Economics 626: Empirical Microeconomics

This course will cover fundamental methods for analysis of microeconomic data. There will be four core topics: extremum estimators with applications (discrete choice, truncated, censored and selected data, duration models), panel data, IV estimation, and nonstandard standard errors. In addition, we will cover many combinations of these topics, e.g. nonlinear IV, nonlinear panel, etc. Additional topics that may be covered, time permitting, include quantile regression (and instrumental variable quantile regression), treatment effects, randomization in economics, nonparametric and semiparametric estimation and inference with multiple outcomes. This course will focus on application, although we will not neglect theory entirely. All students are encouraged to take Econ 722, taught by Prof. Ingmar Prucha in the spring term. Econ 722 covers many of the same topics (as well as others) with a greater emphasis on theory, with the goal of developing an ability to read, understand and apply advanced estimation methods from the top econometrics journals.

Prerequisites: Econometrics I (Econ 623) and Econometrics II (Econ 624) or permission of the instructor. Students without these prerequisites may be admitted to the course subject to the approval of the instructor, but neither the instructor nor the TA will be obliged to provide remedial instruction. Students are assumed to have basic proficiency with Stata (reading in and manipulating data, obtaining summary statistics and running simple regressions, basic graphics). A programming mini-course will be offered in the first week of the semester to familiarize you with more advanced Stata skills. This mini-course is not strictly required but is strongly recommended. In fact, the first problem set for 626 will be distributed during the mini-course and many useful tools for completing this problem set will be presented.

Course requirements: The course requirements are satisfactory completion of all problem sets, a midterm exam and a final exam. You are permitted (indeed, encouraged) to collaborate on problem sets, but each student must write up and submit an individual solution unless specific instruction to the contrary is given on the problem set. The midterm is tentatively scheduled for Wednesday, October 22 in class. In lieu of the midterm, students may submit a brief-but-thorough empirical paper which (a) presents original research in a clear, professional fashion and (b) demonstrates mastery of 626-level tools. See the next paragraph for details. The final exam is scheduled for Wednesday, December 17, from 8:00 a.m. to 10:00 a.m.

Details on the midterm-substitute paper: this will be due 21 days before the final exam, i.e. Wednesday, November 26 at 11:00 a.m. Students must advise me of their decision to forgo the midterm no later than Wednesday, September 24 at 11:00 a.m. This is to encourage you to start early – papers always progress more slowly than you expect, even after you have adjusted your expectations to account for this fact. In fact, if you are contemplating this option, you should start looking for an interesting topic and data now. Two prohibitions: first, this must be original work,
not a rehashing of another paper you have written (substantial additions to previous work will be considered, but must be cleared by me before the September 24 deadline); second, although you are allowed to use datasets from other economists’ papers, you must not contact them in any way. This is to prevent a flood of emails from my students to various professors asking for data, which in addition to inconveniencing busy people would adversely affect my reputation in the profession. (One exception: if someone has a note on their website or on a paper explicitly inviting readers to contact him or her for a specific dataset, you may do so in the least intrusive way possible. Before doing this, you should provide me with a link to the website, copy of the paper, etc., and I will give you permission.) (One non-exception: in the interests of fairness, this applies uniformly. That is, if your advisor, undergrad professor, roommate, mother, whatever, has a dataset you want to use, you must follow the same rules.) This is actually not as restrictive as you might think – many people who are willing to share their data have already posted it. Also, many journals now require that data be posted.

A note to auditors: I will be more than happy to accommodate anyone who wishes to audit the course, space permitting. Registered students will have priority when resources, in particular, instructor and TA time, are scarce. While you are welcome to audit, I anticipate that most of the learning in this course will come through close reading of the assigned text and through hard work on the problem sets, rather than via my lectures. Therefore, I have my doubts whether a pure audit will be that useful and encourage you to discipline yourself to work on the problem sets. One useful discipline device that is sure to get you to do the problem sets is registering for the course, which you are encouraged to do.

Course website: https://elms.umd.edu/bin/common/course.pl?course_id=89644_1

Texts:

Required:


Both Cameron & Trivedi and Wooldridge are excellent textbooks, and I recommend that students read the relevant chapters from both. I have found Cameron and Trivedi to be the best textbook for learning this material, while I find Wooldridge superior as a reference. Note on Wooldridge: according to the publisher, there is a second edition in the works. It was originally scheduled for publication in December 2008 but has been indefinitely delayed. You might consider borrowing a copy from a friend or purchasing a used copy.

Recommended:


The Kennedy book is a great source for intuition and tips on applications. It is not rigorous enough to serve as a textbook for this course, but it makes for great productive bus / subway reading. The Newey & McFadden chapter is one of the key theoretical references for microeconometric estimation. It is surprisingly readable given the level of rigor. While it is an excellent reference, its technical level in parts is probably higher than required for this course.


Supplementary:


The first chapter of Hayashi makes an excellent quick refresher if the first-year sequence has faded for you. This chapter is available online at [http://press.princeton.edu/chapters/s6946.pdf](http://press.princeton.edu/chapters/s6946.pdf). The rest of the book is excellent as well.


**Course Outline**

Readings are listed in the following order: recommended instructional readings (textbook or Handbook of Econometrics chapters, pedagogically useful journal articles), marked *; supplementary instructional readings, marked **; recommended applied papers, marked #; supplementary applied papers, marked ##.

**Core topics:**

1. Nonlinear and maximum likelihood estimation, with applications
(a) Theory
Readings:
* Cameron and Trivedi (2005, Chap. 5)
* Wooldridge (2001, Chap. 12.1-12.6)
** Newey and McFadden (1994)

(b) Computation
Readings:
* Cameron and Trivedi (2005, Chap. 10)
* Wooldridge (2001, Chap. 12.7-12.8)

(c) Applications
i. Binary choice (will largely be covered as illustrative examples for parts 1.a and 1.b above)
* Cameron and Trivedi (2005, Chap. 14)
* Wooldridge (2001, Chap. 15.1-15.8)

ii. Multinomial and ordered choice
* Cameron and Trivedi (2005, Chap. 15)
* Wooldridge (2001, Chap. 15.9-15.10)

iii. Corner solutions, censoring, truncation and selection
* Cameron and Trivedi (2005, Chap. 16)
* Wooldridge (2001, Chap. 16.1-16.7, 17.1-17.6)

iv. Duration analysis
* Cameron and Trivedi (2005, Chap. 17)
* Wooldridge (2001, Chap. 20.1-20.3.3)
** Cameron and Trivedi (2005, Chaps. 18 and 19)
** Wooldridge (2001, Chaps. 20.3.4-20.5)

v. Count data
* Cameron and Trivedi (2005, Chap. 20)
* Wooldridge (2001, Chap. 19.1-19.5)

2. Instrumental Variables
(a) Linear IV
* Cameron and Trivedi (2005, Chap. 4.8)
(b) Weak Instruments and Many Instruments

* Cameron and Trivedi (2005, Chap. 4.9)


3. Panel Data

(a) Linear Panel Data Models
* Cameron and Trivedi (2005, Chap. 21)
* Wooldridge (2001, Chap. 10)

(b) Extensions
* Cameron and Trivedi (2005, Chap. 22)
* Wooldridge (2001, Chap. 11)

(c) Nonlinear Panel Data Models
* Cameron and Trivedi (2005, Chap. 23)
* Wooldridge (2001, Chap. 12)
4. Nonstandard standard errors (heteroscedasticity, autocorrelation, spatial correlation, clustering, bootstrapping)

(a) Robust standard errors

(b) Clustering


(c) Spatial Correlation


(d) Autocorrelation


(e) Bootstrapping

* Cameron and Trivedi (2005, Chap. 11)


Additional topics (time permitting and according to student interest; readings will be added when topics are decided):

5. Quantile regression and IV quantile regression
6. Treatment effects, including regression discontinuity
7. Randomization in economics
8. Nonparametric and semiparametric estimation
9. Multiple outcomes (SUR, Bonferroni corrections and adjusted p-values)
Various de rigeur but nonetheless necessary statements

*Academic honesty:* you are required to abide by the standards of the University Honor Code, which prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. For details on the requirements of the Honor Code, see [http://www.shc.umd.edu/code.html](http://www.shc.umd.edu/code.html) (Note: I find it ironic that faculty are encouraged to copy the preceding text from a UMd teaching resources website.) You are permitted (indeed, encouraged) to collaborate on problem sets, but each student must write up and submit an individual solution unless specific instruction to the contrary is given on the problem set.

*Illness:* Campus Senate policy (available [here](http://www.shc.umd.edu/code.html)) requires students who are absent due to illness/injury to furnish documentary support to the instructor. I require students to contact me by email prior to class time in which you indicate that you have an illness or an injury. You must provide written documentation from a physician or other qualified health professional (e.g. registered nurse, physician’s assistant) verifying your illness/injury immediately upon your return to class. You will not be allowed to turn in missed assignments or make up quizzes, tests, papers, etc., if you have not provided this documentation. Documentation not presented to me in a timely manner will not be accepted. In addition, if it is found that you have falsified the documentation provided, you will be referred to the University’s Student Conduct Office.

*Religious observances:* I will make every effort to accomodate students’ religious observances. By September 15, 2008, students must provide me in writing a request for accomodation if some requirement of the class will conflict with a specific and required religious observance. Please specify the observance and date. For further details, refer to the Online Undergraduate Catalog Policy on Religious Observance.

*Students with disabilities:* I will make every effort to accommodate students who are registered with the Disability Support Services (DSS) Office and who provide me with a University of Maryland DSS Accommodation form which has been updated for the Fall 2008 semester. This form must be presented to me no later than September 15, 2008. I am not able to accommodate students who are not registered with DSS or who do not provide me with documentation which has been reviewed by DSS after September 15, 2008.

*Decorum:* Students are expected to treat each other with respect. Disruptive behavior of any kind will not be tolerated. Students who are unable to show civility with one another, the teaching assistants, or myself will be subject to being referred to the Office of Student Conduct or to Campus Police. You are expected to adhere to the Code of Student Conduct at all times.
References


