International Macroeconomics

Master's in Economics (MEcon) — Spring 2019

February 19, 2019

Course number:	8,270,1.00
ECTS credits:	4
Lecture dates:	February 20–March 27 and April 17–May 22, 2019
Extra tutorial date:	May 9, 2019 (optional)
Lecture time:	Wed 12:15-14:00
Lecture hall:	07-001
Examination form:	Decentral. Written examination: 64%, 90 minutes (36% from Take-home Problem Sets)
Examination date:	May 22, 12:15-13:45
Course web page:	*StudyNet*

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Description

This course examines open-economy macroeconomics from a theoretical and quantitative perspective. Topics include theories of the trade balance and the current account and their relationship to domestic macroeconomic variables, the terms of trade and the real exchange rate, and determinants of international capital flows. The course investigates real-side explanations and students put the models to work in quantitative exercises using state-of-the-art software.

Prerequisites

Macroeconomics II is a prerequisite for this course, including basic knowledge of dynamic optimization techniques in discrete time. Familiarity with the software package Matlab can help, but is not necessary. The relevant aspects of dynamic optimization and Matlab coding will be covered in the course.

OBJECTIVES

After completion of this course, you will be able to:

- Understand the identity of a country's net export outflows and its net capital outflows.
- Invoke the distinctions between the trade balance and the current account balance as well as the matching difference between gross domestic product and national income.
- Base predictions of the trade balance and the current account balance on optimal consumer and firm behavior as well as government interventions, both in simplified two-period models and more advanced infinite-horizon models using dynamic optimization.
- Use a fundamental current account equation to state predictions and relate the equation to empirical evidence on open-economy macroeconomics.
- Alternatively use optimality conditions in discrete time and continuous time to state the fundamental current account equation.
- Relate optimally chosen stocks of assets to their market value under certainty and uncertainty in the open economy.
- Derive and quantify an open-economy real-business-cycle model, including in an exercise that requires basic coding in Matlab.
- Infer how shocks to the terms of trade and the real exchange rate in the presence of traded and non-traded goods move the real business cycle in the open economy.
- Use a calibrated open-economy real-business-cycle model to predict consequences of terms of trade and real exchange rate shocks, including in exercises that require basic coding in Matlab.
- Assess empirical puzzles in international macroeconomics that continue to pose challenges to canonical models.

STRUCTURE

The course content is grouped into two main blocks and spans 11 weeks of instruction. The first five lectures in block I gradually lay the foundations of open-economy macroeconomics, progressing from households in an endowment economy to households and firms in a production economy, and moving from two-period to infinite-horizon models. Embedded in the first block is also a Tutorial on using Matlab for macroeconomic simulations in the open economy. At the end of block I stands an open-economy real-business-cycle model that unifies the insights for rigorous quantification. A software-based exercise concludes this first block.

Block II, after the break, starts out with a review of the software-based exercise, so as to prepare you for the remaining two exercises (one of which is optional). The four lectures in block II then consider the terms of trade and the real exchange rate, as well as shocks that move them, so as to assess how these shocks affect the real business cycle in the open economy. The terms of trade and the real exchange require an export-producing, an import-competing, and a non-traded goods sector. Two more software-based exercises apply the insights and show the practical relevance of the model. The final exercise is optional and, if you choose to conduct it, only the two best scores out of the three exercises will count towards your grade.

MATERIALS

Lecture notes become available online at *StudyNet* before each lecture.

Textbooks (required): Obstfeld and Rogoff (1996)/Chapters 1, 2 and 4; Uribe and Schmitt-Grohé (2017)/Chapters 2, 3, 4, 7 and 8.

Background Readings (recommended): Lucas (1982); Obstfeld and Rogoff (2001); Chari, Kehoe and McGrattan (2002); Nason and Rogers (2006).

The two textbooks complement each other. The recommended background readings help you review the lecture material beyond the textbooks. Background readings are available through the course web page. Web links to copyrighted readings may only work from on-campus domains.

PROBLEM SETS AND TUTORIALS

There will be three take-home problem sets (due on April 17, May 8 and May 22) *before* 12pm (before lecture). The problem sets ask you to make mathematical derivations that are variations of the material in class and to then implement a variation of existing Matlab code, available from `http://www.columbia.edu/~mu2166/book/` by Uribe and Schmitt-Grohé, to simulate the according variants of the model.

Each problem set counts for 25 points, but only two problem sets enter your final grade. The first two problem sets are mandatory. If you do not choose to submit the third problem set, then the scores of the first two problem sets count towards your final grade. The third problem set is optional. If you choose to work on and submit the third problem set, then the best two scores out of the three scores will count towards your final grade. The total possible score on the problem sets is therefore 50 points (around 36 percent of the total grade).

The language of the problem sets is English. The expected language of answers is English.

There are three scheduled tutorials for the course. The first tutorial provides an introduction to Matlab and an explanation of the existing code that you will use for your problem sets. The second tutorial, immediately after the due time of the first problem set, will review possible answers and code variations that enter the first problem set. The third tutorial, a day after the due time of the second problem set, will review possible answers and code variations that enter the second problem set. The first two tutorials take place during lecture time on March 6 and April 17. The third tutorial is optional and takes place on Thursday, May 9, one day after the due date of the second problem set.

EXAMINATION

The examination form is decentral and written. The final exam counts for 90 points (around 64 percent of the total grade), and will take 90 minutes.

The principal aid rule is that of an extended closed-book examination. The according use of aids is limited; any additional aids permitted are exhaustively listed as *supplementary aids* below. The rules for an extended closed book examination are:

- All pocket calculators of the Texas Instruments TI-30 series and mono- or bilingual dictionaries (no subject-specific dictionaries) without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are **inadmissible**.
- Any type of communication devices, as well as any electronic devices that can be programmed and are capable of communication—such as notebooks, tablets, PDAs, mobile telephones and others—are **inadmissible**.

- Students are responsible for the procurement of examination aids.

Supplementary aids are permitted as follows. A pen, a pencil, a ruler and an eraser are permitted in addition to the two types of electronic devices listed under the first item above.

The language of examination questions is English. The expected language of answers is English.

The examination is decentral and written. The exam will contain three 30-minute questions and cover the material of the entire course. It will take place on Wednesday, May 22, one week after the eleventh lecture day.

ASSESSMENT

There are three problem sets (the third being optional) and one final exam. The final exam will take 90 minutes (no extra time).

Your final raw score will be your total points from the two or three submitted problem sets and the final exam:

Problem sets:	50 points (25+25 points, best out of three)	April 17, May 8 and May 22
Final (90 minutes):	90 points	May 22
Total:	140 points	

Your final *grade* will be assigned similar to the typical grade distribution (curve) in *Master's of Economics* courses at the University of St. Gallen.

COURSE SCHEDULE

I. Foundations of Open-economy Macroeconomics

1. Wed, February 20: Intertemporal Trade in the Open Economy
Main readings: Obstfeld and Rogoff (1996)/Ch. 1; Uribe and Schmitt-Grohé (2017)/Ch. 2
Background reading: Lucas (1982)

2. Wed, February 27: International Macroeconomic Puzzles
Main reading: Obstfeld and Rogoff (1996)/Ch. 1
Empirical reading: Obstfeld and Rogoff (2001)

Tutorial 1, Wed, March 6: Using Matlab

3. Wed, March 13: Current Account Dynamics
Main reading: Obstfeld and Rogoff (1996)/Ch. 2
Empirical reading: Chari et al. (2002)

4. Wed, March 20: Firms, Investment and the Current Account
Main readings: Obstfeld and Rogoff (1996)/Ch. 2; Uribe and Schmitt-Grohé (2017)/Ch. 3
Empirical reading: Nason and Rogers (2006)

5. Wed, March 27: Open-economy Real-business-cycle Model
Main reading: Uribe and Schmitt-Grohé (2017)/Ch. 4
PROBLEM SET 1 OUT

II. The Terms of Trade and the Real Exchange Rate

Tutorial 2, Wed, April 17: Solutions to Problem set 1
PROBLEM SET 1 DUE at 12pm, prior to the tutorial

6. Wed, April 24: The Terms of Trade
Main reading: Uribe and Schmitt-Grohé (2017)/Ch. 7
PROBLEM SET 2 OUT

7. Wed, May 1: The Terms of Trade and the Open-economy Real-business-cycle Model
Main readings: Uribe and Schmitt-Grohé (2017)/Ch. 7; Obstfeld and Rogoff (1996)/Ch. 4

8. Wed, May 8: The Real Exchange Rate
Main reading: Uribe and Schmitt-Grohé (2017)/Ch. 8
PROBLEM SET 2 DUE at 12pm, prior to lecture

Tutorial 3, Thu, May 9: Solutions to Problem set 2

9. Wed, May 15: The Real Exchange Rate and the Open-economy Real-business-cycle Model
Main readings: Uribe and Schmitt-Grohé (2017)/Ch. 8; Obstfeld and Rogoff (1996)/Ch. 4
PROBLEM SET 3 OUT

Wed, May 22: EXAMINATION (90 minutes)
PROBLEM SET 3 DUE at 12pm, prior to the exam

References

Chari, V. V., Patrick J. Kehoe, and Ellen R. McGrattan, "Can Sticky Price Models Generate Volatile and Persistent Real Exchange Rates?," *Review of Economic Studies*, July 2002, *69* (3), 533–63.

Lucas, Robert E. Jr., "Interest Rates and Currency Prices in a Two-Country World," *Journal of Monetary Economics*, November 1982, *10* (3), 335–59.

Nason, James M. and John H. Rogers, "The Present-Value Model of the Current Account Has Been Rejected: Round Up the Usual Suspects," *Journal of International Economics*, January 2006, *68* (1), 159–87.

Obstfeld, Maurice and Kenneth Rogoff, *Foundations of international macroeconomics*, Cambridge, Mass. and London: MIT Press, 1996.

__ **and** __ , "The Six Major Puzzles in International Macroeconomics: Is There a Common Cause?," in Ben S. Bernanke and Kenneth Rogoff, eds., *NBER macroeconomics annual 2000*, Vol. 15, Cambridge and London: MIT Press, 2001, chapter 6, pp. 339–90.

Uribe, Martín and Stephanie Schmitt-Grohé, *Open economy macroeconomics*, Princeton and Oxford: Princeton University Press, 2017.