Econ 597

Empirical Macroeconomics

Fall 2020

Instructor Info

Diego Vilán

Office Hrs: Immediately after class and by appointment

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Course Info

Prereq: Econ 551, 552, 553

Thursdays

6.30 - 9.00pm

Online

Overview

Empirical macroeconomics is concerned with the understanding of aggregate phenomena such as economic growth, business cycles, unemployment, inflation, and international trade among others. It does so by working with the available data and applying a mix of econometric methods and general equilibrium models.

In turn this course will have to distinct modules. In the first one students will learn the theory of stationary and non-stationary processes, and how this theory applies to econometric techniques for estimation and forecasting based using time series data. The second module will cover the basics of Dynamic Stochastic General Equilibrium (DSGE) models and their use in policy evaluation. This class attempts to be, to the greatest extent possible, self-contained, and we will be covering both the theory as well as the fundamental numerical methods and computational techniques to solve statistical and rational expectation models.

Reading Material

Required Textbook

Given the plethora of topics, there is no single required textbook. Instead, I plan to draw material from the following sources:

Recommended Texts

- Walter Enders, *Applied Econometric Time Series*. Wiley, 4th Ed. 2015. ("WE")
- Francis Diebold; *Elements of Forecasting*. Cengage, 4th Ed. 2007. ("FD")
- Lutz Killian & Helmut Lutkepohl, *Structural Vector Autoregressive Analysis*. Cambridge University Press. 2017. ("LK")
- George McCandless, *The ABCs of RBCs: An Introduction to Dynamic Macroeconomic Models*. Harvard University Press. 2008. ("MC")
- Jordi Galí, *Monetary Policy, Inflation, and the Business Cycle*. Princeton University Press, 2nd Ed. 2015. ("JG")

We will also rely on my own set of notes developed on these topics which will be distributed throughout the semester.

Grading Scheme

50%	Midterm Exam
35%	Final project replication and presentation
15%	Problem Sets & Class participation

The course will be graded on a curve. I will assign letter grades based on each student's final overall score and my professional judgment. The cutoffs used will respect the ordinal ranking of the numerical course grade. That is to say, students with a sufficiently higher numerical final course grade will receive a higher letter grade than those with a lower numerical course grade. Roughly speaking, having an overall score one standard deviation above the class average typically implies a letter grade of "B+" or above.

While I will not assign letter grades to individual evaluation components, I will circulate key statistics of the distribution of grades of each assignment. For example, I will make public the max, mean, median, as well as some percentiles of the distribution of the midterm examination.

Learning Objectives

1. Ability to understand, evaluate and analyze economic data
2. Ability to understand and interpret statistical evidence from economic data
3. Ability to apply empirical evidence to assessing economic arguments
4. Ability to apply macroeconomic theories to policy discussions
5. Ability to apply microeconomic theories to policy discussions
6. Ability to evaluate the effectiveness of policy programs using sound economic techniques

Replication Project

Students will replicate the primary results of a published research paper that employs some of the methods and models studied in class. Students are responsible for producing a report (about 15-20 pages, plus tables and figures) that includes at a minimum:

1. A summary of the central argument of the paper under study
2. A brief review of the literature (summarizing at least three related studies)
3. Their replication results and an overall evaluation of the work.
4. Suggestions for further research/ solving some of the model's limitations

Students will also present their main findings (and challenges!) to their peers in twenty minutes presentations towards the end of the course. Students will work in groups formed at the beginning of the semester, and will need to complete several intermediate assignments related to the replication project to ensure the timely completion of the project: drafting a summary of its argument, collecting the necessary data, as well as evaluating its methodology. Please refer to the class schedule for a precise description of the dates.

Practice Problem

There will be four problem sets (roughly one every two weeks) throughout the semester. These practice problems represent an important part of the learning experience, as well as a guide of what to expect in the midterm examination. Problem sets have both required and optional questions, with only required problems being expected to be answered by the due date. Students are encouraged to collaborate and consult each other, but must submit their individual answers.

Homework assignments must be uploaded to the course website before each deadline, after which solutions will be posted. Submitted answers will be peer-reviewed, meaning that students will offer each other feedback based on the provided solutions. Your job as a peer reviewer is to offer constructive comments that will help the other student master the concepts, and to improve their performance on future homework assignments and on the exams. Student's peer review comments should be uploaded no later than one week after a problem set's deadline, and will be worth 15 % of the final grade. For further guidance on the peer-review system please refer to: https://serc.carleton.edu/sp/library/peerreview/tips.html

Computer Requirements:

This class carries a heavy computational workload. In turn, completing some of this course's requirements will require a computer with at least 1 GB of RAM and 5 GB of free hard-drive space. Because this course is being taught online, you will also need to have a webcam and a microphone. Students are expected to participate in the class meetings and office hours with their camera turned on.

We will be working mostly with R and Matlab, but you are free to use any software of your liking. No prior computational knowledge is assumed nor required, although definitely useful. For writing the research paper, as well as the presentation slides, I encourage students to use LaTex. Overleaf (www.overleaf.com) is a free online platform for collaborative scientific writing.

Class Schedule

Class #	Date	Topic	Readings	Note
MODULE 1: Time Series Models				
Class 1	08/27/20	Introduction to Time Series & Preliminaries	WE: 1	Replication groups assigned
Class 2	09/03/20	Stationary Univariate Models	WE: 2	Problem Set 1 posted
Class 3	09/10/20	Stationary Univariate Models	FD: 7 & 8	Replication papers assigned
Class 4	09/17/20	Non-stationary Models	WE: 4	Problem Set 1 due Problem Set 2 posted
Class 5	09/24/20	Stationary Multivariate Models	WE: 5 LK: 2 & 4	Replication paper summary due
Class 6	10/01/20	Principles of Forecasting & Cointegration	FD: 3 & 5 LK: 3	Problem Set 2 due
Class 7	10/08/20	MIDTERM EXAM		
MODULE 2: DSGE Models				
Class 8	10/15/20	Introduction to General Equilibrium Models	MC: 1&2	Related Literature due
Class 9	10/22/20	Neoclassical Growth Model	MC: 3 & 5	Problem Set 3 posted
Class 10	10/29/20	Real Business Cycle Models	MC: 6	
Class 11	11/05/20	Simple New Keynesian Models	JG: 3 & 4	Problem Set 3 due
Class 12	11/12/20	Medium-scale New Keynesian Models	JG: 6	Problem Set 4 posted
Class 13	11/19/20	Open Economy Models	JG: 8	Complete data collection
	11/26/20	NO CLASS - Thanksgiving Recess		Problem Set 4 due
Class 14	12/03/20	Final Student Presentations		Final Paper due