

ECON 303301: Econometrics
Spring 2009
Department of Economics and Econometrics
University of Notre Dame

Section 01, 11:45am – 1:00pm
Classroom: 243 Coleman-Morse

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Class web page: <http://www.nd.edu/~wevans1/econ30331.html>

Textbook:

Jeffrey Wooldridge, *Introductory Econometrics: A Modern Approach*, 4th Edition, South-Western, Cengage Learning

Along with this book, I will assign mandatory readings of academic articles. The readings are available for download in PDF format from the class web page. To comply with copy write laws, the web page is password protected and your NetId/password will provide you access to the articles.

Office Hours: Mondays, 2:00pm – 3:30pm, Tuesdays 9:00am – 11:00am, and by appointment.

I am never far from email. If you have a question, please feel free to contact me at wevans1@nd.edu.

Course rationale, objective and theme:

What separates economics from most other social sciences is that our discipline begins with a few basic assumptions and utilizes these as building blocks for extensive models of the real world. Models are only useful if they can be tested with data and economists have developed extensive statistical models that are used to test their theories. The workhorse statistical model in the social sciences is the ordinary least squares (OLS) regression. The bulk of the course will be outlining the theory behind and the properties of the OLS model. The course will however not just be an abstract exercise. For each topic, I will first present a standard textbook treatment of the topic. Next, we will read some academic papers that used the techniques outlined in class. Students will be expected to read the assigned papers and be able to discuss not only the econometric techniques used but also the economic issues as well. Finally, I will provide sample code that illustrates how one would obtain estimates given appropriate data.

The class will use the STATA statistical software package. STATA is a fast and versatile program that was written by economists so it is more intuitive for people in our field. STATA is also the program of choice for applied micro economists. Knowledge of STATA will greatly enhance your ability to get a job after graduation.

STATA is available in all Windows-based machines in computer clusters and classrooms on campus. STATA is not available on the MAC machines in the clusters. If you want your own copy of STATA, a one-year site license for STATA 10/IC can be purchased through the STATA Grad Purchase plan. The web site is <http://www.stata.com/order/new/edu/gradplans/gp-campus.html> and the cost is \$95. This version of STATA is available for either Windows or MAC platforms. This is not required for class but if you want to use STATA on your own laptop/desktop, this is the only avenue available.

To help you get started with STATA, I have put together a 15-page tutorial that is available on the class web page. You are expected to go through the tutorial yourself and become familiar with the basics of STATA. You need to do this soon because we will begin to use STATA early on in the semester. I will run a 90 minute 'get to know' STATA session for anyone interested. The class is not required and if you 'pick up' programming quickly, you may want to skip it. The STATA review session is tentatively scheduled for Friday, January 23, 11:45am – 1:00pm. The classroom is TBD.

Prerequisites: ECON 30330 or a serious course in Mathematical Statistics. You are also expected to know some simple calculus.

I have put together a 20 page review of ECON 30330 and this is available on the class web page. This handout goes over most of the important concepts that will be used this semester such as expected values, covariance, correlation, linear combinations of random variables, test of hypothesis, testing the equality of means from two samples, etc. Please read over the handout. If the terms in that handout are foreign to you, you may need to review your ECON 30330 notes.

Expectations: Students are expected to attend class, be prepared for class, to NOT be late to class, to participate in classroom discussions, to hand in assignments when due, and to NOT engage in academic dishonesty.

Evaluations: Grades for the course will be based on 6 problem sets (20 percent of the course grade), a mid term examination (25 percent), an empirical project (20 percent) and a comprehensive final exam (35 percent).

Problem sets: Five to six problem sets will be assigned during the semester. These problem sets are designed to gauge your understanding of the concepts discussed in class. The problem sets will have two types of questions. The first are 'pencil to paper' where you are asked to prove a mathematical statement, calculate an estimate, derive an equation, etc. These questions are the type that will be asked on the exams. For the second type of question, you will given a data set and asked to generate and interpret statistical output. You can use any statistical software package to answer these questions but I will provide sample programs and support (i.e., I will answer questions) for STATA.

You are encouraged to work in groups on the problem sets but everyone must turn in their own copy of the answers. Problem set answers should be turned in at the beginning of class on the day they are due. I will not accept late problem sets.

The first problem set is on the class web page and is due at the start of class on Monday, January 26th, and will cover the statistics you should have learned in ECON 30330.

Examinations: The mid-term examination will be held Wednesday, March 4th. The final exams will be held in the classrooms on Wednesday, May 6th at 8:00am.

Exams will be a mix of problems like those from the problem sets, and discussion-type questions.

Makeup exams will only be given for students who have a valid University excuse, applied for in writing and adequately documented. I must receive documentation within 48 hours of the missed exam. Please familiarize yourself with student responsibilities concerning missed exams, missed assignments, etc.

Paper: A group research project is due at the start of class, Wednesday, April 22nd. More information about the project will be given later in the semester but in a nutshell, I will provide you with a data set and a fairly narrow research question and you will be expected to review the relevant literature, estimate models to answer the particular question, and write up the results as if this were an academic paper. The assignment will be distributed on the Monday after Spring Break (March 16th). You will work in groups of two or three and you must identify your group by Monday, March 23rd. It is assumed that if your name is on the paper, you make equal contributions to the project. Grades on the paper will be based on the quality of the writing (grammar counts), the justification for the model you estimate, and the accuracy with which you interpret your statistical models.

Please familiarize yourself with the Undergraduate Academic Code of Honor:
<http://www.nd.edu/~hnr/code/docs/handbook.htm>.

Brief Outline, ECON 30331 Spring 2009

- I. Moving from correlation to causation**
Chapter 1, Wooldridge
- II. The bivariate regression model**
Chapter 2, Wooldridge
- III. Multiple regression analysis: estimation**
Chapter 3, Wooldridge
- IV. Multiple regression analysis: inference**
Chapter 4, Wooldridge
- V. Dummy variables**
Chapter 7, Wooldridge
- VI. Applications – Some papers**
Bertrand, Marianne and Sendhil Mullainathan, “Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination,” *American Economic Review*, 94(4), 2004, 991-1013.

Duggan, M., and Steven Levitt, "Winning Isn't Everything: Corruption in Sumo Wrestling," *American Economic Review*, 92(5), 2002, 1594-1605.

Fisman, Ray and Edward Miguel, "Corruption, Norms and Legal Enforcement: Evidence from Diplomatic Parking Tickets," September 2007, *Journal of Political Economy*, forthcoming.

Sacerdote, Bruce, "How Large Are the Effects from Changes in Family Environment? A Study of Korean American Adoptees," *Quarterly Journal of Economics*, 121(1), 2007, 119-157.

VII. OLS Asymptotics

Chapter 5, Wooldridge

VIII. Time series data

Chapters 10 - 12, Wooldridge

David Wilcox, "Social Security Benefits, Consumption Expenditures, and the Life Cycle Hypothesis," *Journal of Political Economy*, 97, April 1989, 288-304

Richard Thaler, "Anomalies: Weekend, Holiday, Turn of the Month, and Intraday Effects," *Journal of Economic Perspectives*, 1, Fall 1987, 169-78.

IX. Panel Data Models

Chapters 13 and 13, Wooldridge

Meyer, B., "Natural and Quasi-experiments in Economics," *Journal of Business and Economic Statistics*, 12, 1995, 151-161.

J.H. Tyler, R.J. Murnane, and J.B. Willett, "Estimating the Labor Market Signaling Value of the GED." *Quarterly Journal of Economics*, v115, n2 (May 2000): 431-68.

Almond, D., K. Chay, D. Lee, "The Costs of Low Birth Weight," *Quarterly Journal of Economics*, 120, 2005, 1031-1084.

Geronimus, A., and S. Korenman, "The Socioeconomic Consequences of Teen Childbearing Reconsidered," *Quarterly Journal of Economics*, 1992, 1187-1213.

Ayres, Ian and Steven Levitt, "Measuring Positive Externalities from Unobserved Victim Precaution: An Empirical Analysis of Lojak," *Quarterly Journal of Economics*, 115(3), 2000, 755-789.

Card, D., and A.B. Krueger, "Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania," *American Economic Review*, September 1994, 722-794.

X. Instrumental variables

Chapter 15, Wooldridge

Angrist, J.D., "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records," *American Economic Review*, 80, 1990, 313-336.

W.G Howell, et al., "Test Score Effects of School Vouchers in Dayton, Ohio, New York City and Washington, DC: Evidence from Randomized Field Trials," August 2000.

Angrist, J.D., and W.N. Evans, "Children and Their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size," *American Economic Review*, 88(3), 1998, 450-477.

XI. Regression discontinuity models

Matsudaira, Jordan, "Sinking or Swimming: Evaluating the Impact of English Immersion versus Bilingual Education." Working Paper, Cornell University, December 2005.

Angrist, J.D., V. Lavy, "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement," *Quarterly Journal of Economics*, 114(2), 1999, 533-575.