

# Practical Exercises – key steps

## 1. Overview

In this session, our goal is to familiarise ourselves with the practical processes needed to make changes to the VNMOD model. We will do this by, firstly, **amending an existing policy** in the model, and then, secondly, **introducing a new policy** into the model. After each of these tasks, we will assess the effects of our changes on the summary statistics provided by the Statistics Presenter.

## 2. Initial model preparation steps

- Make a copy of the master model, and name it 'VNMOD v3.3 – Example reforms'.
- Open Euromod and navigate in the file directory to the folder named 'VNMOD v3.3 – Example reforms'.
- Open the selected model by clicking on the Viet Nam flag in the top menu bar.
- **For the purpose of these exercises, we will use the 2019 system as our baseline system.**
- Hide every system except the 'VN\_2019' system (right-click system, click hide 'All but selected')
- If necessary, alter the way the user interface is displayed on the screen.

## 3. Policy reform #1: amending the existing pension benefit policy

For our first practical exercise, we are going to make an amendment to the benefit policy 'poa01\_vn', which relates to the *Pension Benefit for older people living without family support (i.e. living without anyone of working age)*. If we click on the drop-down arrow to the left of this policy name on the spine, we can see how this policy was modelled for the VN\_2019 system year.

### 3.1. Summary of current configuration of 'poa01\_vn' policy

Before we start to make any changes to this policy, we need to fully understand what is being modelled and how. We can see that there are currently three functions in this policy:

*Spine reference: 20.1. DefVar* – creates a “temporary” variable for number of people aged between 16-59 in each household (for now it is 0)

*Spine reference: 20.2. Elig* – specifies values for the intermediate variable based on the data

*Spine reference: 20.3. BenCalc* – calculates the benefit for each eligible individual. Note that the benefit condition specifies that beneficiaries should be either:

- Between 60 and 80 years of age, with no working-age people in their household, and in poor households; or
- Over 80 years of age, with no working-age people in their household, and in poor households.

### 3.2. Amending the configuration of the ‘poa01\_vn’ policy

#### Creating a new ‘reform’ system

A vital rule of tax-benefit simulation using Euromod, is that we never change the content of the ‘master’ system, unless we are correcting an error or omission in that system. If we are running reform scenarios, as we are in this practical exercise, then the very first step we must perform is to **make a copy of the base system and give it a suitable system name.**

- Right-click on the system name ‘VN\_2019’, which is our base system for this practical exercise, and select ‘Copy/Paste System’, then give it a name such as ‘VN\_2019\_reform\_1’.

#### Description of the reform

The reform we wish to simulate, entails providing extra financial support to those females aged over 60, who are living in rural areas, and who are already currently eligible for the existing pension benefit. Specifically, we will give a qualifying woman an extra VND 400 per month, on top of what they are already receiving for the pension benefit. Therefore, any woman who currently qualifies for the pension benefit ‘poa01\_vn’ in the year 2019, who is of the appropriate age and who lives in a rural location, will receive the standard amount for her age group, **plus an additional VND 400 per month**. There are no other eligibility criteria.

#### Implementation of the reform scenario

- Navigate back to the existing ‘poa01\_vn’ policy, and look in detail at the specification of this policy in the ‘VN\_2019\_reform\_1’ system (see the detailed explanation document if needed). **Remember that any changes we make during this reform, will only be made to the ‘VN\_2019\_reform\_1’ system. We will not touch the master ‘VN\_2019’ system.**
- Introduce a new BenCalc function into the ‘poa01\_vn’ policy, placing this function at the very bottom of the policy, after the existing BenCalc that we have already looked at in detail that is at Spine reference 20.3 (see above). To do this, we right-click on the BenCalc at Spine reference 20.3, and we go to ‘Add Function After ->’, then we choose the BenCalc option from the list of possible function types.
- Turn this new function ‘ON’ for our reform system.
- TAX\_UNIT is ‘tu\_individual\_vn’.
- The ‘Comp\_Cond’ parameter is where we need to enter the eligibility rules for this ‘top up’ amount. The three eligibility criteria that are applicable here are that the person:
  - (a) Must be female, AND
  - (b) Must be aged over 60, AND
  - (c) Must be living in a rural location, AND
  - (d) Must already be receiving the pension benefit in its standard form.
- The eligibility rule for this ‘top up’ benefit can therefore be written into the Comp\_Cond parameter of our new BenCalc function (in Spine reference line 20.4.1) as follows:

$$(dgn = 0) \ \& \ (dag > 60) \ \& \ (dur = 0) \ \& \ (poa01\_s > 0)$$

- The Comp\_perTU is where we specify the monetary amount associated with the ‘top up’ benefit. Whilst we could decide to create a new Constant to reflect this monetary amount, on this occasion we will simply type the monetary amount into the Comp\_perTU parameter, using the ‘#m’ suffix to clearly show that this is a monthly amount:

400#m

- Change the Output\_Var parameter to an Output\_Add\_Var parameter, and reference the ‘poa01\_s’ variable in the Output\_Add\_Var parameter.

### Configuration of the new BenCalc used to model the ‘top up’ to pension benefit

20.4	fx	BenCalc		n/a	on
20.4.1		Comp_Cond	1	n/a	(dgn = 0) & (dag > 60) & (dur = 0) & (poa01_s > 0)
20.4.2		Comp_perTU	1	n/a	400#m
20.4.3		Output_Add_Var		n/a	poa01_s
20.4.4		TAX_UNIT		n/a	tu_individual_vn

- Because we are not creating any new simulated output variables, as we are simply using the existing poa01\_s output variable and adding the ‘top up’ to it, we do not need to alter any of the Income Lists specified within the model

### 3.3. Running the model and assessing the output

- Run the ‘VN\_2019’ system and the ‘VN\_2019\_reform\_1’ system.
- Run the Statistics Presenter and assess the impact of our reform on government expenditure, as well as on headline poverty and inequality measures:
  - We run the Statistics Presenter by navigating to the ‘Applications’ tab at the top of the menu, and clicking on the Statistics Presenter icon.
  - We want to select ‘Baseline/Reform’ calculations.
  - In the following dialogue box, we select the ‘VN\_2019’ system in the ‘Baseline Scenario’ column, and the ‘VN\_2019\_reform\_1’ system in the ‘Alternative Scenario(s)’ column.

## Reform scenario 1, Statistics Presenter output for revenue/expenditure

Southmod Statistics - Baseline/Reform			
Results for Viet Nam: VN_2019 vs VN_2019_reform_1			
Tax-ben policy	Poverty	Inequality	
Tax-benefit policy ?			
Yearly, mill. national currency			
	VN_2019 (base)	VN_2019_reform_1	Difference to base
<b>Government revenue through taxes, SSC and indirect taxes</b>	<b>636,491.97</b>	<b>636,491.97</b>	<b>0.00</b>
... direct taxes	40,181.65	40,181.65	0.00
... indirect taxes	121,016.66	121,016.66	0.00
... social security contributions (employer, employee and self-employed)	475,293.66	475,293.66	0.00
<b>Government expenditure on social transfers</b>	<b>322,799.20</b>	<b>326,608.19</b>	<b>3,808.99</b>
... child benefits	2,502.44	2,502.44	0.00
... social assistance	20,292.29	20,292.29	0.00
... orphan/widow benefits	0.00	0.00	0.00
... disabled benefits	61,423.63	61,423.63	0.00
... unemployment benefits	916.92	916.92	0.00
... pension benefits	237,663.93	241,472.92	3,808.99
... agricultural benefits	0.00	0.00	0.00

The reform would cost the government an additional VND 3,809 billion to implement in the way we have specified in this practical exercise. (Note that in millions are in fact billions in the VNMOD model, as all values in the input data and model are in thousands).

Note that no other forms of benefit expenditure would be affected by the reform we implemented, and similarly there would be no changes to government tax revenues.

## Reform scenario 1, Statistics Presenter output for poverty measures

Southmod Statistics - Baseline/Reform			
Results for Viet Nam: VN_2019 vs VN_2019_reform_1			
Tax-ben policy   Poverty   Inequality			
Poverty after taxes and transfers ?			
Income based			
	VN_2019 (base)	VN_2019_reform_1	Difference to base
Share of poor population, in %			
<b>All</b>	<b>9.87</b>	<b>9.71</b>	<b>-0.16</b>
Poor households out of ...			
... male headed households	11.21	11.05	-0.16
... female headed households	5.32	5.15	-0.17
... households with children	11.46	11.41	-0.05
... households with older persons	8.18	7.84	-0.34
Poverty gap (average normalised poverty gap, FGT(1))			
<b>All</b>	<b>4.33</b>	<b>4.30</b>	<b>-0.02</b>
Poor households out of ...			
... male headed households	5.05	5.02	-0.02
... female headed households	1.88	1.85	-0.03
... households with children	5.16	5.15	-0.01
... households with older persons	3.16	3.10	-0.06
Absolute national poverty line, in national currency, yearly:	10,218	10,218	0

We can see that if the pension benefit ‘top up’ was introduced in the way we specified, it would lead to a reduction in the poverty headcount rate of 0.16 percentage points, resulting in an overall poverty rate of 9.71%.

We can see that the effect specifically on households containing older persons would be somewhat larger, with the poverty rate of this group reducing by 0.34 percentage points.

Small reductions in the poverty gap would also be observed.

**Reform scenario 1, Statistics Presenter output for inequality measures**

Southmod Statistics - Baseline/Reform			
Results for Viet Nam: VN_2019 vs VN_2019_reform_1			
Tax-ben policy   Poverty <b>Inequality</b>			
Inequality and the household income distribution after taxes and transfers, yearly ?			
Income based			
	VN_2019 (base)	VN_2019_reform_1	Difference to base
Gini (household income)	0.4371	0.4364	-0.0007
P80/P20	4.34	4.29	-0.06
Quantiles of distribution and median			
20th	15,138.62	15,336.04	197.42
40th	27,602.86	27,616.52	13.66
50th	34,226.85	34,247.40	20.55
60th	41,496.72	41,551.86	55.14
80th	65,731.54	65,731.54	0.00
Absolute national poverty line, in national currency, yearly	10,218	10,218	0

Our reform scenario the Gini coefficient would fall slightly from 0.4371 to 0.4364, a reduction of 0.0007. This can be interpreted as a small reduction in the level of income inequality in the country as a whole.

From the quantiles of the income distribution, we can see that the reform scenario generates a small increase to the income levels at the 20<sup>th</sup>, 40<sup>th</sup>, 50<sup>th</sup> and 60<sup>th</sup> percentiles, but has no effect on the income at 80<sup>th</sup> percentile. This is in line with what we would expect, as our pension benefit 'top up' was targeted at households that met the 'poor list' criterion, and therefore we would not expect those people with the highest incomes to benefit from this 'top up'.

**Congratulations, you have completed the first reform scenario practical exercise!**

## 4. Policy reform #2: adding a new policy

For our second practical exercise, we are going to introduce a new benefit aimed at supporting children aged under 3 years (i.e. ages 0-2 inclusive). In line with the naming convention applied in VNMOD (and other Euromod-based models), we will call our child benefit 'bch', denoting it is a 'benefit for children'. The policy will therefore be called '**bch\_vn**'. Although all children aged 0-2 years, inclusive, will be eligible for this new benefit, the monetary amount will vary according to the child's age. Furthermore, the monetary amount paid for each eligible girl will be slightly higher than the monetary amount paid for each eligible boy.

Remember that we are not proposing that a benefit should be designed like this in reality! We are simply using these eligibility and payment criteria for illustrative purposes in this practical exercise.

### 4.1. Creating the 'bch\_vn' policy

Creating a new 'reform' system

**Make a copy of the base 'VN 2019' system and give it a suitable system name.**

- Right-click on the system name 'VN\_2019', which is our base system for this practical exercise, and select 'Copy/Paste System', then give it a name such as 'VN\_2019\_reform\_2'.

#### Description of the reform

The reform we wish to simulate, entails providing extra financial support to households with very young children. The benefit will be paid for each eligible child in the household, with no maximum limit to the number of children receiving it per household. All children aged 0, 1 and 2 years will be eligible for this benefit, with **no** 'means test' element to the eligibility conditions. In other words, this is a **universal** child benefit.

Although this new benefit will be universal, not all children will receive the same monetary amount. Rather, the monetary amount will be dependent upon the age and sex of the child, as shown in the table.

**Monetary amounts by age/sex groups for new child benefit**

Age of child	Monthly amount of benefit per child	
	Female child	Male child
0	VND 650	VND 600
1	VND 450	VND 400
2	VND 250	VND 200

#### Implementation of the reform scenario

- Add a new benefit policy to the model. Our new policy will be called 'bch\_vn'. To do this, right-click on policy name 'bed01\_vn', and select 'Add Policy After -> Benefit'.
- Give the new policy the appropriate name which, in this example, is **bch\_vn**,

- Turn this policy 'ON' for the 'VN\_2019\_reform\_2' system, but **not** the base 'VN\_2019' system.
- Add a comment to briefly describe this new policy, such as

**BEN: New universal child benefit paid to children aged under 3 years.**

- Based on the stated policy design features, we can use a single BenCalc function to simulate this new benefit policy.
- To add a BenCalc into the bch\_vn policy, we right-click on the policy name, and we choose 'Add Function -> BenCalc'.
- Turn this 'ON' for the 'VN\_2019\_reform\_2' system, but **not** for the base 'VN\_2019' system.
- The TAX\_UNIT for this BenCalc will be 'tu\_individual\_vn'.
- The output variable will be 'bch\_s'.
- Next, specify the Comp\_Cond and Comp\_perTU parameters.

**Final configuration of the new bch\_vn policy**

19	▼	●	bch_vn		n/a	on
19.1		▼	fx BenCalc		n/a	on
19.1.1			Comp_Cond	1	n/a	(dag=0)
19.1.2			Comp_perTU	1	n/a	600 #m
19.1.3			Comp_Cond	2	n/a	(dag=1)
19.1.4			Comp_perTU	2	n/a	400 #m
19.1.5			Comp_Cond	3	n/a	(dag=2)
19.1.6			Comp_perTU	3	n/a	200 #m
19.1.7			Comp_Cond	4	n/a	(dag<3) & (dgn=0)
19.1.8			Comp_perTU	4	n/a	50 #m
19.1.9			Output_Var		n/a	bch_s
19.1.10			TAX_UNIT		n/a	tu_individual_vn

**Adding the new output variable to the relevant Income Lists**

- We need to add this new output variable to two different income lists:
  - Spine reference number 5.10: **ils\_bennt** (*non-means tested benefits, to calculate disposable income*)
  - Spine reference number 7.3: **ils\_bch** (*child benefits, shown in Statistics Presenter*)
- Navigate to the relevant Income List, right-click on the 'Name' parameter (e.g. Spine reference number 5.10 for **ils\_bennt**), choose 'Show Add Parameter Form', then tick the [Placeholder] option, then 'Add' and 'Close'. This adds a blank [Placeholder] parameter to the Income List.
- Rename this [Placeholder] by giving it the name of our new 'bch\_s' simulated variable.
- Finally, add a '+' sign to the 'VN\_2019\_reform\_2' system to indicate that this new simulated variable should be added to this Income List for this reform system.
- Note that we do **not** add this simulated variable to the Income List for the base 'VN\_2019' system.
- We can also add an informative comment to explain what this simulated variable is, such as



“New universal child benefit in 'VN\_2019\_reform\_2' system”

- Note that we need to do this separately also for the other Income List stated above.

### Running the model and assessing the output

- Click on the green ‘Run SOUTHMOD’ icon on the top-left of the screen.
- Tick the ‘VN\_2019\_reform\_2’ system to run.
- Run the Statistics Presenter.
  - Specify ‘Baseline/Reform’
  - Choose the ‘VN\_2019’ system as the ‘Baseline Scenario’ and the ‘VN\_2019\_reform\_2’ system as the ‘Alternative Scenario(s)’
  - Select ‘Income-based’ distributional statistics.

## Reform scenario 2, Statistics Presenter output for revenue/expenditure

Southmod Statistics - Baseline/Reform			
Results for Viet Nam: VN_2019 vs VN_2019_reform_2			
Tax-ben policy	Poverty	Inequality	
Tax-benefit policy ?			
Yearly, mill. national currency			
	VN_2019 (base)	VN_2019_reform_2	Difference to base
<b>Government revenue through taxes, SSC and indirect taxes</b>	<b>636,491.97</b>	<b>636,491.97</b>	<b>0.00</b>
... direct taxes	40,181.65	40,181.65	0.00
... indirect taxes	121,016.66	121,016.66	0.00
... social security contributions (employer, employee and self-employed)	475,293.66	475,293.66	0.00
<b>Government expenditure on social transfers</b>	<b>322,799.20</b>	<b>343,576.88</b>	<b>20,777.68</b>
... child benefits	2,502.44	23,280.11	20,777.68
... social assistance	20,292.29	20,292.29	0.00
... orphan/widow benefits	0.00	0.00	0.00
... disabled benefits	61,423.63	61,423.63	0.00
... unemployment benefits	916.92	916.92	0.00
... pension benefits	237,663.93	237,663.93	0.00
... agricultural benefits	0.00	0.00	0.00

It is evident from the figure that the annual cost to Government of introducing this new universal child benefit would be approximately VND 20,778 billion for the year 2019. This is the difference between the expenditure on child-related benefits in the 'base' system (VN\_2019) and the reform system (VN\_2019\_refom\_2). Although this additional expenditure is quite large when compared to the base expenditure on child benefits (just VND 2,502 billion), it is still far smaller than the base expenditure on pension benefits (VND 236,664 billion), which remained unaffected by our reform scenario.

## Reform scenario 2, Statistics Presenter output for poverty measures

Southmod Statistics - Baseline/Reform			
Results for Viet Nam: VN_2019 vs VN_2019_reform_2			
Tax-ben policy	Poverty	Inequality	
Poverty after taxes and transfers ?			
Income based			
	VN_2019 (base)	VN_2019_reform_2	Difference to base
Share of poor population, in %			
<b>All</b>	<b>9.87</b>	<b>9.48</b>	<b>-0.39</b>
Poor households out of ...			
... male headed households	11.21	10.74	-0.47
... female headed households	5.32	5.18	-0.14
... households with children	11.46	10.93	-0.53
... households with older persons	8.18	7.78	-0.40
Poverty gap (average normalised poverty gap, FGT(1))			
<b>All</b>	<b>4.33</b>	<b>4.05</b>	<b>-0.27</b>
Poor households out of ...			
... male headed households	5.05	4.73	-0.32
... female headed households	1.88	1.75	-0.13
... households with children	5.16	4.78	-0.37
... households with older persons	3.16	2.94	-0.22
Absolute national poverty line, in national currency, yearly:	10,218	10,218	0

The introduction of the simulated child benefit would reduce the overall national poverty headcount rate by 0.39 percentage points, from the base value of 9.87% poor, to the reform scenario of 9.48% poor. As might be expected given the focus of the new child benefit, the poverty rate amongst households containing children fell by a larger amount, declining from 11.46% to 10.93%.

Of course, as our new child benefit is a universal benefit, some beneficiary children will not be poor to begin with, and so for these cases, receiving the benefit will not change their poverty status. It may, however, result in these non-poor cases moving further away from the poverty threshold, and therefore act as a protective mechanism to prevent these individuals falling into the poverty in the future.

**Reform scenario 2, Statistics Presenter output for inequality measures****Southmod Statistics - Baseline/Reform**

Results for Viet Nam: VN\_2019 vs VN\_2019\_reform\_2

Tax-ben policy

Poverty

**Inequality****Inequality and the household income distribution after taxes and transfers, yearly ?**

Income based

	<b>VN_2019 (base)</b>	<b>VN_2019_reform_2</b>	<b>Difference to base</b>
Gini (household income)	0.4371	0.4346	-0.0025
P80/P20	4.34	4.28	-0.07
Quantiles of distribution and median			
20th	15,138.62	15,419.66	281.04
40th	27,602.86	27,923.33	320.48
50th	34,226.85	34,357.01	130.16
60th	41,496.72	41,793.02	296.30
80th	65,731.54	65,931.84	200.30
Absolute national poverty line, in national currency, yearly	10,218	10,218	0

The child benefit reform would lead to a small reduction in the Gini coefficient, with it falling from 0.4371 to 0.4346. Furthermore, we can see from the quantiles of the income distribution that the new benefit would positively increase incomes across the entirety of the income distribution, which is as we would expect given that it is a universal benefit, and therefore not restricted to lower-income households

**Congratulations, you have completed the second reform scenario practical exercise!**