ECONOMICS 675
EMPIRICAL MICROECONOMETRICS
COURSE OUTLINE

Department of Economics - University of Michigan
Fall 2009
Version of September 10, 2009

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Course meetings: MW 1:00-2:30 MH 1401

Course description

The purpose of this course is to expose students to econometric techniques frequently used in applied microeconomic research. One way to think about the course is that it will introduce you to the tools in toolbox. The course will not go into great depth in regard to any particular applied econometric method, but will instead aim to provide you with enough knowledge about each one to know when, and when not, to use it in your empirical research.

Students will be expected to read the assigned papers and be able to discuss not only the econometric techniques used but also the basic economic issues as well.

Prerequisites

The nominal course prerequisites are Economics 671 and 672. The real prerequisite is a good grasp of the topics covered in a first-year graduate textbook such as Johnston and DiNardo, plus a good understanding of linear algebra and probability theory. Some experience with the use of statistical software will be useful but is not necessary.

Problem sets

The problem sets will have two types of questions. The first will be exam-type questions that ask you to “prove” or “show” things or to respond to a written description of some empirical results. This type will be relatively infrequent. For the second type of question, you will be given data and asked to estimate an econometric model and then to interpret the estimates you obtain. In general, both generating and interpreting the estimates correctly are important, with
interpretation weighing most heavily in determining the grade for each problem.

The topics for the problem sets will be some or all of the following:

Discrete choice models
Truncated and censored regression models
Duration models
Quantile regression
Variance estimation and power
Bootstrapping
Non-parametric regression and matching
Heckman bivariate normal selection model
Instrumental variables models
Regression discontinuity designs
Difference-in-differences and panel data models

Grades

Grades for the course are based on performance on the problem sets. In particular, your course grade is the average of your grades on the problem sets after dropping the lowest of the grades, where missed problem sets have a grade of zero. Because one problem set grade is dropped, no late problem sets will be accepted.

Statistical software

I support Stata, and provide problem set solution log files in Stata, but you are welcome to use alternative software such as SAS, SPSS, TSP, or Shazam or other programs such as Eviews for the problem sets if you like. Some of the topics in this class are not well covered by these other packages, so learning Stata is strongly encouraged.

A variety of resources for learning Stata can be found here:

http://www.stata.com/links/resources1.html

The following book provides a useful guide to the basics of Stata and is a recommended text for this class:


This book and many others can be ordered at the Stata web page: www.stata.com.

You can order your own copy of Stata at a very low rate (due to a special arrangement between Stata and the University of Michigan). Go to www.stata.com, click on “Order Stata”, click on “New Purchases, Educational Plans”, and then click on “Gradplans”. You will see that you can order various versions of Stata, either in the form of a one-year “lease” or a permanent purchase. Some of the problem sets in the course use data sets too large for “small” Stata so you should
get regular Stata.

**Students with disabilities**

“If you believe you need an accommodation for a disability, please let me know at your earliest convenience. Some aspects of this course may be modified to facilitate your participation and progress. As soon as you make me aware of your needs, we can work with the Office of Services for Students with Disabilities to help us determine appropriate accommodations. I will treat any information you provide as private and confidential.” Also see [http://www.umich.edu/~sswd/](http://www.umich.edu/~sswd/) for more information.

**Academic misconduct**

Information about what happens if you cheat or otherwise engage in academic misconduct can be found here: [http://www.lsa.umich.edu/academicintegrity/](http://www.lsa.umich.edu/academicintegrity/). Be aware that I will take cheating very seriously even if it is the first time you have been caught.

**General readings and textbooks**

The general texts for the course, both of which are available at the university bookstore, are:


You might also enjoy the companion book to one of the main texts:

Cameron, Colin and Pravin Trivedi. 2009. *Microeconometrics Using Stata*. College Station, TX: Stata Press.

Enjoyable and interesting background reading for the course is provided by:


The following handbook chapters also cover large chunks of the material in the course. Both are available electronically through the UM library.


If it has been a while since you had any statistics, or even if it has not, you may want to brush up a bit on the basic linear model. The chapters to read for this purpose are:

Wooldridge (2002), Chapters 1-4

Cameron and Trivedi (2005), Chapter 4

Angrist and Pischke (2009), Chapters 1-3

**Reading list by topic**

A “[*]” denotes the most important readings.

I will post the journal article readings on the CTools site for the course.

**Discrete choice models**

[*] Wooldridge (2002), Chapter 15

[*] Cameron and Trivedi (2005), Chapters 14 and 15


**Truncated and censored regression models**

[*] Wooldridge (2002), Chapter 16

[*] Cameron and Trivedi (2005), Section 16.1-16.4


**Duration models**
Wooldridge (2002), Chapter 20

Cameron and Trivedi (2005), Chapters 17 and 18


**Quantile regression**

Cameron and Trivedi, Section 4.6

Angrist and Pischke, Chapter 7


Koenker, Roger. 2003. “Short Course on Quantile Regression.”

**Nonparametric regression**

Cameron and Trivedi (2005), Chapter 9


**Matching methods**

Wooldridge (2002), Chapter 18, Sections 18.1 to 18.3.

Cameron and Trivedi (2005), Section 25.4

Angrist and Pischke (2009), Chapter 3


Variance Estimation

[*] Wooldridge (2002), Sections 4.2.3, 6.3, 11.5, 17.1, 17.2 and 17.8

[*] Cameron and Trivedi (2005), Chapter 24

[*] Angrist and Pischke (2009), Chapter 8.


Bootstrapping

[*] Wooldridge (2002), Section 12.8

[*] Cameron and Trivedi (2005), Chapter 11

[*] Angrist and Pischke (2009), Chapter 8


Bivariate normal selection model

[*] Wooldridge (2002), Section 17.4

[*] Cameron and Trivedi (2005), Sections 16.5-16.7

**Instrumental variables**

[*] Wooldridge (2002), Chapter 5

[*] Cameron and Trivedi (2005), Sections 4.8, 4.9, 6.4, 8.3, 8.4

[*] Angrist and Pischke (2009), Chapter 4

Angrist, Joshua, Guido Imbens and Donald Rubin. 1996. Identification of Causal Effects Using Instrumental Variables.” *Journal of the American Statistical Association*. 91: 444-455. [Be sure to also read the comments.]


**Regression discontinuity designs**

[*] Cameron and Trivedi (2005), Section 25.6.

[*] Angrist and Pischke (2009), Chapter 6


**Difference-in-differences**

[*] Wooldridge (2002), Section
Cameron and Trevedi (2005), Sections 22.6 and 25.5

Angrist and Pischke (2009), Chapter 5


Panel data models

Wooldridge (2002), Chapter 10

Cameron and Trivedi (2005), Chapter 21

Angrist and Pischke (2009), Chapter 5


**Course schedule**

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