2. Advanced Computable General Equilibrium (CGE) Modeling

Objective of the course

The Advanced Dynamic CGE course is an intensive extension of the introductory CGE training, designed to equip participants with advanced skills in developing and customizing Dynamic CGE models for individual economies. Through a step-by-step, hands-on approach, participants learn to specify dynamic equations, import and calibrate large Social Accounting Matrices (SAMs) in GAMS, and integrate them into fully operational dynamic CGE frameworks. The course is intended for policymakers, academics, researchers, and analysts seeking to advance their careers in economy-wide modelling, with eligibility extended to graduates of the Introductory CGE course or participants with prior experience in large static CGE modelling. The course is delivered in five modules as follows.

- **Module 1: Datasets for Dynamic CGE models**
  - Building a macro and micro Social Accounting Matrix (SAM)
  - Economic blocks in the SUT/SAM and transforming them into database for CGE models
  - Aggregation of SUT/SAMs in GAMS and R softwares
  - Intermediate skills in GAMS code language
  - Group exercise 1: SAM building exercise
- **Module 2: Construction of a large static CGE Model and policy analysis**
  - Solvers in GAMs for CGE models (MINOS, PATHNLP, CONOPT and PATH)
  - Hands-on step-by-step building of large static CGE Models
  - Importing data from excel to GAMS
  - Policy analysis using large static CGE Models
  - Static CGE code preparation for exporting results to excel
  - Debugging of large static CGE models
  - Group exercise 2: Simulation of a large static open-economy CGE model
- **Module 3: Construction of a Recursive Dynamic CGE Model and policy analysis**
  - Introduction to dynamic CGE Models
  - Theoretical structure of Dynamic CGE models
  - Derivation of linear and non-linear Dynamic CGEequations
  - Data for dynamic CGE Models
  - Exporting results from a Dynamic CGE Model to excel
  - Build a Dynamic equations for CGE Models
  - Adding time to CGE equations
  - Group exercise 3: Building dynamic equations in GAMS
- **Module 4: Calibration and customisation of Dynamic CGE Models**
  - Importing SAM and parameters from excel to dynamic CGE Models using GAMs codes
  - Building equations for Calibrating Dynamic CGE models
  - Customizing a Dynamic CGE model to a particular economy
  - Exporting results from a Dynamic CGE Model to excel
  - Group exercise 4: Calibrating a dynamic CGE Model
- **Module 4: Debugging the Dynamic CGE Model**

- Introduction to debugging equilibrium models
- Types of bugs in dynamic CGE models
- Error reporting and debugging
- Hands-on model inspection and examples of debugging errors
- Best practices of avoiding bugs in dynamic CGE models
- Group exercise 4: Debugging a dynamic CGE model

- **Module 5: Policy analysis and interpretation of Dynamic CGE results**

  - Policy analysis using Dynamic CGE Models
  - Building scenarios and shocks in dynamic CGE models
  - Interpretation of dynamic CGE results and reporting formats
  - Group exercise 5: Policy simulation (hands-on Real World Policy Simulation)
  - Group presentation of results on CGE Modelling for policy Analysis

Mode of delivery

The course is delivered through an intensive, hands-on approach in which participants systematically build a recursive dynamic CGE model, over the duration of the training. The programme is highly sequential, requiring full attendance at all sessions, as each step builds directly on the previous one. Participants work in teams to enhance peer learning and methodological coherence, while each participant is required to have an individual laptop and mouse for practical implementation. By the end of the course, each team presents policy simulation results generated from their model. For the online delivery option, participants are required to submit all assignments within the stipulated timelines to ensure completion within the scheduled period, as extensions may incur additional facilitation costs. To apply for this course, fill in the form below or send an email to apply@macrosolve.net or macrosolveinfo@gmail.com.