General Equilibrium Modelling of Trade Policy

Semester: Spring Semester 2025

Root Number: 453214

ECTS: **3 ECTs**

Lecturers: Eddy Bekkers

Dates: July 14 – July 17, 2025

Audience

The course is intended for master and doctorate students, as well as officials from international and national institutions with an interest in quantitative analysis of trade. The course is also part of the Certificate of Advance Studies specialized in trade policy modeling (CAS TradeMod) aimed at professionals, researchers and graduate students (Masters and PhD), notably in Economics and Social Sciences. Undergraduate students will be considered if their profile is outstanding. Students are assumed to have some familiarity with applied general equilibrium models or to take first the course Introduction to Input-Output and Applied General Equilibrium Models offered July 7—11, 2025.

Course description

The goal of the course is to familiarize students with the tools employed to conduct applied general modelling experiments and to teach students how to conduct trade policy simulations at an introductory level employing computable general equilibrium (CGE)-models. As such, this course provides a practical introduction to quantitative economic analysis of international economic (trade) relations and policies. CGE-models are applied to a wide range of policy questions, in particular trade policy questions. However, they are also the main tool to analyse the economics of climate change policy.

The course will first review the basics of AGE/CGE models, followed by theoretical and hands-on sessions where we analyze the economic effects of several policy measures such as changes in national or international shocks in such models. We will work with the AGE/CGE model developed and maintained by the global trade analysis project (GTAP).

Afterwards, the students will be introduced more intensively into the theoretical structure of GTAP and learn how to implement trade policy shocks in RUNGTAP/GEMPACK and interpret the results. This part will focus on applying the modelling tools to practical policy experiments in trade policy and also development. The course concludes with a group assignment to calculate the macroeconomic and trade effects of a trade policy experiment.

Lecturers

Eddy Bekkers

Eddy Bekkers is counsellor at the Economic Research and Statistics Division of the World Trade Organization. He holds a PhD from Erasmus University Rotterdam and Masters in Economics and Econometrics from the University of Amsterdam. He was assistant professor at the Johannes Kepler University in Linz for six years and postdoctoral researcher at the World Trade Institute of the University of Bern for three years. He conducts research on a wide range of topics in international trade: firm heterogeneity, gravity modelling, traded goods prices, food price pass through, foreign affiliate sales and trade in services. He has published in peer-reviewed journals such as Economic Journal, the European Economic Review, the Review of International Economics, Economics Letters, World Economy, the Journal of Global Economic Analysis, the Canadian Journal of Economics. In his current work at the WTO, Eddy is the main economist working with the WTO Global Trade Model, a recursive dynamic CGE model employed to make long-run projections and to conduct policy simulations at the WTO.

Learning Objectives

After the course, participants should be able to:

- Understand the basics of the theory underlying the standard CGE-model GTAP.
- Work with the RUNGTAP software and be able to run basic policy experiments.
- Map gravity estimates into trade policy shocks by calculating ad valorem equivalents.
- Apply the CGE-model to conduct experiments on trade policy and development, interpret the results and report on the results at a basic level.

Grading

Grading will be based on a take home assignment in which the participants have to work on an applied simulation project based on the contents discussed in class.

Literature

The course will rely mainly on the following sources, which the students can find in the ILIAS system:

Aguiar, A., Chepeliev, M., Corong, E. L., McDougall, R., & van der Mensbrugghe, D. (2019). The GTAP Data Base: Version 10. *Journal of Global Economic Analysis*, *4*(1), 1–27. https://doi.org/10.21642/JGEA.040101AF

Bekkers, E. and Rojas-Romagosa, H. (2019). Quantitative Trade Models and the Economic Assessment of TTIP. World Economy.

Burfisher, M. (2016): Introduction to Computable General Equilibrium Models. Second Edition. Cambridge University Press.

Corong, E. L., Hertel, T. W., McDougall, R., Tsigas, M. E., & van der Mensbrugghe, D. (2017). The Standard GTAP Model, Version 7. *Journal of Global Economic Analysis*, *2*(1), 1–119. https://doi.org/10.21642/JGEA.020101AF

Dixon, P.B. and D.W. Jorgenson (2013): Handbook of Computable General Equilibrium Modeling, Elsevier. Chapters 1 and 2.

Hertel et al. (1997) Global trade analysis. Modelling and applications. Hertel and Tsigas. Chapter 2.

Shepherd, Ben (2017). The Gravity Model of International Trade: A User Guide.

Software requirements

We will work in class and for the project with the software "RunGTAP", which can be downloaded for free at:

https://www.gtap.agecon.purdue.edu/products/rungtap/default.asp

Important: "RunGTAP" will only run on Windows OS out of the box. We strongly encourage the participants to work with that OS in the course. For Mac users we will additionally provide a version of "RunGTAP" specifically developed for that purpose by Joseph Francois. However, we had trouble with that software on some versions of Mac OS in the past, so it should be considered as a second best option only.

As yet another alternative, we suggest Mac users to install a trial version of Windows, which is available on the Microsoft website, in a virtual environment. As virtualization software we recommend the free available software "Virtualbox" for Oracle, available at:

https://www.virtualbox.org/

Course Overview

Class	Date	Day	Time	Topic
1	14 07	Monday	10:00 12:30 13:30 16:00	Intro. to Applied General Equilibrium Models and CGE-Model GTAP Readings: Burfisher (2016, Ch. 3), Hertel et al. (1997, Ch. 2). Theoretical Structure CGE-Model, Calibration and Data Readings: Hertel et al. (1997, Ch. 2), Aguiar et al. (2016).
2	15 07	Tuesday	10:00 12:30 13:30 16:00	Closures and Implementation of Shocks Readings: Burfisher (2016, Ch. 4-6) Parameter Choices, Policy Shocks and Interpretation of Effects Readings: Burfisher (2016, Ch. 7-8)
3	16.07	Wednesday	10:00 12:30 13:30 16:00	Mapping Gravity Estimates into Policy Shocks Readings: Bekkers and Rojas-Romagosa (2019), Shepherd, Ben (2017). Application to Experiments on Trade Policy (first part) Readings: Burfisher (2016) exercises.
4	17.07	Thursday	10:00 12:30 13:30 16:00	Application to Experiments on Trade Policy (second part) Discussion of Exercises, Handing out of group exercise and supervised working on group exercise. Handing out take home exam.