

# APPLIED TRADE POLICY MODELLING USING COMPUTATIONAL GENERAL EQUILIBRIUM MODELS

**Semester:** Spring Semester – FS 2022

**Root number:** 477693

**ECTS:** 3 ECTS

**Lecturer:** Eddy Bekkers

**Location:** The course will be on-site at the WTI in Bern; Alpenraum

**Dates:** June 27 – July 1<sup>st</sup> 2022

## Course Organization:

- Class will be from Monday to Thursday from 10:00 until 12:30 and from 13:30 until 16:00 and on Friday morning from 9:30 to 12:30.
- Group presentations are on Saturday July 2, 11.00-12.00
- Please read the compulsory literature and prepare the exercises handed out.

## Audience:

- The CAS TradeMod is aimed at professionals, researchers and graduate students (Masters and PhD), notably in Economics and Social Sciences. Undergraduate students will be considered only if their profile is outstanding.

## 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. 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 students will be introduced into the theoretical structure of the CGE-model GTAP and learn how to implement trade policy shocks in RUNGTAP/GEMPACK and interpret the results. The course 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.

## Lecturer:

**Eddy Bekkers** is research economist at 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 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:

- Explain the basic structure of applied general equilibrium models used for trade policy experiments.
- Understand the basics of the theory of 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.

## Exam and Grades:

The grade consists of two components. A group presentation on the conducted simulations on Saturday afternoon (30%) and a written report on the simulations presented on Saturday (70%), to be handed in on Sunday July 3 at 8 pm. The exercise for the group exercise will be handed out on Thursday afternoon.

## Course Overview:

Class	Date	Day	Time	Topic
1	27 June	Monday	10:00 12:30	Intro. to Applied General Equilibrium Models and CGE-Model GTAP
			13:30 16:00	Theoretical Structure CGE-Model, Calibration and Data
2	28 June	Tuesday	10:00 12:30	Closures and Implementation of Shocks
			13:30 16:00	Parameter Choices, Policy Shocks and Interpretation of Effects
3	29 June	Wednesday	10:00 12:30	Mapping Gravity Estimates into Policy Shocks
			13:30 16:00	Application to Experiments on Trade Policy (first part)
4	30 June	Thursday	10:00 12:30	Application to Experiments on Trade Policy (second part)
			13:30 16:00	Discussion of Exercises, Handing out of group exercise
5	1 <sup>st</sup> July	Friday	9:30 12:30	Discussion of Exercises. Working under supervision on group exercise. Handing out take home exam.

**MONDAY, 27 JUNE 2022****Morning: Introduction to applied general equilibrium models and CGE-model GTAP****Topics**

- Introduction applied general equilibrium models
- Structure of CGE-Model GTAP I
- Overview of data
- Introduction to software RUNGTAP
- Hands-on exercises

**Compulsory Reading Material**

- Burfisher (2011). Computable general equilibrium models. Chapter 2. Elements of a computable general equilibrium model. Chapter 3.
- Hertel et al. (1997) Global trade analysis. Modelling and applications. Hertel and Tsigas. Chapter 2. Structure of GTAP

**Afternoon: Theoretical structure CGE-model, calibration and data****Topics**

- Structure of CGE-Model GTAP III
- Overview of data
- Calibration of model
- Hands-on exercises with RUNGTAP

**Compulsory Reading Material**

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

**Optional Reading Material**

- A. Aguiar, B. Narayanan and McDougall (2016). An overview of the GTAP 9 database. Journal of Global Economic Analysis, Volume 1 (2016), No. 1, pp. 181-208.

- Burfisher (2011). Computable general equilibrium models. Chapter 3. The CGE model database: a social accounting matrix.

## TUESDAY, 28 JUNE 2022

### Morning: Closures and implementation of shocks

#### Topics

- Closures in RUNGTAP
- Implementation of shocks in RUNGTAP
- Hands-on exercises RUNGTAP

#### Compulsory Reading Material

- Burfisher (2016). Computable general equilibrium models. Chapters 4-6

### Afternoon: Parameter choices, policy shocks and interpretation of effects

#### Topics

- Parameter choices
- Implementing policy shocks: tariff shocks, technology shocks, non-tariff trade cost shocks
- Interpreting results
- Hands-on exercises on parameters, policy shocks and closures

#### Compulsory Reading Material

- Burfisher (2016). Computable general equilibrium models. Chapters 7-8

**WEDNESDAY, 29 JUNE 2022****Morning: Mapping gravity estimates into policy shocks****Topics**

- Review gravity estimation
- Calculating ad valorem equivalents
- Mapping gravity estimates into policy shocks in RUNGTAP

**Compulsory Reading Material**

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

**Optional Reading Material**

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

**Afternoon: Application to experiments on trade policy****Topics**

- Implementation of trade policy shocks: preferential trade agreements (PTAs) and other trade policy changes (Brexit)
- Political issues related to changes in NTMs

**Compulsory Reading Material**

- Burfisher (2011). Computable general equilibrium models. Exercises

**FRIDAY, 1<sup>ST</sup> JULY 2022****Morning: Discussion of exercises, working on group exercises****Topics**

- Discussion of last policy exercises
- Working in small groups on collecting data on policy shocks, setting up policy experiments, conducting simulations, and interpreting results