

General Equilibrium Modelling of Trade Policy

Semester: Spring Semester 2026

Root Number: 453214

ECTS: 3 ECTS

Lecturers: Eddy Bekkers

Dates: July 13 – July 18, 2026

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 analyze the economics of climate change policy.

The course will first review the basics of AGE/CGE models, provide an in-depth comparison between CGE models and new quantitative trade (NQT) 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 development. The course concludes with a group assignment to calculate the macroeconomic and trade effects of a trade policy experiment.

Lecturer

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 master's in economics and Econometrics from the University of Amsterdam. He was in academia before joining the WTO (University of Linz and University of Bern). He conducts research on a wide range of topics in international trade with a focus on applied quantitative modelling on topics of real-world interest such as trade and climate change, impact assessments of trade agreements, trade and FDI, and long run scenario analysis. 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.

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 group presentation and 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:

Primary

Bekkers, Eddy, Kirti Jhunjunwala, Jeanne Metivier, Victor Stolzenburg, and Ayse, Nihal Yilmaz (2025): Trade policy bias and the gender wage gap. WTO Staff Working Paper 2025-05. Section 3 and Annex A.

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

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

Secondary

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>

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>

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

Bekkers, Eddy, Erwin Corong, Jeanne Métivier, and Daniil Orlov (2024). How will global trade patterns evolve in the long run? *The World Economy*, 47(8). <https://doi.org/10.1111/twec.13575>

Fontagné, L., Fouré, J., and Keck, A. (2017). Simulating world trade in the decades ahead: driving forces and policy implications. *The World Economy*, 40(1), 36-55.

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

Software requirements:

We will work with GEMPACK and Rungtap to conduct simulations. Therefore, you should install these two software packages on your laptop before the course starts. We will conduct the experiments with Rungtap, an application calling GEMPACK. Therefore, you will have to install both programs and we ask you to do so before we start with the course.

1. GEMPACK and RUNDYNAM
A six month limited executable version of GEMPACK (usable for medium-sized models of up to 12-15 sectors and 12-15 regions) can be downloaded from the

GEMPACK website. Instructions on downloading this version of GEMPACK and relevant links are:

<https://www.copsmodels.com/pdf/quickinst.pdf>

The guide explains that you should install the following executable:

<https://www.copsmodels.com/ftp/ei12dl/gpei-12.1.004-install.exe>

Please read the instructions before downloading the executable.

You should also download and install Rundynam, an application to conduct dynamic simulations: <https://www.copsmodels.com/gprddl.htm>

2. RUNGTAP

Rungtap can be downloaded here:

<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	13.07	Monday	10:15 12:45 14:00 16:30	Intro. to Applied General Equilibrium Models and CGE-Model GTAP Readings: Burfisher (2016, Ch. 3), Hertel et al. (1997, Ch. 2). Calibration and Data. Closures and Implementation of Shocks Readings: Burfisher (2016, Ch. 4-6)
2	14.07	Tuesday	10:15 12:45 14:00 16:30	Theoretical Structure CGE Model Readings: Hertel et al. (1997, Ch. 2), Aguiar et al. (2016). Parameter Choices and welfare decomposition. Mapping Gravity Estimates into Policy Shocks Readings: Burfisher (2016, Ch. 7-8). Bekkers and Rojas-Romagosa (2019), Shepherd, Ben (2017).
3	15.07	Wednesday	10:15 12:45 14:00 16:30	Recursive dynamic CGE models. Set-up and Ingredients. Readings: Bekkers et al. (2024). Fotagné et al. (2018) Working with Rundaynam on applications. Handing out group exercise Readings: User Model WTO Global Trade Model.
4	16.07	Thursday	10:15 12:45 14:00 16:30	Guidelines on setting up a CGE simulation. Application to Experiments on Trade Policy. Working under supervision on group exercise Discussion of Exercises, Handing out of group exercise and supervised working on group exercise. Handing out take home exam.
5	18.07	Saturday	10.30-12.00	Group presentations in hybrid format (to accommodate students already travelling home)