this amount"  |
| 39.2.9  | comp_cond        | 3      | {IsNtoMchild}#3                             |   |
| 39.2.10 | #_N              | 3      | 4   | "since 2011, any subsequent child receives higher amount"   |
| 39.2.11 | #_M              | 3      | 99  |   |
| 39.2.12 | comp_perElig     | 3      | 140#m                                       |   |
| 39.2.13 | output_var       |        | bch_s                                       |   |
| 39.2.14 | TAX_UNIT         |        | tu_bch_fa_ie                                |   |

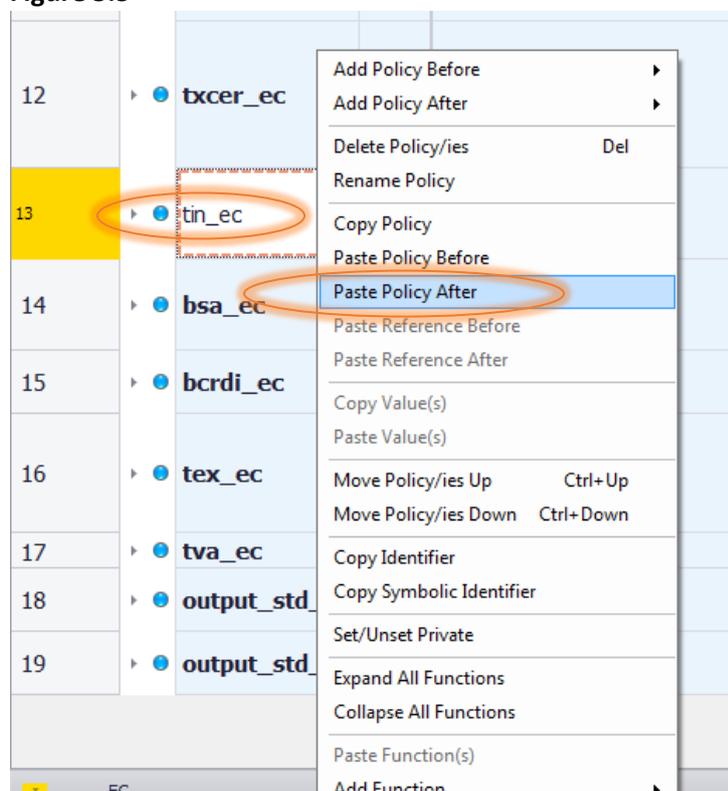
After this analysis, we must implement the bond in Ecuador. For this we can simply copy the policy by right clicking on **bch\_ie** and selecting *Copy Policy* (Figure 5.2).

**Figure 5.2**



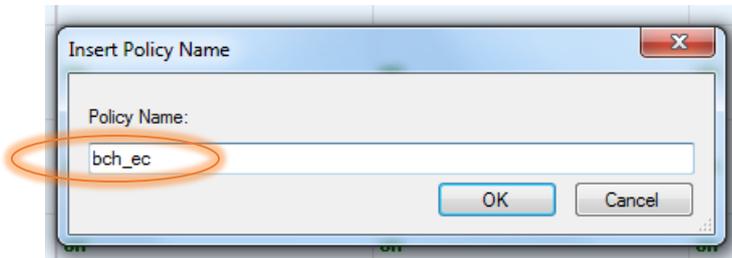
Based on the analysis of the policy of Ireland, we know that the bond is not subject to income tax therefore we must implement (paste) this policy after the simulation of income tax in Ecuador (**tin\_ec**) (Figure 5.3).

**Figure 5.3**



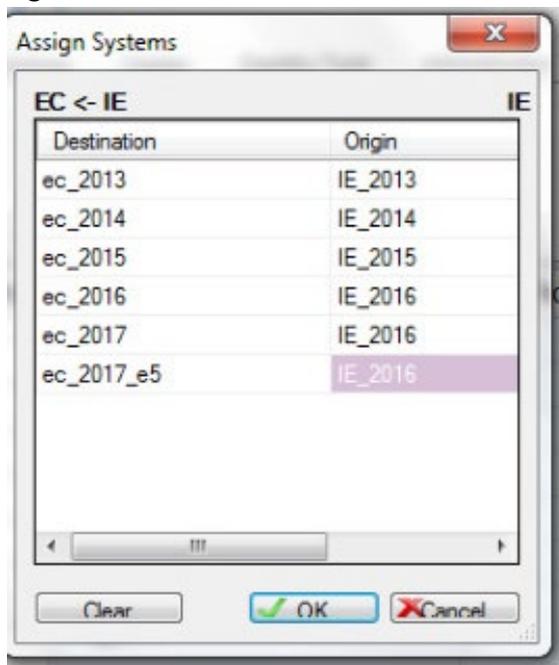
After clicking on the option *Paste Policy*, it will be necessary to give a (new) name to the policy in Ecuador. In our case, we want to keep the same name, but use the specific acronym to Ecuador - **bch\_ec** (Figure 5.4).

**Figure 5.4**



After naming the policy and clicking OK, we must make sure that the IE\_2017 system is assigned to the Ecuadorian system EC\_2017\_e5 (Figure 5.5).

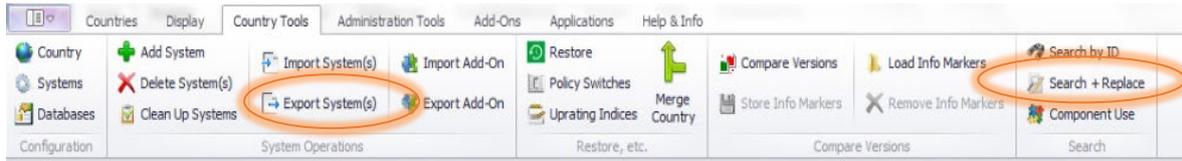
**Figure 5.5**



By clicking on OK you can notice that now the childhood bonus (**bch\_ec**) has been implemented for all years in Ecuador. However, we are interested in analyzing the effect of this policy only for the EC\_2017\_e5 system. Therefore, for all other systems we must specify that this policy is not available, by left clicking "on" and replacing it with the "n / a" option (not available). For reasons of consistency we should delete the comments in the Comment column because they correspond to the policy of Ireland.

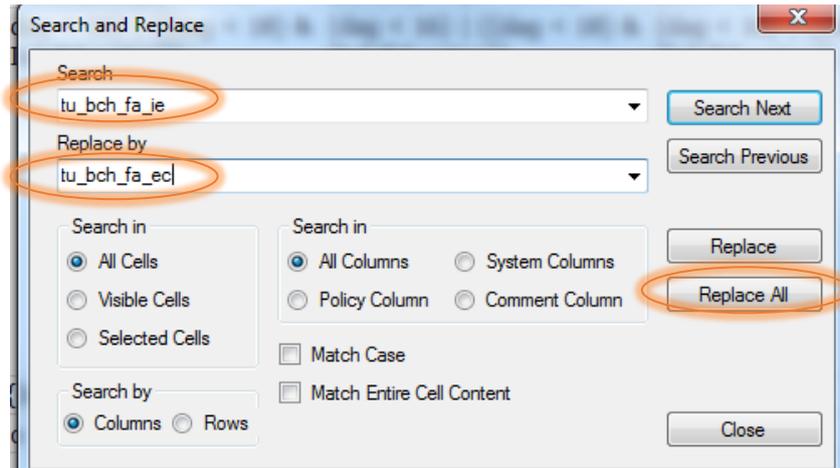
Our next step is to make sure that all adjustments for family units and income lists are made. For this, we must replace the name of the family unit of Ireland **tu\_bch\_fa\_ie** with the corresponding one for Ecuador **tu\_bch\_fa\_ec**. The easiest way to make this adjustment is using the Search and Replace option, which is found in the Country Tools tab in the options bar (Figure 5.6).

Figure 5.6



After clicking Search and Replace, you should find **tu\_bch\_fa\_ie** and replace it with **tu\_bch\_fa\_ec** (Figure 5.7).

Figure 5.7



The next step is to assign the amounts of the childhood bonus specific to the case of Ecuador (Figure 5.8).

Figure 5.8

|         |              |   |                 |                                   |
|---------|--------------|---|-----------------|-----------------------------------|
| 14.2    | BenCalc      |   | on              |                                   |
| 14.2.1  | comp_cond    | 1 | {IsNtoMchild}#1 | first and second child receive... |
| 14.2.2  | #_N          | 1 | 1               |                                   |
| 14.2.3  | #_M          | 1 | 2               |                                   |
| 14.2.4  | comp_perElig | 1 | 40#m            | ...this amount                    |
| 14.2.5  | comp_cond    | 2 | {IsNtoMchild}#2 | third child receives...           |
| 14.2.6  | #_N          | 2 | 3               |                                   |
| 14.2.7  | #_M          | 2 | 3               |                                   |
| 14.2.8  | comp_perElig | 2 | 30#m            | ...this amount                    |
| 14.2.9  | comp_cond    | 3 | {IsNtoMchild}#3 |                                   |
| 14.2.10 | #_N          | 3 | 4               | any subsequent child receives...  |
| 14.2.11 | #_M          | 3 | 99              |                                   |
| 14.2.12 | comp_perElig | 3 | 20#m            | ...this amount                    |
| 14.2.13 | output_var   |   | bch_s           |                                   |
| 14.2.14 | TAX_UNIT     |   | tu_bch_fa_ec    |                                   |

Finally, the new simulated variable (**bch\_s**) will affect our concept of net income only if it enters one of the income lists that make up the net income. In this case, the bonus for children must be included in the **ils\_bennt** income list, which is used to include bonuses without evaluation of monetary resources.

Before running the simulation you must increase the row of **bch\_s** for which you must right click on the variable **bcrdi\_s**, a window will appear and you must choose the option "Show Add Parameter

Form", another window is displayed and select the first option "Placeholder", then click on *Add* and the new row will appear in which the copied policies should be pasted, to then make sure that the names of "tu\_bch\_fa\_ie" were changed to "tu\_bch\_fa\_ec". (Figure 5.9)

**Figure 5.9**

|       | Policy        | Grp/No | ec_2017_e5 | Comment   |
|-------|---------------|--------|------------|---|
| 1     | • Uprate_ec   |        | on         | <b>DEF: UPGRATING FACTORS</b>                             |
| 2     | • ConstDef_ec |        | on         | <b>DEF: CONSTANTS</b>                                     |
| 3     | • Ilsdef_ec   |        | on         | <b>DEF: STANDARD INCOME CONCEPTS</b>                      |
| 3.1   | ↳ DefII       |        | on         | earnings  |
| 3.2   | ↳ DefII       |        | on         | original income   |
| 3.3   | ↳ DefII       |        | on         | simulated benefits  |
| 3.4   | ↳ DefII       |        | on         | Pensions (feeds into Statistics Presenter, do not change) |
| 3.5   | ↳ DefII       |        | on         | Means-tested benefits                                     |
| 3.6   | ↳ DefII       |        | on         | Non means-tested benefits                                 |
| 3.6.1 | name          |        | ils_bennt  |   |
| 3.6.2 | bun           |        | +          | Unemployment benefit (Seguro de cesantia)                 |
| 3.6.3 | bhl           |        | +          | Injury benefit  |
| 3.6.4 | bed           |        | +          | Scholarships  |
| 3.6.5 | bcrdi_s       |        | +          | Disability carer benefit (Joaquin Gallegos Lara)          |
| 3.6.6 | bch_s         |        | +          | Child Benefit   |

### Solution – Task 3: Produce the output database

Run the EUROMOD model to produce the output database for System EC\_2017 and EC\_2017\_e5 (see Exercise 1 for more information)

### Solution – Task 4: Analyze the results

Use the *Statistics Presenter* tool to analyze the impact of the introduction of the childhood bonus at the poverty and inequality level (see Exercise 1 for more information)

| <b>Basic Poverty Indices</b>    |                                 |                             |                    |
|---------------------------------|---------------------------------|-----------------------------|--------------------|
|                                 | Poverty Risk for ec_2017 (base) | Poverty Risk for ec_2017_e5 | Difference to base |
| Population                      | 0,22                            | 0,15                        | -6,96              |
| Children                        | 0,26                            | 0,16                        | -10,21             |
| Working Age                     | 0,17                            | 0,12                        | -5,13              |
| Working Age Economically Active | 0,11                            | 0,07                        | -4,33              |
| Elderly                         | 0,34                            | 0,31                        | -2,29              |
| Fixed Poverty Line              | 196,71                          |                             |                    |
| <b>Basic Inequality Indices</b> |                                 |                             |                    |
|                                 | ec_2017 (base)                  | ec_2017_e5                  | Difference to base |
| Gini Original Income            | 0,47                            | 0,47                        | 0,0                |
| Gini Disposable Income          | 0,43                            | 0,40                        | -0,03              |

*\*\*\* If you need additional information about the functions used during the exercise, you can access the EUROMOD help menu: EUROMOD Help & Info (in the last tab of the option bar). Click on Help and type the words you want to search.*