

Rutgers University
Department of Economics, Graduate Program
Economics 509: Applied Econometrics for Microeconomics
Fall 2009

MW, 1:10-2:30 pm, NJ Hall 105

Professor Hilary Sigman (sigman@econ.rutgers.edu)

Course Objectives: The aim of this course is help students become researchers in empirical microeconomics. It covers modern methods in econometrics for cross-sectional and panel data, with emphasis on applying these methods to data in practical contexts. It will aim also to develop research skills in empirical methods, including strategies for designing and implementing research.

Website: The course has a Sakai site (sakai.rutgers.edu) that will have handouts, presentations, etc. and a discussion board.

Requirements:

- Problem Sets/Exercises (10%). A few exercises throughout the term. Credit is mainly for completing them in a timely manner. Students will have 2 weeks' notice of due dates.
- Paper discussion (20%). Students will choose a paper (ideally a working paper) for which you will act as a discussant. Pick something in your area of interest and not necessarily something with sophisticated econometrics. Please propose a paper for this purpose by September 16 . We'll try to schedule you at a time appropriate for the methods of your paper. The score will be based on a 10-20 minute presentation to the class (summarize the paper and present comments and criticism) and submitting your overheads.
- Research proposal (40%). Students will write a 7-10 page proposal for a project in empirical microeconomics. The paper should state the research question and briefly explain its relationship to the existing literature, identify data that could be used for analysis, and describe the methods that would be applied and the advantages and disadvantages of these methods. In addition to written proposals, students will present their proposals in the last two weeks of term and comment on each others' proposals.
- Final exam (30%). Date to be arranged.

Office Hours: NJ Hall 419, principally by appointment. Office hours for my undergraduates are from Mondays, 10-noon and you are welcome to drop by. (The undergraduates rarely show up, but they will have priority during this time when they do.)

Texts:

- A. Colin Cameron and Pravin K. Trivedi, *Microeconometrics: Methods and Applications*, Cambridge U. Press, 2005. (ISBN 0-521-24805-9)

- Joshua D. Angrist and Jörn-Steffen Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton U. Press, 2009. (ISBN 978-0-691-12035-5)

Also recommended/other sources for the entire course:

- Guido Imbens and Jeffrey Wooldridge “NBER Summer Institute 2007 Minicourse: What’s New in Econometrics?” <http://www.nber.org/minicourse3.html>
- Jeffrey M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, MIT Press, 2002. (ISBN 0-262-23219-7)
- Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach*, Thomson-Southwestern (ISBN 0-324-11364-1) (an undergraduate text)
- A. Colin Cameron and Pravin Trivedi, *Microeconometrics Using Stata*, Stata Press, 2009. (ISBN 978-1-59718-048-1)

Readings: For the most part, we will use textbooks for reading about methodology. Most of the articles are applications of the methods or at least methodological articles that emphasize applications. Links to the journal readings can be found through [our class page on RefShare](http://our.class.page.on.RefShare) (tinyurl.com/komq3u). You will need to be on campus or authenticated through the Rutgers Library proxy to click through for full text.

Software: We will do some exercises in Stata. Stata is available on networked computers in the department. You can also purchase a university-site-licensed version of Stata/IC 10 for your own computer at <https://software.rutgers.edu/software/details.php?id=158>.

Empirical Microeconomics Workshop: Friday, 2-3:30 pm, NJ Hall 105. Attending this workshop is strongly recommended. Nothing will help you develop as an empirical researcher as much as participating in this discussion of current research. The schedule is available under the Workshops link on the Economics Department website.

Course outline and readings: The reading list below is in progress and will be updated during the semester, particularly with more papers as applications of the methods. Please let me know if there are specific topics you’d like to cover that you don’t see here or have application papers you’d like us to discuss in class.

I. Study design and some advice on empirical work

Angrist and Pischke, ch 1 and 2

Heckman, J.J. 2000. Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective, *Quarterly Journal of Economics*, 115(1), 45-97 (see espec. pp. 84-86, in response to A &P)

Chetty, R. 2009. Sufficient Statistics for Welfare Analysis: A Bridge between Structural and Reduced-Form Methods, *Annual Review of Economics*, vol. 1, no. 1.

II. Single equation models

Cameron and Trivedi, pp. 65-85, 90-95, 223-233 (on hypothesis tests) or Wooldridge, ch 4

Angrist and Pischke, ch 3 (to p. 68)

a. Functional form

Wooldridge, *Introductory Econometrics*, Sections 6.2, 6.4 and appendix A.4

b. Dummy variables

Angrist and Pischke, pp. 48-51

c. Omitted variable bias and proxy variables

Wooldridge, pp. 61-67 or Cameron and Trivedi, pp. 92-93

Application: Levinsohn, J. and A. Petrin, A. 2003. Estimating Production Functions Using Inputs to Control for Unobservables, *Review of Economic Studies*, vol. 70, no. 2, pp. 317.

Petrin, A., Poi, B.P. and J. Levinsohn. 2004. Production function estimation in Stata using inputs to control for unobservables, *Stata Journal*, vol. 4, no. 2, pp. 113-123.

III. Some issues with standard errors

a. Clustered errors

Cameron and Trivedi, pp. 829-845, 848-53 or Wooldridge pp. 128-134

Angrist and Pischke, pp. 308-323

Wooldridge, NBER Minicourse, Lecture 8

Moulton, B. R. An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units, *Review of Economics and Statistics*, 1990, 72, 334-38

Application: Angrist and Lavy. 2009. The Effect of High Stakes High School Achievement Awards: Evidence from a School-Centered Randomized Trial, *American Economic Review*, 99, 877-908

b. Bootstrapping

Cameron and Trivedi, pp. 357-373

Cameron and Trivedi, *Microeconometrics Using Stata*, Ch. 13

Angrist and Pischke, pp. 300-308

Brownstone, D. and R. Valletta. 2001. The Bootstrap and Multiple Imputations: Harnessing Increased Computing Power for Improved Statistical Tests. *Journal of Economic Perspectives*, vol. 15, no. 4, pp. 129-141.

Application: Steckel, Richard H. and Carolyn M. Moehling . Rising Inequality: Trends in the Distribution of Wealth in Industrializing New England, *Journal of Economic History*, 2001, 61, 160-83 (<http://www.jstor.org/stable/2697859>)

IV. Panel Data

Cameron and Trivedi, ch 21 or Wooldridge, ch 10

Wooldridge, NBER Minicourse Lecture 2 (2 parts)

Angrist and Pischke, ch 5

V. Difference in differences

Cameron and Trivedi, pp. 768-70

Bertrand, M. , E. Duflo, and S. Mullainathan. 2004. How much should we trust differences-in-differences estimates? *Quarterly Journal of Economics* 119, (1) (February): 249-75.

Cameron, A. C., J.B. Gelbach, and D. L. Miller. 2008. Bootstrap-based improvements for inference with clustered errors. *Review of Economics and Statistics* 90, (3) (08): 414-27.

Applications: Card, D. and A.B. Krueger. 1994. Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania, *American Economic Review* , 84, 4, 772-793

Card, D. 1990. The impact of the Mariel Boatlift on the Miami labor market. *Industrial and Labor Relations Review*, Vol, 43, No, 2, 245-57.

VI. Regression Discontinuity

Cameron and Trivedi, pp. 879-83

Angrist and Pischke, ch 6

Imbens and Lemieux, Regression Discontinuity Designs: A Guide to Practice,
<http://www.nber.org/papers/t0337>

Applications: Card, David, Alexandre Mas, and Jesse Rothstein. 2008. Tipping and the dynamics of segregation. *Quarterly Journal of Economics* 123, (1) (02): 177-218.

Lee, David S., 2008. Randomized Experiments for Non-random Selection in US House Elections. *Journal of Econometrics*, 142.

VII. Instrumental variables

Cameron and Trivedi, pp. 95-112 or Wooldridge, pp. 83-105

Angrist and Pischke, ch 4

Heckman, J.J. and S. Urzua, Comparing IV With Structural Models: What Simple IV Can And Cannot Identify, NBER Working Paper 14706 (<http://www.nber.org/papers/w14706>)

Application: Chay, K. and M. Greenstone, Does Air Quality Matter? Evidence from the Housing Market, *Journal of Political Economy*, 2005, 113, 376-424

VIII. Measurement error

Cameron and Trivedi, pp. 899-911 or Wooldridge, pp. 70-73 and pp. 105-107

Application: Goolsbee, A. The Importance of Measurement Error in the Cost of Capital, *National Tax Journal*, 2000, 53, 2, 215-228

IX. Nonlinear models

A. Selection

Cameron and Trivedi, pp. 529-555 or Wooldridge, pp. 551-590

Angrist and Pischke, pp. 94-107

B. Discrete response

Cameron and Trivedi, pp. 463-478, 490-503 or Wooldridge, ch 15

Imbens, NBER Minicourse Lecture 11

Application: Berry, S., J. Levinsohn, and A. Pakes, (1995), Automobile Prices in Market Equilibrium, *Econometrica*, Vol. 63, 841-890.

C. Duration models

Cameron and Trivedi, ch 17 or Wooldridge, ch 20

X. Quantile regression

Cameron and Trivedi, pp. 85-90

Wooldridge, NBER Minicourse Lecture 14

Angrist and Pischke, ch 7