

EC 304: Empirical Economic Analysis II

Spring 2023
Department of Economics
Boston University

Professor	Zhongjun Qu
Class hours	Monday and Wednesday 10:10–11:25
Class location	CAS 229
Email	qu@bu.edu
Office hours	Wednesday 2:00-3:30 Thursday 12:30-2:00
Office location	270 Bay State Road, Room 407.
Review session	Friday 10:10-11:00, CAS 116
Teaching fellow	Byeo Rhee Bak <brbak@bu.edu>, Office hour: Friday 9-10 AM, SSW 514

Course Objectives

This course provides an in-depth introduction to multiple regression and related methods for empirical economic analysis. The topics covered include the linear multiple regression model, instrumental variable regression, discrete choice model, panel data regression, regression with time-series data, estimation of dynamic causal effects, and prediction with big data. These topics introduce students to the core set of empirical methods used by economists. In particular, students will learn how to estimate causal effects using observational data and how to forecast economic and financial variables. We emphasize real-world applications. The goal is to help students to become sophisticated consumers of econometrics.

Required Textbook

J.H. Stock and M.W. Watson, Introduction to Econometrics, 4th Edition, Pearson. The third edition is also fine.

Prerequisite

The course builds on the probability and statistics concepts taught in CAS EC 303, Empirical Economic Analysis I. Students are strongly encouraged to independently read chapters 2 and 3 in our required textbook to review concepts in probability and statistics.

Assignments and Grading

There will be seven assignments, each containing both theoretical and empirical questions. Students are encouraged to collaborate on the problem sets but must hand in their copy.

Completed homework assignments are to be handed in at the beginning of the lecture on the due day. Late homework will not be accepted.

The evaluation will consist of the problem sets (20%), two midterm exams (each 20%), a final exam (30%), and class participation (10%, e.g., attending lectures on time, asking and answering questions, participating in discussions). The midterm exams are not cumulative. The final exam is cumulative.

All exams are close book. Students may bring a single-sided, letter-sized formula sheet and a calculator to each of the three exams. No other documentation is permitted.

Students with questions about grading (homework assignments or exams) should contact the instructor within seven days after the grades are assigned. Otherwise, the grades are considered final and will not be changed.

Software

All the lectures, review sessions, problem sets, and solutions will use STATA as the software language. However, students can also choose to use R for their homework assignments. The exams will contain empirical questions, which students can answer in STATA or R languages.

Stata Access

You can purchase STATA directly from the website <https://www.stata.com/order/new/edu/profplus/student-pricing/>. We recommend Stata/BE. The above link is for new purchases. If you are renewing or upgrading, use the link below: <https://www.stata.com/order/dl/>. If you prefer not to purchase a copy, there are three options to use STATA on a university owned computer or a terminal: (1) Utilize the computers in the Library, which will have Stata available for use. (2) Utilize the computers in CAS 330 at 685 Commonwealth Avenue. The schedule is posted on the door as well as online at <http://www.bu.edu/casit/computer-labs/>. Card access can be requested. Students can visit CAS 331 between 8 am – 6 pm to be set up for access. The cards will give access between 8 am – 10 pm, 7 days a week, and we ask students to be aware of the room availability as it is also used for lectures and lab sections. The building doors are typically open until 11 pm most evenings. But please note that the hours may be different during the Covid period. (3) The software is available on the Shared Computing Cluster (SCC).

Academic Conduct:

Students should know and understand the CAS Academic Conduct Code: <https://www.bu.edu/academics/cas/policies/academic-conduct/>. Any suspected academic misconduct will be reported to the Dean's Office.

CLASS SCHEDULE

WEEK	DATE	TOPIC	READING
Week 1:	23-Jan	Introduction	SW chapter 1
	25-Jan	Regression with a Single Regressor (I)	SW chapter 4
Week 2:	30-Jan	Regression with a Single Regressor (II)	SW chapter 4
	1-Feb	Regression with a Single Regressor (III)	SW chapter 5
Week 3:	6-Feb	Linear Regression with Multiple Regressors (I)	SW chapter 6
	8-Feb	Linear Regression with Multiple Regressors (II)	SW chapter 7
Week 4:	13-Feb	Nonlinear Regression Functions (I)	SW chapter 8
	15-Feb	Nonlinear Regression Functions (II)	SW chapter 8
Week 5:	2/21/2021 (Tuesday)	Review	
	22-Feb	Midterm 1	
Week 6:	27-Feb	Assessing Studies Based on Multiple Regression (I)	SW chapter 9
	1-Mar	Assessing Studies Based on Multiple Regression (II)	SW chapter 9
Week 7:	13-Mar	Panel Data (I)	SW chapter 10
	15-Mar	Panel Data (II)	SW chapter 10
Week 8	20-Mar	Panel Data (III)	SW chapter 10
	22-Mar	Instrumental Variable Regression (I)	SW chapter 12
Week 9	27-Mar	Instrumental Variable Regression (II)	SW chapter 12
	29-Mar	Instrumental Variable Regression (III)	SW chapter 12
Week 10	3-Apr	Midterm 2	
	5-Apr	Regression with Binary Dependent Variables (I)	SW chapter 11
Week 11	10-Apr	Regression with Binary Dependent Variables (II)	SW chapter 11
	12-Apr	Time Series Regression and Forecasting (I)	SW chapter 15
Week 12	17-Apr	NO CLASS	
	19-Apr	Time Series Regression and Forecasting (II)	SW chapter 15
Week 13	24-Apr	Time Series Regression and Forecasting (III)	SW chapter 15
	26-Apr	Dynamic Causal Effect (I)	SW chapter 16
Week 14	1-May	Dynamic Causal Effect (II)	SW chapter 16
	3-May	Prediction with Big Data (I)	SW chapter 14
	Time permits	Prediction with Big Data (II)	SW chapter 14