EC 508. Econometrics. Professor R Lucas. Fall 2020
Monday and Wednesday 2.30-3.45
Classes and office hours will be held on-line.
Class meetings will also be available as recordings on Zoom.

Class meetings.

All class meetings will be held on-line, using Zoom through Blackboard. The meeting will be recorded and posted on Blackboard after a short delay. To enter the class meeting, go to Blackboard for this course and click on 508 Zoom on the top portion of the left-hand panel.

Office hours: By appointment.

Monday 8-9, Tuesday 4-5, and Friday 2-3.
Email a request for a 15 minute Zoom appointment to Professor Lucas (rlucas@bu.edu).
Your email request should indicate any time constraints within the set office hours.
Only requests received more than 24 hours in advance will be given any priority.
Those in Asian time-zones will be given priority for Monday appointments.
No discussion sessions will be organized for EC508 this semester.

Asking questions.
Any questions about class material may be posed in any of three ways.

1. They may be sent to Professor Lucas by email, using your BU email only, after the class. These questions will be gathered and either responded to at the beginning of the next class or referred to an individual office hour appointment.

2. There will be occasional breaks for brief questions during the class-meeting, though chat will be turned off.

3. If you have a more urgent question that cannot wait for our next break then try to catch my attention by raising and waving your hand.

Any Stata related questions should be directed to our Teaching Fellow, Xuan Li xuanli@bu.edu

Course content

EC508 is an introduction to regression analysis for economists with two objectives:

A basic understanding of econometric theory;

Ability to use Stata software for the various techniques covered.

The course will start with the basic theory of ordinary least squares regression, inference from these estimates, specification and interpretation of multiple regression estimates. Following this, various problems in estimation, both in cross-sectional and time-series data, will be considered, including: collinearity, heteroscedasticity, autocorrelation and errors in measurement. Other topics to be covered include dependent dummy variables, distributed lags, panel estimation, estimation of simultaneous systems and time series analysis.

Preparation

Math: Matrix algebra will not be used. However, students will be expected to be comfortable using basic algebra (such as polynomials, summation notation and logarithms) and some differential calculus (including partial derivatives and first-order conditions for minimization).

Statistics: A brief review will be offered, but students should be familiar with the normal distribution, t-statistics and F-statistics and their use in hypothesis testing.

Economics: Familiarity with basic micro and macroeconomics will be assumed.

Stata: No prior knowledge of the Stata software is assumed.

Stata. Access to Stata software is required to complete the problem sets. Substitution of another statistical software is not acceptable. Get started immediately on establishing your access to Stata: it will be required for the first problem set.

Some of you may already have access to Stata from prior courses. If not, Boston University has a "gradplan" for purchasing Stata at discounted prices. To explore this:

Go to https://www.stata.com/order/

Click on your country on the map and Go.

Select student and New purchase.

Stata I/C (intercooled) is perfectly sufficient for this course.

It is available in three forms:

A 6-month rental at $48

A 12-month rental at $94

A perpetual license at $225

Requirements

The requirements for this course are twofold: an original paper and a series of problem sets.

The grade for this course is divided up as follows:

Original paper	70%
Problem sets	30%

The original paper can be on any topic that you wish. It must report results obtained by you, based on data that you are responsible for locating (but see some possibilities listed below). It must also use one or more of the estimation techniques covered in this course, using Stata. The paper should be no longer than 20 pages, including tables and references. A good paper will explain why the analysis is of interest, any limitations of the data, why the estimation approach was chosen, and what conclusions you draw from the results. The raw data must be submitted at the same time as the paper (preferably zipped), as must your Stata code to generate the results in the paper.

Some potential data sources:
US macro data from the Bureau of Economic Analysis.
https://apps.bea.gov/itable/index.cfm
US micro data:
Current population survey.
https://www.census.gov/programs-surveys/cps/data/datasets.html
International macro data.
The World Bank's World Development Indicators.
https://databank.worldbank.org/reports.aspx?source=world-development-indicators
International micro data.
USAID Demographic and Health Surveys. (Requires simple registration).
https://www.dhsprogram.com/Data/

These are by no means the only options; merely some suggestions.

All students are encouraged to discuss their plans for the original paper with Professor Lucas at an early date, during office hours. Make an appointment; I may be able to suggest other data sources, depending upon your interests.

All papers will be tested for plagiarism. The Boston University Academic Conduct Code defines plagiarism as:

"Representing the work or ideas of another as one's own; and/or using another's work or ideas without crediting the source. Plagiarism includes, but is not limited to, the following: copying the answers of another student on an examination; copying or restating the work or ideas of another person or persons in any oral or written work (printed or electronic) without citing the appropriate source; using audio or video footage that comes from another source (including work done by another student) without permission and/or acknowledgement of that source; and collaborating with someone else in an academic endeavor without acknowledging their contribution. Plagiarism can consist of acts of commission (appropriating the words or ideas of another as one's own), or omission (failing to acknowledge/ document/credit the source or creator of words or ideas)."

Problem sets.

Two series of problem sets will be posted on Blackboard and an email will be sent to all registered students announcing the posting.

The first series will be based on the content of recent class material.
The second series will involve use of Stata, applying various estimation procedures.

Submission due dates.

The original paper, with your Stata data and do files, should be sent by email to Professor Lucas (rlucas@bu.edu) to arrive no later than 4pm (16.00) US_EST on Wednesday, December 2.

Solutions to all Problem Sets should be sent by email to our Teaching Fellow, Xuan Li xuanli@bu.edu. The due date for each problem set will be announced at the time of posting.

Submissions of any materials arriving after these deadlines will receive a grade of zero. It may be wise to plan to send your original paper and accompanying material a day or so BEFORE the deadline.

Text: The required textbook for this course is: D.N. Gujarati, *Basic Econometrics*.
This book is available through the Barnes and Noble BU Bookstore.

Topics and Readings

Sep	2	Organization meeting
	9	Chapter 1: Nature of Regression Analysis
		Chapter 2: Some Basic Ideas
	14	An introduction to Stata
	16	Chapter 3 (including appendix): The Problem of Estimation
	21	Chapter 4: Classical Normal Linear Regression Model
	23	Chapter 5: Interval Estimation and Hypothesis Testing
	28	Chapter 6: Specification and Interpretation
	30	Chapter 7: Multiple Regression
Oct	5	Chapter 8: The Problem of Inference
	7	Continued
	13	Chapter 9: Dummy Variables
	14	Chapter 10: Multicollinearity
	19	Chapter 11: Heteroscedasticity
	21	Chapter 12: Autocorrelation
	26	Chapter 13: Specification and Measurement error
	28	Chapter 15: Dependent Dummy Variables
Nov	2	Continued
	4	Chapter 16: Panel Data
	9	Continued
	11	Chapter 17: Distributed Lags
	16	Continued
	18	Chapter 18: Simultaneous Equation Models
	23	Chapter 19: Identification
	30	Chapter 20: Estimating Simultaneous Equation Models
Dec	2	Continued
	7	Chapter 21: Time Series
	9	Continued