

Dartmouth College
Department of Economics

Economics 80
Advanced Topics in Econometrics
Fall 2015
Tu/Th, 10-11:50 (X: Wed, 3-3:50)

Doug Staiger
309A Silsby, 646-2979
Doug.Staiger@Dartmouth.edu
Office Hours: Tu/Th 12-2

Syllabus

Overview: This course has two goals: (1) To introduce students to advanced methods associated with linear and non-linear regression analysis, and (2) to develop a practical understanding of how econometric analysis can be used to evaluate policy and examine the empirical relevance of economic theory. The practical application of these methods will be illustrated through topics drawn from the fields of expertise of the instructor and topics of interest to the students.

The course will be devoted to a systematic investigation of applications of econometrics to a variety of problems. The applications are not contained in a particular text but are selected by me from a variety of sources. The usual approach will be to discuss 1) economic issues that motivate the application, 2) econometric techniques and issues related to the application (e.g. data, specification, estimation techniques), and 3) the results of the empirical analysis and what we can learn from them. I strongly encourage participation by students in classroom discussions, and such participation will be rewarded.

Pre-Requisites: A- or better in Economics 20, 21, and 22.

Textbook/Readings:

Introductory Econometrics: A Modern Approach (4th or 5th Edition) by Jeffrey Wooldridge (SouthWestern Publishing). This is a very comprehensive and well written intro text that we use in ec20. It covers much (but not all) of the more advanced material that we'll be working on.

A Guide to Econometrics, 6th Edition by Peter Kennedy (MIT Press, available on the web at places like barnesandnoble.com for about \$35). This is a supplemental econometrics text that leaves out the details, but gives an excellent overview of econometrics from simple regression to very advanced techniques. I have used this book since I was an undergraduate (earlier editions of course!) and still find it very useful. If you have an earlier edition, it is pretty similar.

The Journal of Economic Perspectives, Fall 2001 issue (available on Canvas). This issue contains a very useful symposium on econometric tools. Each chapter provides a non-technical overview of an econometric topic. Use these chapters as background reading on each topic.

There will be various handouts, articles and book chapters (some listed below) that are available on Canvas or from me. You may want to purchase *A Gentle Introduction to Stata (4th Edition)* by Alan Acock from www.stata.com. This book provides a fairly comprehensive introduction to Stata (brief Stata handouts are on Canvas). Full Stata documentation is available through online help & online manuals (hard copies of manuals are in econ lounge) & some FAQ's are at <http://www.dartmouth.edu/comp/soft-comp/software/statistics/statafaq.html>

Requirements: The central focus of the course will be on student empirical projects. The exact topic and structure of this project is quite flexible. These projects can be done individually or in small groups (2 or maybe 3), and possibly in combination with a paper from a 40-level course or a student's thesis (with approval from both instructors). The empirical project is worth 50% of the grade. Each student will choose a topic they are enthusiastic about, review the literature, assess data availability, develop an interesting empirical question, analyze the data, and present their results in oral and written form.

In addition to the paper, we will do 3 applied problem sets. These problem sets will all have the form of "mini-projects", e.g. I will provide some data and broad questions, and you will do the necessary data analysis and write up your results in a short (3-5 page) paper. I strongly encourage everyone to work in small groups (2-3) on these problem sets. The problem sets are worth 30% of the grade, and I base your grade on the best 2 (out of 3) problem sets. The remaining 20% of your grade is based on class participation.

There are no exams in this course.

Important Dates:

Regular Class Meetings: Tuesday & Thursday, 10-11:50.

Stata X-hours: Wednesdays 3-3:50, tentative dates 9/23, 10/7, 10/14 (more as needed).

Thursday, Sept. 24th: Submit and discuss in class possible research topic(s).

Saturday, Sept. 26th: Special day of class (usual time & place).

Thursday, Oct. 1st: Brady Kelly will talk about econometrics at APT before class, 9:30am.

Tuesday, Oct. 20th: Research proposals due, presentations in class & evening (6-10?)

Tuesday, Nov. 17th: Present final research results in class & evening (6-10?)

Wednesday, Nov. 25th: Final paper due.

**Tentative Outline of Course
(subject to change)**

PART I: THE BASICS

Topic 1: Getting Started – Research & Writing, Matrix Notation

McCloskey, “Economical Writing,” *Economic Inquiry*, 1985.

Lanham, *Revising Business Prose*, chap. 1-2, 1983.

Wooldridge, Ch. 19 and Appendix D & E (background, we’ll cover key concepts in class)

Kennedy, Ch. 22 and 1-4 (only read notes and technical notes if interested)

Angrist & Krueger, “Empirical Strategies in Labor Economics” 1998
(background for choosing paper topic – focus on sections 1, 2.1, and 3, and skim 2.2)

Angrist & Pischke, *Mostly Harmless Econometrics*, Chapter 1, 2009.

Wilper et al., “Health Insurance and Mortality in U.S. Adults,” *AJPH*, 99(12), Dec 2009.

Baicker et al., “The Oregon Experiment – Effects of Medicaid on Clinical Outcomes,”
NEJM, 368(18), May 2, 2013.

Card et al., “Does Medicare Save Lives?” *Quarterly Journal of Economics*, May 2009.

Chandra et al., “Patient Cost-Sharing and Hospitalization Offsets in the Elderly,” *American Economic Review*, March 2010.

Topic 2: Model Specification, Teacher Value Added, & Stata

Background

Specification testing & outliers: Wooldridge, Ch. 9.1, 9.5; Kennedy, Ch.5, 15, 21.1-21.2.

Applications

Kane, Rockoff & Staiger, “What does certification tell us about teacher effectiveness?
Evidence from New York City,” *Economics of Education Review*, 2008.

Problem Set 1: Teacher value added

PART II: CAUSAL EFFECTS

Overview

Angrist & Krueger, "Empirical Strategies in Labor Economics" 1998
(focus on section 2)

Topic 3: Control Groups, Matching, Difs-in-difs, Panel Data

Background

Wooldridge, Ch. 13-14.

Kennedy, Ch. 18.

Applications

Dale & Krueger, "Estimating the Payoff to Attending a More Selective College: An Application of Selection on Observables and Unobservables," *Quarterly Journal of Economics*, 117(4):1491-1527, 2002.

Ruhm, "Are Recessions Good for Your Health?" *Quarterly Journal of Economics*, 115(2):617-650, 2000.

Shen, "The effect of hospital ownership choice on patient outcomes after treatment for acute myocardial infarction," *Journal of Health Economics*, 2002.

Topic 4: Regression Discontinuity Designs

Background

Lee & Lemieux, "Regression Discontinuity Designs in Economics," nber wp #14723, 2009.

Applications

Peterson, "A Massachusetts Meritocracy: The Adams Scholarship and its Effect on College Enrollment," Dartmouth Thesis, 2009.

Problem Set 2: TBD

Topic 5: Instrumental Variables (IV)

Background

Wooldridge, Ch. 15-16

Kennedy, Ch. 9, 11

Notes on IV, IV paper in fall 2001 JEP.

Applications

McClellan, McNeil and Newhouse, "Does More Intensive Treatment of Acute Myocardial Infarction in the Elderly Reduce Mortality? Analysis Using Instrumental Variables," *JAMA*, 1994.

Acemoglu & Johnson, "Disease and Development: The Effect of Life Expectancy on Economic Growth" *Journal of Political Economy*, 115(6):925-985, December 2007

PART III: NONLINEAR MODELS

Topic 6: Non-Linear regression/index models (Logit/Probit-type models, hazard, count data models, quantile).

Background

Wooldridge, Ch. 17

Kennedy, Ch. 16-17, 21.3

Logit/Probit & Quantile papers in fall 2001 JEP.

Applications

Eide & Showalter, "The effect of school quality on student performance: a quantile regression approach," *Economic Letters*, 1998.

Chou and Staiger, "Health Insurance and Female Labor Supply in Taiwan," *Journal of Health Economics*, 2002.

Card & Dahl, "Family Violence and Football: The Effect of Unexpected Emotional Cues on Violent Behavior," *The Quarterly Journal of Economics*, 126(1), 2011.

Chetty, "Moral Hazard Versus Liquidity and Optimal Unemployment Insurance," *Journal of Political Economy*, 116(2), 2008.

Problem set 3: TBD