International Macroeconomics

Master's in Economics (MEcon) — Spring 2020

March 25, 2020

Course number:	8,270,1.00
ECTS credits:	4
Lecture dates:	February 22, February 29, March 30 and March 31
Tutorial dates:	February 22 and March 30
Lecture times:	specific to lecture day
Lecture hall:	01-104 for Block I (Zoom for Block II)
Zoom lectures:	501 429 399 (March 30), 840 892 740 (March 31)
Zoom tutorial:	532 547 404 (March 30)
Examination form:	None. Grade is based on two Take-home Problem Sets only
Course web pages:	*econ.ucsd.edu/muendler/teach/20s/8270* & *learning.unisg.ch/courses/5836*

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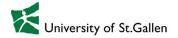|	
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DESCRIPTION

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, domestic productivity change, the terms of trade and the real exchange rate, as well as determinants of international capital flows. The course investigates real-side explanations, and students put the models to work in quantitative exercises using current country data and 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 MATLABcan 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.

- Predict the changes in domestic macroeconomic variables—such as consumption, investment, output, employment, and wages—from fluctuations in international relative prices—such as the terms of trade, the global real interest rate, and the real exchange rate.

- 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 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 and, optionally, STATA.

- Model open economies with multiple sectors, using optimality conditions from a social planner's problem and decentralized optimality conditions.

- Infer how shocks to domestic productivity, 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 calibrated open-economy real-business-cycle and multi-sector models to predict consequences of domestic productivity, terms of trade and real exchange rate shocks for domestic macroeconomic variables, including in exercises that require basic coding in MATLAB.

- Evaluate the quality of model predictions relative to empirical evidence from structural vector auto-regression models.

- Assess empirical puzzles in international macroeconomics that continue to pose challenges to canonical models.

STRUCTURE

The course content is grouped into two main blocks 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 first software-based exercise in the form of a problem set concludes this first block.

Block II starts out with a review of the first software-based exercise, so as to prepare you for the second software-based exercise. 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 lectures present empirical evidence from structural vector auto-regression models and contrast them with predictions from the calibrated theory models. A full understanding of the terms of trade and the real exchange rate requires an export-producing, an import-competing, and a non-traded goods sector. The second software-based exercise asks you to apply the insights and assess the plausibility and practical relevance of the extended model.

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 1, 2, 3, 4, 7 and 8.

Background Readings (recommended): Lucas (1982); Nason and Rogers (2006); Mendoza (1991).

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 two take-home problem sets (due on March 30 and May 2). Each problem set counts 45 points, so the total score for the course is 90 points.

The problem sets ask you to obtain country-level data, prepare and detrend them; to mathematically derive variations of the material in class; and to then implement variations of existing MATLAB code to simulate the according variants of the model. Basline data and code in MATLAB (and optionally for parts of problem set 1 STATA) are available on StudyNet (Canvas).

You have about one month time to complete each problem set. You can contact the teaching assistant and the instructor with any questions on the data or code.

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

There are two scheduled tutorials for the course. The first tutorial provides an introduction to MATLAB as well as 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.

ASSESSMENT

There are two problem sets. Your final raw score will be your total points from the two submitted problem sets:

Problem sets:	45 and 45 points	February 22 and March 31 (due March 30 and May 2)
Total:	90 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.

ZOOM FOR BLOCK II

Given the containment efforts against the spread of the SARS-Cov-2 virus, Lectures 6 through 9 and Tutorial 2 will be held as synchronous classes using Zoom (a web-based video conference solution). The Zoom meeting IDs are 501 429 399 (*unisg.zoom.us/j/501429399*) for Lectures 6 and 7, 840 892 740 (*unisg.zoom.us/j/840892740*) for Lectures 8 and 9, and 532 547 404 (*unisg.zoom.us/j/532547404*) for Tutorial 2. The Zoom meetings are password protected. The password will be communicated to all enrolled students on March 26, 2020.

You can join the meetings before the host and co-host (Marc Muendler and David Torun) enter. All participants will be muted upon entry. The lectures and tutorial will be automatically recorded in the cloud and available to all course participants subsequently.

To use Zoom effectively with two-way audio and one-way video (receiving), you will need one of the following:

- A computer (Windows, Apple or Linux) with speakers and a microphone (a webcam can be useful but is not required); or

- a mobile device (iOS or Android).

To participate in the meeting, you will need an internet connection (broadband wired or wireless, 3G or 4G/LTE).

If you do not have this equipment or a sufficient internet connection, you can participate in the lecture using a phone (mobile device or landline), but you will not be able to participate in the meeting's chat or see the lecture slides. However, you can download the slides in advance and follow by audio only.

For in-class discussions, as a student you can use the chat feature of the Zoom meeting to raise your hand. For after-class discussions, please email Marc Muendler or David Torun (please expect a response time of up to 48 hours), or use the Discussion Board on the course web page (*learning.unisg.ch/courses/5836*).

COURSE SCHEDULE

I. Foundations of Open-economy Macroeconomics

1. Sat, February 22, 8:15am-10:00am: 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. Sat, February 22, 10:30am-12:15pm: Intertemporal Trade and Production
Main reading: Obstfeld and Rogoff (1996)/Ch. 1, Uribe and Schmitt-Grohé (2017)/Ch. 1
PROBLEM SET 1 OUT

Tutorial 1, Sat, February 22, 2:00pm-3:45pm: Using MATLAB for macroeconomic analysis

3. Sat, February 29, 8:15am-10:00am: Current Account Dynamics
Main reading: Obstfeld and Rogoff (1996)/Ch. 2
Background reading: Nason and Rogers (2006)

4. Sat, February 29, 10:30am-12:15pm: Firms, Investment and the Current Account
Main readings: Obstfeld and Rogoff (1996)/Ch. 2; Uribe and Schmitt-Grohé (2017)/Ch. 3

5. Sat, February 29, 2:00pm-3:45pm: Open-economy Real Business Cycle Model
Main reading: Uribe and Schmitt-Grohé (2017)/Ch. 1 and Ch. 4
Background reading: Mendoza (1991)

II. The Terms of Trade and the Real Exchange Rate

Tutorial 2, Mon, March 30, 4:15pm-6:00pm: Solutions to Problem set 1
PROBLEM SET 1 DUE prior to the tutorial
Zoom Meeting-ID: 532 547 404 (*unisg.zoom.us/j/532547404*)

6. Mon, March 30, 6:15pm-8:00pm: The Terms of Trade
Main reading: Uribe and Schmitt-Grohé (2017)/Ch. 7
Zoom Meeting-ID: 501 429 399 (*unisg.zoom.us/j/501429399*)

7. Mon, March 30, 8:15pm-10:00pm: The Terms of Trade and a Two-sector Open-economy Model
Main readings: Uribe and Schmitt-Grohé (2017)/Ch. 7; Obstfeld and Rogoff (1996)/Ch. 4
Zoom Meeting-ID: 501 429 399 (*unisg.zoom.us/j/501429399*)

8. Tue, March 31, 4:15pm-6:00pm: The Real Exchange Rate
Main reading: Uribe and Schmitt-Grohé (2017)/Ch. 8
Zoom Meeting-ID: 840 892 740 (*unisg.zoom.us/j/840892740*)

9. Tue, March 31, 6:15pm-8:00pm: The Real Exchange Rate and a Three-sector Open-economy Model
Main readings: Uribe and Schmitt-Grohé (2017)/Ch. 8; Obstfeld and Rogoff (1996)/Ch. 4
Zoom Meeting-ID: 840 892 740 (*unisg.zoom.us/j/840892740*)
PROBLEM SET 2 OUT

References

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

Mendoza, Enrique G., "Real Business Cycles in a Small Open Economy," *American Economic Review*, September 1991, *81* (4), 797–818.

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.

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