*A Basic 1*2*3 Open Economy Model: Exercises*

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Outline

- Introduction
- GAMS model coding
  - Coding CES and CET equations for trade
  - Computing parameters for CES and CET functions
- World price shock exercise
  - Coding exercises using a LOOP and INCLUDE file
- Sensitivity experiments
  - Sensitivity analyses – to elasticities
  - Coding experiments using two LOOPs
- 'Dutch disease' shock experiments
  - Unrequited inflows of funds
  - Sensitivity analyses
  - Resource booms and the real exchange rate
- Results
  - Starting to interpret results

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Aims

- Learn about
  - CES functions
  - CET functions
- Learn how results are influenced by changes in
  - Elasticities
  - Trade shares
- Start to think about the real exchange rate
- Learn to write better policy experiment files
  - Managing shocks
  - Carry out simple sensitivity analyses
- Better interpret CGE results

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Follow the instructions in the document *Basic 1-2-3 Model Exercises.pdf*

Start at the beginning and work through each exercise.

Techniques and skills used here will be used repeatedly in the course. We may not do things the way you are used to doing things.

Even if you knew everything you may learn something new.

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User Model Library

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Course Library & Working Project

- All the files for these exercises are already in your course library
  - `cgemod_training\practical_lib`
- Create a new directory for the 123 model exercices
  - `cgemod_training\opmod`
- Create a New Project (`File>New Project`)
  - Add a new sub directory – `opmod1`
  - Name the project file `opmod1.gsp`
- The library index file in Model Library Explorer
  - `Practical CGE Library`
  - Items 5 and 6 will be used

Create a new project `opmod1`, i.e.,

`cgemod_training\opmod\opmod1`

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Model Development

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Assigning Equations

- The template (`123.gms`) contains
  - Set declarations and assignments
  - Some parameter declarations and assignments
  - Variable declarations and initialisation
  - Some equation declarations
- In this part of the exercise you will
  - Assign parameter & equations
  - Resolve all syntax and execution errors you cause
- The exercise document provides details for all the stages
  - Remember to make use of any advice in earlier exercise documents and anything you have learnt

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Policy Experiments

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Exercise: World Prices

- You will code and run world price experiments in a LOOP
  - 5 for exports
  - 5 for imports
- For each experiment you will
  - Collate the results
  - Analyse the results

The answers to the questions are VERY important. This is an early step in learning how to interpret the results from CGE models.

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Experiments: Elasticities and Sensitivity

- You will analyse the sensitivity of the world price experiment results to changes in the CES/Armington elasticities
- You will add another LOOP
  - This LOOP will contain changes to the import/CES elasticity
- For each experiment you will
  - Collate the results
  - Analyse the results

The analyses to the results are VERY important. This is an early step in learning how to interpret the results from CGE models.

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Demonstration: Offer Curves

- You will code and run 7 different world prices for exports in a LOOP
- You will then use the quantities of exports (*QE*) and imports (*QM*) to derive the offer curve
  - Plot quantities of exports (*QE*) and imports (*QM*) in QE: QM space
  - An Excel template is provided to help
- The experiments will be conducted for each of three degrees of trade dependency: high, medium and low
- For each experiment you will
  - Develop a set of *a priori* expectations about the results
  - Explain the shapes of the different offer curves

This exercise is VERY important. It demonstrates that models using the Armington insight are consistent with orthodox trade theories.

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Experiments: Dutch Disease

- You will code and run 5 different inflows of unrequited funds in a LOOP
- You will then assess the sensitivity of your results to changes in import elasticities
  - This will be done in an outer LOOP
  - This LOOP will contain changes to the import/CES elasticity
- For each experiment you will
  - Collate the results
  - Develop a set of *a priori* expectations about the results
  - Answer a set of question using the results
  - Compare the results with your expectations

The answers to the questions are VERY important. This is an early step in learning how to interpret the results from CGE models.

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Skills

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GAMS Skills

- Coding a model
  - Parameters
  - Equations
  - Checks on the model
- Running Experiments
  - Choosing the 'right' model settings
- Collecting results
  - Organising experiment files
  - Organising results files
- Interpreting results
  - Interpretation is critical

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The End

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