



ECON 211f1: Introduction to Econometrics

Brandeis International Business School

Fall Module II 2012

Time: 5:00—6:20

Location: TBA

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Hours: TBA

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Course Description

In this module we will focus on learning how to conduct and critique empirical studies using applied econometric models. Focus will be on topics in economics, business and finance using multiple linear regression techniques.

The first part of this course will be used to review the basics of the regression model: its foundations, assumptions and limitations. More importantly, we will focus on how to correct for many of the violations of the model, along with discussing the impacts of these corrections. As part of this correction process, we will discover and learn how to use a number of limited dependent variable models. The intent of this course is to apply the statistical basics learned in ECON210 in real world settings using real world data.

In this course we will be both consumers of statistics as well as producers of statistics: I will offer a number of papers that utilize the techniques we have learned so we can both appreciate and critique the use of these models. At the same time, we will download real data and generate our own models in an attempt to understand the practical issues faced by researchers in the field.

This course will be also be used to extend modeling efforts to include the use of a number of limited dependent variable models. The most important of these will be models with binary dependent variables (logit and probit). However, once that framework has been developed, we will have the training needed to examine logical extensions of these models to other categorical models (e.g. multiple category models (multinomial logit), ordered category models (ordered logit), count models (poisson)).

My expectations are that students will be able to generate a number of these models with confidence and understanding along with the ability to read, understand and critique a number of other model types.

Learning Goals

A good manager must be able to understand measurement information provided and use that information in a variety of ways. Statistical analysis and model building are primary tools in this process. Upon completion of this class students will be able to:

- Identify, evaluate, modify and manipulate data and utilize this data for descriptive purposes by generating, analyzing and presenting a variety of univariate statistics (sum, count, minimum, maximum, mean, median, variance, standard deviation, etc.)

- Utilize this data for inferential purposes by generating, analyzing and presenting a variety of bivariate statistics (correlations, t-tests, f-tests, chi-squares, etc.)
- Utilize this data for inferential purposes by generating, analyzing and presenting a number of causal models including simple and multiple regression models as well as a number of limited dependent variable models such as logit and probit

Prerequisites

It is important that we all start at a similar level with a basic understanding of inferential statistics and understanding of linear regression. ECON 210f or another basic statistics course is therefore a prerequisite to this course. Students coming to this class not having taken ECON210f should meet with me to ensure that they have the appropriate background.

We will make immediate and great use of Stata for our statistical work. Therefore, a solid knowledge of Stata basics is also a requirement. Again, ECON210f provided such training. Please speak with me if you have not taken ECON210f to ensure that you have the requisite Stata background.

Required Textbook and Software Expectations

We will make great use of Stock and Watson, *Introduction to Econometrics*, 2nd ed. Publisher: Addison-Wesley so this is a required text. As part of the course I will also provide a number of other on-line readings.

As we will be using Stata extensively, I highly recommend Christopher Baum, *An Introduction to Modern Econometrics Using Stata*. Publisher: Stata Press.

The Stata program is available on the computers in IBS but is also available for purchase if you are interested. I will provide detail on purchase during our first class.

We will be using Word and Excel extensively in this course and my expectations are that you are comfortable with both.

Keeping Informed

We'll make regular use of LATTE and a course mailing list (registering in the course automatically adds you to both lists). All lecture notes, handouts, links and other supporting materials will be available via LATTE, and any late-breaking news will reach you via the mailing list. Please check your Brandeis email regularly to keep apprised of important course-related announcements.

Participation & Contributions

IBS is truly an international community of learners, each with something to contribute to the enterprise. Each student in the class should regard participation as a chance to contribute to our joint efforts and helping fellow students to learn. Moreover, because this module aims to build both understanding and effective communication skills, class participation is important. Statistics is not a spectator sport; you will learn by *doing* rather than by watching. Participation can take many forms, and each student is expected to contribute actively, freely, and effectively to the classroom experience by raising questions, demonstrating preparedness and proficiency in the analysis of problems and cases, and explaining the implications of particular analyses in context. To this end, *class attendance is required, and students should use name cards.*

Written Assignments

We will have weekly problem sets, a take home midterm (to be done individually), and the final will consist of a group project (see below). All written material is due before the beginning of the next class unless otherwise specified. In your written work, the *clarity and correctness of your explanations is at least as important as the numerical correctness of your analysis*. All assignments are due before the start of class in electronic format via LATTE. If you are absent, your paper should arrive electronically before class that day.

Evaluation

Your final grade in the course will be computed using these weights:

Participation	10%
Homework sets (3)	20%
Take home Midterm	35%
Take home final	35%
TOTAL	100%

Academic Integrity

Academic integrity is central to the mission of educational excellence at Brandeis University. Each student is expected to turn in work completed independently, except when assignments specifically authorize collaborative effort. It is not acceptable to use the words or ideas of any other person without proper acknowledgement of that source. This means that you must use footnotes and quotation marks to indicate the sources of any phrases, sentences, paragraphs or ideas found in published volumes, on the internet, or created by another student. Violations of university policies on academic integrity, described in Section 3 of *Rights and Responsibilities*, may result in failure in the course or on the assignment, and could end in suspension from the University. If you are in doubt about the instructions for any assignment in this course, you must ask for clarification.

Disabilities

If you are a student with a documented disability on record at Brandeis and wish to have a reasonable accommodation made for you in this class, please see me immediately.

Study Groups

Working with one or two partners is an excellent way to gain deep understanding of this subject. I encourage small groups to work on assignments, with a few caveats:

- Be sure that you are neither carrying nor being carried by the group; each member of the group is entitled to learn.
- For problem sets, you may work alone or with as many as 3 partners, but each person should submit their own problem set.
- Each group member retains the right to “go it alone.” Joining a group is not a marriage, and you can leave a group at any time.

Course Outline

Note: This module meets only thirteen times for about one-and-one-half hours per session; your attendance and involvement are crucial.

Date	Topic	Assignment for <i>next class</i>
Meeting 1	Introduction and review of statistics	Stock and Watson Chapters 2 and 3
Meeting 2	Introduction and review of statistics (continued)	Stock and Watson Chapters 2 and 3 Problem set 1 due before next meeting
Meeting 3	Review of OLS	Stock and Watson Chapters 4 and 5
Meeting 4	Review of multiple linear regression modeling	Stock and Watson Chapters 6 and 7
Meeting 5	Variable transformation (squares and logs) and the use of categorical variables on the right-hand side (the X's)	Stock and Watson Chapters 6 and 7
Meeting 6	Logarithmic transformations on Y. Introduction to transformation of non-linear models.	Stock and Watson Chapter 8 Ramanathan Chapter 6 (provided)
Meeting 7	Issues related to violations of the model: OLS and multiple linear regression	Crown Chapter 5 (provided)
Meeting 8	Limited dependent variable models introduction—logit	Stock and Watson Chapter 11
Meeting 9	Describing marginal effects in logit and probit models	
Meeting 10	Extending logit to multinomial logit and ordered logit	
Meeting 11	Assessing empirical models	Stock and Watson Chapter 9
Meeting 12	Assessing empirical models (continued)	
Meeting 13	Other limited dependent variable models surveyed.	
	Review for final	