Ec524: Empirical Methods in Applied Economics
Module I: Identification in Non-structural Models
2008/2009
Prof. Steve Pischke

Lecture: Thursday, 11:00-13:00, G1, MT weeks 2-6

Office: R448, x6509.   Office Hour: Tuesday, 10:00 – 11:30

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This 10 hour module will be held in Michaelmas Term. It is open to all Ph.D. students, voluntary, and non-examinable. The module will focus on methodological issues, which commonly arise in applied microeconomics fields. It will be centred around the estimation of causal or treatment effects. In each case, the methods will be illustrated by papers drawn from the recent literature.

Book:

Joshua Angrist and Jörn-Steffen Pischke *Mostly Harmless Econometrics: An Empiricists Companion*, Princeton University Press, 2009 (Referenced below as MHE)
Relevant chapters from the book will be made available on the course website.

See also:

Joshua Angrist and Alan Krueger (AK) "Empirical Strategies in Labor Economics", chapter 23 in *Handbook of Labor Economics*, O. Ashenfelter and D. Card (eds.), vol. 3A, especially section 2 (Referenced below as AK).

Other background reading:

P. Holland, "Statistics and Causal Inference", *Journal of the American Statistical Association*, vol. 81, 1986, 945-970, with discussion.

D. T. Campbell, "Reforms as Experiments", *American Psychologist*, vol. 24, April 1969, pp. 409-429.

Joshua Angrist, "Introduction to the JBES Symposium on Program and Policy Evaluation", *Journal of Business and Economic Statistics*, April 1995.

Bruce Meyer, "Natural and Quasi-Experiments in Economics", *Journal of Business and Economic Statistics*, April 1995.

Topics and Selected Readings:

1.   The Evaluation Problem: Introduction and Randomised Experiments

* MHE, chapter 2; AK, section 2.1

* Alan Krueger, "Experimental Estimates of Education Production Functions", *Quarterly Journal of Economics*, vol. 114, May 1999, pp. 497-532 [P7616a/b]

Edward Miguel and Michael Kremer, "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities", *Econometrica*, vol. 72, January 2004, pp. 159-217.

Jeffrey Kling, Jeffrey Liebman and Lawrence Katz, "Experimental Analysis of Neighborhood Effects," *Econometrica*, vol. 75, January 2007, 83-119.

Karlan Dean and Jonathan Zinman (2007) "Observing Unobservables: Indentifying Information Asymmetries with a Consumer Credit Field Experiment," Working Paper, Yale University.

2.   Observational Studies and Regression

* MHE, sections 3.2 and 3.4; AK, sections 2.2.1

* Zvi Griliches, "Estimating the Returns to Schooling - Some Econometric Problems", *Econometrica*, vol. 45, January 1977, pp. 1-22 [P10694a/b].

3.   Instrumental variables

* MHE, sections 4.1, 4.2, and 4.6; AK, section 2.2.3

* Joshua Angrist and Alan Krueger "Does Compulsory School Attendance Affect Schooling and Earnings?" *Quarterly Journal of Economics*, vol. 106, November 1991, pp. 979-1014 [P10693a/b].

John Bound, David Jaeger, and Regina Baker, "Problems with Instrumental Variables Estimation When the Correlation Between the Instruments and the Endogenous Explanatory Variables is Weak", *Journal of the American Statistical Association*, vol. 90, 1995, pp. 443-450.

Joshua Angrist, Guido Imbens, and Alan Krueger, "Jackknife Instrumental Variables Estimation," *Journal of Applied Econometrics* 14, January/February 1999, 57-67.

James H. Stock, Jonathan H. Wright, and Motohiro Yogo, "A Survey of Weak Instruments and Weak Identification in Generalized Methods of Moments", *Journal of Business and Economic Statistics*, 20, 2002, pp. 518-529.

Conley, Tim, Christian Hansen, and Peter Rossi, "Plausibly Exogenous," University of Chicago working paper, 2007.

4.   Differences-in-Differences, Panel Data and Fixed Effects

* MHE, chapter5; AK, sections 2.2.2 and 2.4

* David Card, "Using Regional Variation to Measure the Effect of the Federal Minimum Wage", *Industrial and Labor Relations Review*, vol. 46, October 1992, pp. 22-37 [P6360a/b].

David Card and Alan Krueger, "Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania", *American Economic Review* 84, no. 4, September 1994, pp 772-784.

Wolfers, Justin, "Did Unilateral Divorce Laws Raise Divorce Rates? A Reconciliation and New Results," NBER Working Paper 10014, October 2003.

David Autor, "Outsourcing at Will: The Contribution of Unjust Dismissal Doctrine to the Growth of Employment Outsourcing", *Journal of Labor Economics*, vol. 21, January 2003, pp. 1-42.

Orley Ashenfelter and David Card, "Using the Longitudinal Structure of Earnings to Estimate the Effect of Training Programs", *The Review of Economics and Statistics*, vol. 67, no. 4 (Nov. 1985), pp. 648-660.

Alberto Abadie, Alexis Diamond, and Jens Hainmueller, "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program," NBER Working Paper 12831, 2007

Chamberlain, Gary, "Panel Data," in Zvi Griliches and Michael Intriligator (eds.) *Handbook of Econometrics*, vol II, Amsterdam: North Holland, 1984, chapter 22.

Richard Freeman, "Longitudinal Analyses of the Effect of Trade Unions", *Journal of Labor Economics*, vol. 3, 1984, pp. 1-26 [P6627a/b].

Ashenfelter, Orley and Alan Krueger, "Estimates of the Economic Return to Schooling from a New Sample of Twins," *American Economic Review*, vol. 84, no.5, December 1994, pp. 1157-73.

Ashenfelter, Orley and Cecilia Rouse "Income, Schooling, and Ability: Evidence from a New Sample of Identical Twins," *Quarterly Journal of Economics* 113, February 1998, 253-284.

Bound, John and Gary Solon "Double Trouble: On the Value of Twins-based Estimation of the Return to Schooling" *Economics of Education Review* 18, 1999, 169-182.

Nickell, Stephen "Biases in Dynamic Models with Fixed Effects," *Econometrica* 49, 1981, 1417-1426.

5. Regression Discontinuity Design

* MHE, chapter 6; AK, section 2.2.4

* Guido Imbens and Thomas Lemieux, "The Regression Discontinuity Designs: A Guide to Practice," *Journal of Econometrics*, vol. 142, February 2008, 615-635.

* Joshua Angrist and Victor Lavy, "Using Maimonides' Rule To Estimate the Effect of Class Size of Scholastic Achievement", *Quarterly Journal of Economics*, vol. 114, May 1999, pp. 533-576 [P7351a/b].

Jinyong Hahn, Petra Todd, and Wilbert Van der Klaauw, "Identification and Estimation of Treatment Effects with a Regression-Discontinuity Design", *Econometrica*, 69(1), 2001, pp. 201-209.

David Lee, "Randomized Experiments from Non-Random Selection in US House Elections", *Journal of Econometrics*, vol. 142, February 2008, 675-697

David Lee and David Card, "Regression Discontinuity Inference with Specification Error", *Journal of Econometrics*, vol. 142, February 2008, 655-674

6. Standard Errors

* MHE chapter 8.

Brent Moulton, "Random Group Effects and the Precision of Regression Estimates", *Journal of Econometrics*, 32, pp. 385-397.

Marianne Bertrand, Esther Duflo, and Sendhil Mullainathan, "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics*, vol. 119, February 2004, pp. 249-275.

Stephen Donald and Kevin Lang, "Inference with Difference-in-Differences and Other Panel Data", *Review of Economics and Statistics* 89, May 2007, 221-233

Colin Cameron, Jonah Gelbach, and Douglas L. Miller "Bootstrap-Based Improvements for Inference with Clustered Errors," NBER Technical Working Paper 344, 2007, forthcoming *Review of Economics and Statistics*

7. Nonlinearity and Heterogeneity

* MHE, sections 3.3, 4.4, and 4.5; AK section 2.3.

* J. Angrist "Estimating the Labor Market Impact of Voluntary Military Service Using the Social Security Data on Military Applicants", *Econometrica*, vol. 66, 1998, pp. 249-288 [P7251a/b].

R. Dehejia and S. Wahba, "Causal Effects in Nonexperimental Studies: Re-evaluating the Evaluation of Training Programs", *Journal of the American Statistical Association*, vol. 94, September 1999 [P6718a/b].

Paul Rosenbaum, and Donald B. Rubin, "The Central Role of the Propensity Score in Observational Studies for Causal Effects", *Biometrika*, 70, 1983, pp. 41-55.

Joshua Angrist, and Jinyong Hahn, "When to Control for Covariates? Panel Asymptotics for Estimates of Treatment Effects", *Review of Economics and Statistics*, vol. 86, February 2004, pp. 58-72.

Guido Imbens, "Nonparametric Estimation of Average Treatment Effects Under Exogeneity: A Review", *Review of Economics and Statistics*, vol. 86, February 2004, pp. 4-29.

Joshua Angrist, Guido Imbens, and Donald Rubin, "Identification of Causal Effects Using Instrumental Variables", with comments and rejoinder, *Journal of the American Statistical Association*, 1996.

Guido Imbens, and Joshua Angrist, Identification and Estimation of Local Average Treatment Effects", *Econometrica*, March 1994.

Joshua Angrist, and Guido Imbens "Two-Stage Least Squares Estimation of Average Causal Effects in Models with Variable Treatment Intensity", *Journal of the American Statistical Association*, June 1996.