Computable General Equilibrium Modeling
ECON 440.624
Course Syllabus

Instructors: Dr. Carolina Diaz-Bonilla and Dr. Valeria Piñeiro
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Class: Wednesdays 6-8:45pm, location: TBA
Office: TBA
Office Hours: Immediately before class, or by appointment

Course Objective
The objective of this course is to develop the ability to understand, interpret, and implement Computable General Equilibrium (CGE) models using the General Algebraic Modeling System (GAMS) software. The course will be primarily applied, however students will also learn basic relevant general equilibrium theory linked to empirical applications of CGE models.

The specific objectives: (1) gain an understanding of the underlying economic theory behind CGE modeling; (2) gain an understanding of the GAMS software; (3) be able to write simple CGE programs in GAMS; (4) be able to use and modify existing CGE programs and interpret results; and (5) be able to analyze public policy with CGE models.

Course Requirements
Course grade will be based on:
- Participation and modeling exercises (20%)
- Midterm group presentation (40%)
- Final paper (40%) (individual)

Prerequisites

Readings
No textbook is required. A list of required and recommended readings are included at the end of the syllabus.

Please note: the software used for the models in this class is not fully compatible with a Mac computer, therefore we recommend using JHU’s computer lab for the final project rather than trying to use a Mac.

Tentative Course Outline:
Week 1:
- Introduction and Overview of CGE Modeling
- Introduction to the GAMS software and GAMS IDE, with simple partial equilibrium (PE) models
- Reading: Chapter 1, Burfisher (2011).
Week 2:
- Modeling Exercise “0”: Partial Equilibrium transport model.
- Modeling Exercise “1”: Simple economy, 2 activities- 2 factors- 2 households; begin in class
- Reading: Chapter 2, Burfisher (2011), Gams user’s guide chapter 1, Brook et al. (1998).

Week 3:
- Social Accounting Matrices (SAMs)
- Finish Modeling Exercise “1”: Simple economy, 2 activities- 2 factors- 2 households; undertake some simulations, finish as homework

Week 4
- Review Simulations for Modeling Exercise “1”
- Modeling Exercise “2”: Intermediate demand; done in class.
- Reading: Chapter 11 and 12, Sadoulet (1995).

Week 5:
- Discussion Wobst (2003).
- Modeling Exercise “3”: Saving- Investment; begin in class, finish as homework
- Reading: Chapter 4 and 5, Burfisher (2011).

Week 6:
- Factor markets and trade
- Modeling Exercise “4”: Government; begin in class, finish as homework
- Reading: Chapter 6 and 7, Burfisher (2011).

Week 7:
- Final details of how to build a CGE model
- Modeling Exercise “5”: Open economy; begin in class, finish as homework
- Reading: Robinson et al. (1999).

Week 8 (March 1): MIDTERM GROUP PRESENTATIONS – 15 minutes each

Week 9:
- 1-2-3 model
- Reading: Devarajan et al. (1997).
- Example of applied policy model. Discussion Cattaneo et al. (1999)

Week 10:
- Introduction to policy models

SPRING BREAK (March 20-24)

Week 11:
- Comparative static IFPRI standard CGE model
- Using the excel interface.
• Closures
• Reading: Lofgren et al. (2002).

**Week 12:**
• Comparative static IFPRI standard CGE model
• Run scenarios
• What can be changed in the excel interface
• Write up your own simulations

**Week 13:**
• TBD (summing up, lecturer, questions)

**Final Paper due: Friday, April 14**

**Week 14 (Wednesday April 19):**
• **IN CLASS PRESENTATION OF INDIVIDUAL FINAL PAPER**

**Required readings**


Recommended and more topical readings


Macro closures


Labor Markets


Environmental Policy


Macro and Income distribution


Value Added Tax


Trade


**Multi-sector dynamic CGE model for medium- to long-run development policy analysis**


**Social Accounting Matrix**


**GAMS and exercises**


Kalvelagen, Edwin. Modeling with GAMS. Chapter 1. GAMS Development Corporation.