Exercise: BVR add-on

Analyse behavioural responses to a change in income tax rates

# Objectives

* Use the BVR add-on to simulate behavioural responses to a 5-percentage point increase in the basic rate of tax for people residing in England and Northern Ireland in 2026.
* Analyse effects of the reform.

# Directions

* Open UKMOD and access the UK policy descriptions
* Run a base-line simulation of the *UK\_2026* system using the *training\_data.txt* input data
* Use the BVR add-on to generate working statistics for the base-line simulation (*UK\_2026* system and *training\_data.txt*) – may take some time
* Copy working statistics from the output file *uk\_2026\_bvr.txt* to *training\_data.txt*
  + Output variables *mntr\_earns\_s*, *mntr\_ypp\_s*, *mntr\_yprtx\_s*, *mntr\_yiytx\_s*, *mntr\_other\_s*, *ntax\_s*, renaming each to omit the appended “*\_s*”
* Copy the *UK\_2026* system and name the copy *UK\_2026\_ex1*
* Implement a 5-percentage point increase in the basic rate of tax by adjusting parameter *$ITRate1* in system *UK\_2026\_ex1*
* Save the model changes
* Run the BVR add-on for the *UK\_2026\_ex1* system and *training\_data*
* Use the Statistics Presenter’s *Behavioural responses* template to analyse effects of the reform

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Step-by-step solutions and further information

# Step 1: Projections for default system

* Open the UK model, by clicking on the UK country flag.
* Select the “Run” button
* From the “Run UKMOD” window, select the checkbox under the “Run” column on the “UK\_2026 System” row, and select “training\_data”
* Press the “Run” button

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# Step 2: Evaluate working statistics for reference simulation

* Open the “Run UKMOD” window via the “Run” button
* Select the “View / Filter / Add-Ons” tab
* Turn on the “Auto Rename” feature
* Choose the BVR option from the add-ons drop-down menu

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* Select the “Main” tab
* Select the checkbox under the “BVR” column on the “UK\_2026 System” row, and “training\_data”
* Press the “Run” button

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*Note: Some “warning” messages may appear, which can be ignored*

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# Step 3: Add reference statistics to the input data

* Use Excel to open the output file “uk\_2026\_bvr.txt” and the input file “training\_data.txt”
* Add “mntr\_earns” data to the input file:
  + In the output file (uk\_2026\_bvr.txt), search for “mntr\_earns\_s”
  + Copy this column of data and append the data to the right-most column of the input data (training\_data.txt).
  + Edit the name at the top of the column to “mntr\_earns”.
* Repeat the above process for “mntr\_ypp\_s”, “mntr\_yprtx\_s”, “mntr\_yiytx\_s”, “mntr\_other\_s” and “ntax\_s”
* Save and close the input data file

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The mode is now set-up to analyse behavioural reforms to the 2026 system. Note that the input data would need to be updated as described above to consider reforms relative to any other system and/or input data set.

# Step 4: Specify policy reform

* Open the UK model
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  Description automatically generated with medium confidenceTo work more easily with the *UK\_2026* system, limit the display by right-clicking on the system name (*UK\_2026*), selecting *move to hidden system box* and then selecting *all systems but selected*
* Copy the 2026 system, via either of the following alternatives:
  + Right-click the system heading (*UK\_2026*) and select the option *copy/paste system*, entering the new system name *UK\_2026\_ex1*
  + Select the *Country Tools* tab, and press on the *Add System* button, selecting *UK\_2026* from the list of options, and entering the new system name *UK\_2026\_ex1*
* Navigate to the income tax parameters of the *UK\_2026\_ex1* system and increase the value of parameter $ITRate1 from 0.2 to 0.25 (as shown below)
* Save the model (CNTRL + s)

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# Step 4: Run the model and analyse the output

* Re-run the BVR add-on for the new system “UK\_2026\_ex1” on the expanded data “training\_data.txt”

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* When the simulation is complete, open the “Statistics Presenter” selection window, and select “UKMOD Statistics – Behavioural responses” from the drop-down menu

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* Under the Baseline Scenario, select the “uk\_2026\_std.txt” output, under the Alternative Scenario select the “uk\_2026\_ex1\_bvr.txt” output, and press “OK”

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When the statistics presenter window is populated you can inspect associated results (*NOTE: results below are for test data only*)

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