

EC 204-SB1: Empirical Economics 2

Department of Economics
Boston University

Summer 2020 (Session II)

Class Hours: T/W/R 10:00am-12:30pm

Instructor

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Course Description

Does taking an econometrics class in college improve job prospects? To what extent do friends determine your outcomes in life? Are married people happier? Are kids going to lag behind if both parents work? What factors determine the timing of retirement? We can use econometrics to answer questions like these, and others in a wide variety of fields. Econometrics is the use of statistical tools to answer questions using economic or other data. The main objective of economists to use econometrics is to deduce causality.

This is the second course in the introductory level sequence in empirical economic analysis. More specifically, this course will introduce you to the tools needed to do empirical work, namely, a data set, econometric skills, and computer software. By the end of this class, you should be able to pose a question, develop a hypothesis, and analyze your hypothesis using available data, and econometric skills developed in class. Topics covered in this class include simple and multiple linear regression models, hypothesis testing, goodness of fit, heteroskedasticity, autocorrelation, and panel data. I would love for you to learn econometrics for the sake of learning, however, as an additional motivation, I should add that the skills that you learn in this class are greatly valued in the job market.

Course Objectives

Upon successful completion of the course, you will be able to:

1. Generate, understand and interpret the Ordinary Least Squares (OLS) regression model estimates
2. Indicate a good grasp of the assumptions under which the OLS model operates

3. Acquire experience in working with large data sets
4. Learn how to apply the econometric tools studied in this class to answer interesting questions
5. Demonstrate a working knowledge of the popular statistical software, STATA
6. Be able to read and understand the content and format in academic writing

Hub Learning Outcomes

This class fulfills the Quantitative Reasoning II Hub Capacity. Students will be provided with a thorough grounding in econometric theory with an emphasis on applying these techniques to empirical analysis of a wide variety of cross-sectional and time-series data. Throughout the class, students will be taught how to use the econometric software package (STATA) in the context of each statistical concept on the syllabus, and to the extent possible, in the context of economics-related empirical research questions. Our goal is to provide students with the tools needed both to perform statistical analysis of their own, and to be critical consumers of reported statistical evidence, i.e. concept of endogeneity, causality, omitted variables biases appear at different levels of sophistication throughout the sequence.

Department Outcomes

Within the economics department, EC204 is the second half of a full-year empirical analysis sequence in economics, the other half being EC203. These classes are part of the core EC200 level courses in both the major and minor, the other two being Intermediate Microeconomics (201) and Intermediate Macroeconomics (202), and provide the foundations for upper level electives.

STATA Sessions

These weekly Thursday sessions are an integral part of the course. They are run by your TF Gerard. During these meetings, he will review STATA codes and extra practice problems as well as the problem sets.

Course Pre-requisites

Students should have completed the following courses:

EC 101 (Introductory Microeconomic Analysis)
EC 102 (Introductory Macroeconomic Analysis)
EC 203/EC 303 (Empirical Economics 1), or equivalent

Course Materials

- Textbook: There is no required textbook for this course. However, if you would like to supplement the lecture content, I recommend:
 - Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach*. Cengage Learning, Sixth Edition.
 - Stock, James and Mark Watson, *Introduction to Econometrics*. Pearson, Fourth Edition.
 - Angrist, D. Joshua and Jorn-Steffen Pischke, *Mostly Harmless Econometrics*. Princeton University Press.
- Software (STATA): You are required to purchase the econometric software package STATA. It can be ordered online at: <https://www.stata.com/order/new/edu/gradplans/student-pricing/>

For this class, you should purchase Stata/IC 16 (\$225 for a perpetual license, \$94 for a one-year license, \$48 for 6 months). Note that this software will be very useful for any type of analysis you might want to do in the future, either for an internship or a senior honors thesis. Consult the website if you wish to purchase a more robust version. **We will start using STATA right away, so make sure that you buy or have access to your copy of STATA as soon as possible.**

Course Webpage and Communication

All course documents (syllabus, homework, data sets, lecture notes, etc.) and announcements will be posted on the Blackboard Learn website (<https://learn.bu.edu>). If you do not yet have a BU account, please contact the office of Information Technology to set one up. If I need to make announcements outside of class, I will use email, so please ensure that you check or forward whatever email address you have with BU.

Grading Policy

The course grade will be based on problem sets, exams, and an empirical project:

- Problem Sets – 15%
- Midterm Assessment – 20%
- Final Exam – 30%
- Research Project – 35%

Class participation will be also evaluated at the end of the semester and will help me assigning grades to the border cases.

Problem Sets

Problem sets will consist of 10 questions: 4 true/false/uncertain, 3 longer questions, and 3 computational questions (using STATA). Problem sets will be assigned on Thursdays and students will have one week to complete them. **Students are allowed to work in pairs or groups (of no more than three (3))** for problem sets. Make sure that you include the names of all of the students in the group when submitting problem sets. I will not accept submissions of problem sets past their due dates.

Midterm and Final Assessments

The midterm exam will be a take home assessment that will be made available to you at 12:30pm (EST) on July 28 and will be due by 12:30pm (EST) on July 30. Similarly, the final exam will be a take home assessment. I will make this exam available to everyone at 12:30pm (EST) on Tuesday August 11. You will have exactly 48 hours to complete the exam. It is due by 12:30pm (EST) on Thursday August 13. The final exam will be comprehensive (testing all materials covered in the course).

Since I cannot verify with certainty that students complete either exam without assistance, I am allowing you to refer to the course material when taking the final. I do not, however, want students working with each other. Ultimately, this exam is supposed to provide me with an indication of what **you** have learned.

Research Project

Finally, students will be required to complete a research project. The project will require students to formulate a novel research question, gather data, obtain preliminary findings and present them to the class at the end of the session. Detailed instructions of the research project (and relevant due dates) are posted on Blackboard.

How This (Remote, but Synchronous) Course Will Run

Given the circumstances, this course will be taught remotely via Zoom. This is an not ideal format, but I will endeavor to simulate a traditional classroom environment however I can. To that end, I am planning to do the following

Slack Workspace

I have set up a Slack workspace for all of you to join (see email). My aim here is to stimulate communication between students. Part of a vibrant class involves not just having you communicate with me, but with each other as well. I will post interesting articles, job opportunities, etc. on Slack as well.

Attendance Policy

I will not be tracking attendance—I do not see this as my job. You are all responsible adults, capable of making your own decisions and handling the subsequent consequences. I do urge you

to attend every single lecture as we only have six weeks and the content will be coming quickly. Furthermore, excessive absences are associated with underperformance. **Lastly, in order to foster the classroom environment, I will ask that you all turn on your cameras during lecture so that we can see each other. I often take my cues from facial expressions and body language, so it does help me to “read the room” as I lecture.**

During Class

While class goes on, I will mute students so that there are audio/background noise issues. Students are welcome to unmute themselves and ask questions. If you prefer, you can also use the “raise your hand” feature and I will call on you. Throughout lectures I will also incorporate the polling feature (particularly in our warm up and review exercises).

Our class is set to run from 10am-12:30pm. That is a long time. In order to break this up, I will be holding two 70 minute lectures with a 10 minute break in between. Within each 70 minute lecture I will also incorporate practice questions, prompt discussions, link what we are learning to reality—all in an effort to keep the lectures fresh.

Academic Integrity and Honesty

It is your responsibility to know and understand the provisions of the CAS Academic Conduct Code. The encouragement to collaborate on homework assignments is not extended to tests. Read the CAS Academic Conduct Code, which you can pick up in room CAS B-3 or download at <http://www.bu.edu/academics/policies/academic-conduct-code/>. Misconduct can involve more subtle acts than direct cheating: for instance, submitting the same work for several courses without the consent of instructors. I will report all cases of suspected academic misconduct to the Deans’ Office.

JULY 2020

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY			
			1	2	3	4			
5	6	Lecture 1: Introduction Reading: Ch 1,19 Lecture 2: Review of Probability Reading: Append B	7	Lecture 3: Review of Statistics Reading: Append C Lecture 4: Simple Linear Regression Reading: Ch 2	8	Lecture 4: Simple Linear Regression (cont'd) STATA Lab PS 1 Assigned	9	10	11
12	13	Lecture 5: Multiple Regression (Estimation) Reading: Ch 3 3 Ideas Due	14	Lecture 6: Multiple Regression (Inference) Reading: Ch 4	15	STATA Lab PS 1 due (review) PS 2 Assigned	16	17	18
19	20	Lecture 7: Multiple Regression: Issues Reading: Ch 6 Lecture 8: Dummy Variables Reading: Ch 7	21	Lecture 9: Heteroskedasticity Reading: Ch 8 Proposals due	22	STATA Lab PS 2 due (review)	23	24	25
26	27	Lecture 10: IVs Reading: Ch 15 Lecture 11: Simultaneous Eq Models Raeding: Ch 16 Midterm Assigned at 12:30PM (EST)	28	Lecture 12: Intro to Time Series Reading: Ch 10, 11, 12	29	Midterm Due by 12:30PM (EST) PS 3 Assigned	30	31	

AUGUST 2020

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY			
						1			
2	3	<i>Lecture 13: Intro to Panel Data</i> Reading: Ch 13, 14	4	Peer review session (rough drafts due)	5	<i>STATA Lab</i> PS 3 Due (review)	6	7	8
9	10	<i>Lecture 14: LDVs</i> Reading: Ch 17 Final Exam Assigned 12:30PM (EST)	11	<i>Lecture 15: Additional Topics</i> Reading: TBD	12	Final Exam due by 12:30PM (EST) Final Project Due	13	14	15
16	17	18	19	20	21	22			
23	24	25	26	27	28	29			
30	31								