

Exercise 4: Introducing a supplement, withdrawn with earnings, to the Child Benefit in the UK

Objectives:

- perform a policy reform in UKMOD that involves adding a *BenCalc* function in the existing policy and using the optional parameters *Withdraw_Base*, *Withdraw_Start* and *Withdraw_Rate*.

Description:

The aim of this exercise is to perform a reform of the Child Benefit in the UK in 2022. Your task is to **add** a supplement to the CB for families with at least 2 dependent children, using the function *BenCalc*. The supplement is equal to £30 per week for the whole family but should be withdrawn with earnings: 10% should be withdrawn for each £1,000 that the benefit unit earns, above £20,000 per year (this is a rate of $.1/1,000 = .0001$). Analyse the results after introducing the reform.

Directions:

- Open UKMOD and access the UK policy descriptions
- Copy the *UK_2022* system, and call the copy *UK_2022bch2*
- Open the Child Benefit policy (*bch_uk*)
- Modify the Child Benefit policy to add the supplement using the function *BenCalc*
 - a. Use the same assessment unit for the supplementary as for Child Benefit
 - b. Use the same variable name for the supplement as for Child Benefit (*bch_s*)
 - c. The variable for earnings is *yem*
- Save your changes
- Run both *UK_2022* and *UK_2022bch2*
- Use the Statistics Presenter, Baseline/Reform option, to analyse effects

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Step-by-step solution and further information:

Step 1: Analysing the current policy

Access the Child Benefit policy in the UK (*bch_uk*). Consider year 2022.

Step 2: Adding a new system

1. Add a new system. There are two ways of doing this:
 - a. right-click on the system heading UK_2022 and select the option ‘copy/paste system’ (see Exercise 2 for details)
 - b. click on the button *Add System* in the Country Tools tab. Using 2), select the base system, click ok and then specify a name for the reform system (type e.g. *UK_2022bch2*) (see Exercise 3 for details).

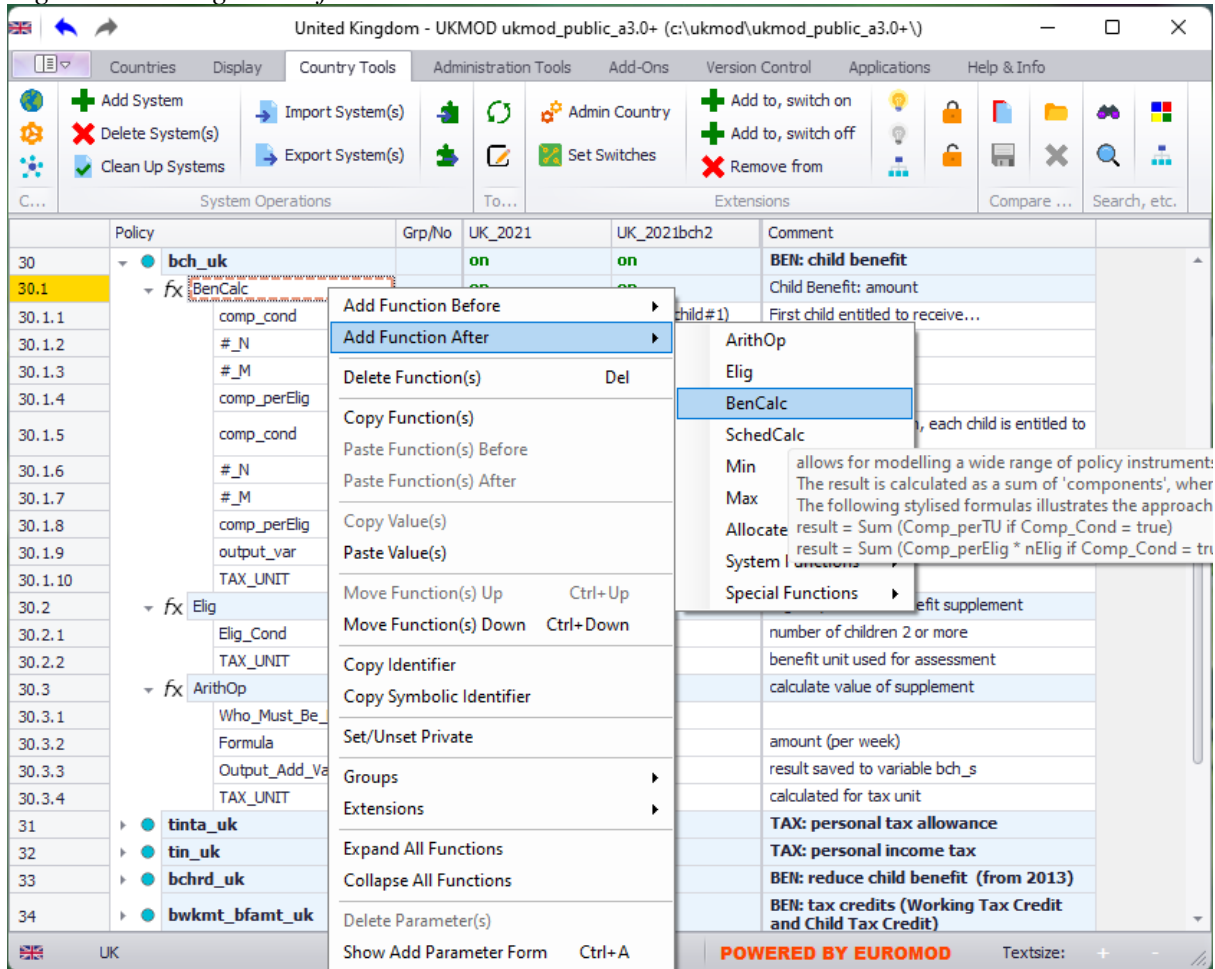
Step 3: Implementing the reform

1. First, to introduce the supplement, we need a function which defines who is entitled to it and how much the supplement amounts to:
 - a. In the Child Benefit policy, right-click on the first function *BenCalc* and select from the option *Add Function After* the function *BenCalc*. This creates the new function with its compulsory parameters *Comp_Cond*, *Comp_perTU*, *output_var* and *TAX_UNIT* (with default values *n/a*).

Note that the parameters *Comp_Cond* and *Comp_PerTU* are already grouped together into one component (column “Grp/No” with value 1), so you don’t need to do anything.

- b. Set the function switch to *on* for the reform system (*UK_2022bch2*).

Figure 1: Adding a new function – BenCalc



- c. For the system we are reforming, change the value of the parameter *Comp_Cond* to $nDepChildrenInTU \geq 2$. Thus, the eligibility condition says that there should be at least 2 dependent children in the benefit unit.
- d. Change the value of the parameter *Comp_perTU* to $30\#w$.
- e. Change the parameter value *Output_Var* from *n/a* to the simulated benefit *bch_s*.

Remember that you need to use the parameter *Output_Add_Var* instead of *Output_Var*, to add the supplement to (rather than replace the value of) the benefit calculated with the first BenCalc function.

To do this, simply click on the parameter *Output_Var* and you will be asked to replace it.

- f. Set the value of the parameter *TAX_UNIT* from *n/a* to *tu_bu_uk* (i.e. the relevant benefit unit or the family used to calculate the Child Benefit).

Figure 2: Filling in parameter values in the new BenCalc function

	Policy	Grp/No	UK_2021	UK_2021bch2	Comment
30	▼ ● bch_uk		on	on	BEN: child benefit
30.1	▼ fX BenCalc		on	on	Child Benefit: amount
30.1.1	comp_cond	1	(IsNtoMchild#1)	(IsNtoMchild#1)	First child entitled to receive...
30.1.2	#_N	1	1	1	
30.1.3	#_M	1	1	1	
30.1.4	comp_perElig	1	\$CBFirst	\$CBFirst	this amount par69
30.1.5	comp_cond	2	(IsNtoMchild#2)	(IsNtoMchild#2)	"From second child on, each child is entitled to receive..."
30.1.6	#_N	2	2	2	
30.1.7	#_M	2	99	99	
30.1.8	comp_perElig	2	\$CBOther	\$CBOther	this amount par70
30.1.9	output_var		bch_s	bch_s	
30.1.10	TAX_UNIT		tu_bu_uk	tu_bu_uk	
30.2	▼ fX BenCalc		n/a	on	
30.2.1	Comp_Cond	1	n/a	nDepChildrenInTu>=2	
30.2.2	Comp_perTU	1	n/a	30#w	
30.2.3	Output_Add_Var		n/a	bch_s	
30.2.4	TAX_UNIT		n/a	tu_bu_uk	

2. Second, we need to calculate the benefit withdrawal:

- a. Right-click on the function or a parameter name of the new function *BenCalc* and select *Show Add Parameter Form*.
- b. In the *Add Parameters* list select the parameters *Withdraw_Base*, *Withdraw_Start*, *Withdraw_Rate* and click the *Add* button. You can drag the parameters within the *BenCalc* function to change their position, e.g. after *Comp_perTU*, but note that order of parameters within a function does not matter.
- c. Set *Withdraw_Base* equal to *yem* (variable for earnings), *Withdraw_Rate* to 0.0001 and *Withdraw_Start* to 20000#y.

Figure 5: Adding parameters *Withdraw_Base*, *Withdraw_Rate*, *Withdraw_Start*

Add Parameters

BenCalc (order: 2) in policy bch_uk

Add	Parameter	Replaces	Grp/No	Count	Default	Description
<input type="checkbox"/>	Base					Base amount that can be used with parameters compX_per...
<input checked="" type="checkbox"/>	Withdraw_Base					Withdraw_Base * Withdraw_Rate is deducted from function...
<input checked="" type="checkbox"/>	Withdraw_Rate				0	Withdraw_Base * Withdraw_Rate is deducted from function...
<input checked="" type="checkbox"/>	Withdraw_Start				0	Level of Withdraw_Base where withdrawal starts.
<input type="checkbox"/>	Withdraw_End				1.79769313486232E+308	Level of Withdraw_Base where withdrawal ends (i.e. benefi...
<input type="checkbox"/>	Comp_Cond		2	1		Condition that must be fulfilled to add the component (comp...
<input type="checkbox"/>	Comp_perTU		2	1		Formula to calculate one component of the function's result...
<input type="checkbox"/>	Comp_perElig		2	1		Formula to calculate one component of the function's result...
<input type="checkbox"/>	Comp_LowLim		2	1	-1.79769313486232E+308	Replaces component if component is smaller.
<input type="checkbox"/>	Comp_UpLim		2	1	1.79769313486232E+308	Replaces component if component is higher.
<input type="checkbox"/>	Output_Var	Output_Add_Var				Variable for storing the result of the function. Result of functi...
<input type="checkbox"/>	Result_Var					Variable for storing the result of the function. Result of functi...
<input type="checkbox"/>	Who_Must_Be_Elig					Function's calculations are carried out if ...- one (one_memb...
<input type="checkbox"/>	Elig_Var				sel_s	Variable indicating whether a person is 'eligible' (see parame...
<input type="checkbox"/>	Run_Cond					Function is only carried out if the condition is fulfilled. The p...
<input type="checkbox"/>	LowLim				-1.79769313486232E+308	Replaces result of function if result is smaller.
<input type="checkbox"/>	UpLim				1.79769313486232E+308	Replaces result of function if result is higher.
<input type="checkbox"/>	Threshold				-1.79769313486232E+308	Replaces result of function if result is smaller: if lower limit is ...
<input type="checkbox"/>	Lmpriority				n/a	Parameter for the further specification of an operand:Possibl...
<input type="checkbox"/>	Round_Down					Result is rounded down to nearest whole number if set to 1,...

Show Common Parameters
 Show Footnote Parameters

Figure 6: Baseline versus reform scenarios

Policy	Grp/No	UK_2022	UK_2022bch2	Comment
30	bch_uk	on	on	BEN: child benefit
30.1	fx BenCalc	on	on	Child Benefit: amount
30.1.1	comp_cond	1	(IsNtoMchild#1)	First child entitled to receive...
30.1.2	#_N	1	1	
30.1.3	#_M	1	1	
30.1.4	comp_perElig	1	\$CBFirst	this amount par69
30.1.5	comp_cond	2	(IsNtoMchild#2)	"From second child on, each child is entitled to receive..."
30.1.6	#_N	2	2	
30.1.7	#_M	2	99	
30.1.8	comp_perElig	2	\$CBOther	this amount par70
30.1.9	output_var		bch_s	
30.1.10	TAX_UNIT		tu_bu_uk	
30.2	fx BenCalc	n/a	on	
30.2.1	Comp_Cond	1	n/a	nDepChildrenInTu>=2
30.2.2	Comp_perTU	1	n/a	30#w
30.2.3	Output_Var		n/a	bch_s
30.2.4	TAX_UNIT		n/a	tu_bu_uk
30.2.5	Withdraw_Base		n/a	yem
30.2.6	Withdraw_Rate		n/a	.0001
30.2.7	Withdraw_Start		n/a	20000#y

3. Save the parameter file.

Step 4: Produce and analyse micro-data output

Run the model to produce micro-data output for the baseline and reform system. Use the Statistics Presenter – option Baseline/Reform – to analyse differences in government revenues and income poverty due to the changes in the Child Benefit (see Exercise 2 for details).

Solution

See Excel file "Exercise 4.xls"