

Global Computable General Equilibrium (CGE)

Modelling: Online Course

Course Description

This course is an intermediate course in (practical) global computable general equilibrium (CGE) modelling using the General Algebraic Modelling System (GAMS) software. The course is designed for individuals who have a well-developed background in economics and basic CGE modelling, who wish to develop the technical skills needed to become a CGE modeller and/or become competent users of modern comparative static single country CGE models. The course emphasises the development of the skills required to develop systematic policy experiments and the interpretation of the results from those experiments. The course also develops the participants understanding of the behavioural relationships in, and the calibration of, CGE models, while enhancing GAMS coding skills. The course uses a mix of video presentations (lectures and ‘how to’ videos), practical computer exercises and policy analyses exercises.

The materials are organised in 4 modules offered over 6 weeks (with a one-week allowance for ‘slippage’). The first two modules have a total of 10 components, each of which requires approximately 3 hours of input from the participants. The third module has three components: the first is a series of presentations providing advice on interpreting and presenting CGE results, while the second and third are exercises in interpreting model results, each requires approximately 9 hours. The final module of the course is devoted to a guided research project that requires about 18 hours of input. Thus, participants should allocate upto 90 hours over 5 weeks to complete the course.

Participants on this course are required to have completed the ‘Practical Computable General Equilibrium (CGE) Modelling course’ (see www.cgemod.org.uk/introcg.html for details) or provide proof of equivalent or greater skills.¹ The methods used in this course

¹ We provide a set of exercises for which satisfactory completion is deemed ‘proof of equivalent or greater skills’.

require an understanding of Social Accounting Matrices (SAMs), and the relationships between SAMs and CGE models.

The course is delivered via an electronic learning environment – Moodle. Moodle provides an environment that allows the delivery of learning materials in a structured and organised manner, and an asynchronous forum in which participants can engage with other participants and with the course tutor. The course tutor is available, by email and/or the Moodle message system, to answer specific questions and provide help with problems: questions and requests for advice submitted between 0800 and 1600 UTC will be responded to by the end of the next working (Monday to Friday) day, i.e., by 1600 UTC. Each module requires the participants to submit an assignment; this allows the tutor to monitor progress and understanding, and to intervene if participants are not understanding concepts and techniques or having difficulties. Feedback is provided for each assignment.

The course assumes that the participants have an in-depth knowledge of microeconomic theory, especially general equilibrium theory, and a reasonable understanding of standard techniques of mathematical economics, especially those relating linear homogenous functions. It is assumed that participants have appreciable experience with programming in GAMS and in the use of MS Excel.

This course does NOT use a GUI (Graphical User Interface) to access GAMS. Experience has demonstrated that the use of GUI's by participants on training programmes typically limits the development of the skills needed to be a good CGE modeller or user of CGE models, while encouraging the belief that CGE models are 'black boxes'. Basic GAMS programming skills, and an understanding of economic theory, demonstrates that allegations that CGE models are 'black boxes' are false. The development of GAMS, or GEMPACK, programming skills greatly extends the ability of the user to exploit the power of CGE models, while, at the same time, opening up the potential that participants can, in the future, change behavioural relationships in CGE models.

A time limited licence for GAMS will be provided (courtesy of GAMS).

Course Aims and Objectives

Course Aims

To develop the CGE modelling skills of participants (using GAMS) so they

- i) understand the behavioural relationships used in CGE models;
- ii) understand the impact of different behavioural relationships used in CGE models;
- iii) understand the calibration of the behavioural relationships in CGE models;
- iv) can formulate appropriate CGE policy experiments; and
- v) can interpret the results generated by global CGE models.

Course Objectives

On completion of the course the participants will be able:

- i) formulate and code appropriate policy experiments;
- ii) identify and understand the strengths and limitations of CGE models;
- iii) modify behavioural relationships;
- iv) interpret the results from global CGE; and
- v) identify, and present, the policy implications of simulations using global CGE models.

Timetable

Online courses are run in four cycles – Oct/Nov, Nov/Dec, Jan/Feb and March/April – with recruitment for each course limited to c12 participants. The global course will run in cycles 3 and 4.

	Cycle 3	Cycle 4
Final dates for registration	30 th Dec 2018	18 th Feb 2019
Final dates for (cleared) payment of course fee	4 th Jan 2019	22 nd Feb 2019
Single Country CGE Courses begin	14 th Jan 2019	4 th Mar 2019
Single Country CGE Courses end	22 nd Feb 2019	12 th April 2019

Course Fees

Category	Developed Economy Rate	Developing Economy Rate
Professional	£(GBP)1,000	£(GBP)825
Student	£(GBP)700	£(GBP)550
Scholarship		£(GBP)150

A 10% reduction in the course fee is offered to applicants who have taken the ‘Practical CGE Modelling course’. A further 10% reduction in the course fee is offered to applicants who have taken the ‘Single-Country CGE Modelling course’.

Notes:

1. Developing economies are those classified as ‘Low-income economies’ and ‘Lower-middle-income economies’ by the World Bank at the time an application is made.
2. Payments in GB pounds (sterling) are by electronic/wire transfer or international cheque. Payees pay their own bank fees and any currency fees, but not the bank fees of CGEMOD. Clearance of payments typically takes 3 to 5 working days after the funds are received by a UK bank.
3. Students are required to correspond from an academic email address and provide confirmation of their status from an academic advisor with an academic email address.

4. A limited number of scholarships are available to students from developing countries. Applications for a scholarship must be made at the time of registration; applications must be accompanied by a case for being awarded the scholarship that is not longer than one-side of A4/US letter. Applicants must be registered at a degree awarding institution, correspond from an academic email address and provide confirmation of their status from an academic advisor.

Cancellations

All requests for cancellations are must be sent to Karen Thierfelder (karen@cgemod.org.uk). An 80% refund of payments for courses, in GBP after our bank and currency charges but excluding the recipients bank fees, will be available for all cancellations received more than 10 working days before the start of the course. A 50% refund of payments, in GBP after our bank and currency charges but excluding the recipients bank fees, will be available for all cancellations received more than 5 working days before the start of the course.

Further Information and registration

For further information and registration please contact Professor Karen Thierfelder

Email: karen@cgemod.org.uk

Global CGE (Online) Course

Module O11: GLOBE_int CGE Model: Theory

	Topic	Tasks	Exercises
O11:1	Intro to GLB_int	Review the model and note the extensions to SMOD_on used in the Practical CGE modelling course	Exercise 1: Run model set up and check solution
O11:2	Trade, Prices and Accounting Identities and Tax relationships in GLB_int	The modelling of price and trade relationships in a global model	Calculating prices & accounting matrices for Africa (Deliverable O11.1)
O11:3	Tax Instruments and Productions	Code trade lib. simulations; Loop over sim; use GDX to access results.	Exercise 2: Trade Policy, <i>Ad Valorem</i> Tariff Changes in one regions
O11:4	Tariff changes in one region	Review Excel files needed to use SeeResults	Exercise 3: Accessing Model Results using SeeResults
O11:5	Tariff changes & tax replacement	Code alternative macroeconomic closures; loop over sim, clos, and elas	Exercise 4 & 5: Trade Policy: and Tax Replacement & Sensitivity Analysis in one region

Module O12: GLOBE_int CGE Model: Exercises

	Topic	Tasks	Exercises
O12:1	Introduction to the GLOBE_int database	Understanding the structure of the database	No computer exercises
O12:2	Configuring the GLOBE_int model	Understanding the structure of, and data used in, glb_int model	Exercise 6: Loading data, calibrating and configuring the glb_int model
O12:3	Free Trade Agreement experiment in GLOBE_int	Analysing an Africa OECD FTA	Exercise 7: Coding and analysing a simple FTA experiment using SeeResults
O12:4	Save and Restart	Implement experiments using Save and Restart	Exercise 8: Comparing results with different methods for running experiments
O12:5	Production tax changes	Code alternative factor market clearing behaviour; loop over sim, clos, elas	Exercise 9: Analyses of input subsidies and unemployment (Deliverable O12.2)

Module O13: Interpreting Model (GLOBE_int) Results: Exercises

	Topic	Tasks	Exercises
O13:1	Analysing and reporting results	Appreciating the formulation and interpretation and presentation of policy experiments	No computer exercises
O14:2	Interpreting model results (I)	Analysing an OECD Africa FTA vv OECD Africa Customs Union	Interpreting FTA experiments
O14:2	Interpreting model results (II)	Analysing productivity growth in a global context	Interpreting implications of interdependency

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Programme Module O14: GLOBE_int Course Project

The objectives of the project are to develop your ability to (i) implement policy experiments in a small global CGE model; (ii) interpret the results of your policy experiments, (iii) carry out systematic sensitivity analyses and (iv) present a report. There are five elements to the project; model recalibration, experiment programming, policy experiments and interpretation, sensitivity analyses and project report.

The available data are from GTAP 8: the database has been partially aggregated. You will need to devise an (further) aggregation consistent with your proposed project and set up the supporting Excel database.

Your remit is that of an economic consultant who has been employed to analyse policy issues that are relevant and current to your chosen country, and can be conducted using a global CGE model. You are required to identify the policy issue, code the policy experiments, interpret and write up the results and conduct sensitivity analyses. The final report will be a maximum of 15 pages, including all tables and graphics.

	Topic	Tasks	Exercises
O14:1	GLOBE_int project	<p>The project aims are</p> <ol style="list-style-type: none"> 1. set up and implement policy experiments in the glb_int CGE model; & 2. interpret the results of your policy experiments 	<p>There are seven elements to the project;</p> <ol style="list-style-type: none"> 1. choose an aggregation and write-up the ‘backstory’ 2. Setup the model’s Excel database 3. model recalibration and testing; 4. experiment programming; 5. policy experiments and interpretation; 6. sensitivity analyses; and 7. project report