LABOR ECONOMICS 250A
SYLLABUS
Empirical Methods in Labor Economics
UCSD
Fall 2008

Professors Julian Betts, Eli Berman, Kate Antonovics, and Gordon Dahl

Location: Econ 300

Overview: This first of three graduate labor courses focuses on the empirical methods used in labor (and other applied microeconomics fields). The course is designed to prepare you to read and evaluate empirical work in the other 2 graduate labor courses, 250B and 250C. However, the toolkit presented in this course will be useful for research in all areas of applied micro.

This course is intended to be both more and less than a course in applied econometrics. It is "less" in that we will not concentrate heavily on deriving properties of estimators, but, instead, we will focus on presenting a practical guide to the key statistical advantages and disadvantages of each technique. It is "more" than a course in applied econometrics in that, for each technique, we will study empirical examples in considerable detail. In this way, the course also will provide an introduction to many different areas of labor research.

The preliminary schedule below takes into account that Nov. 11 and Nov. 27 are both UCSD holidays.

9/25 through 10/14
In weeks 1-3 (Betts) we will begin by summarizing some of the main problems affecting empirical work, such as omitted variable bias, selectivity bias, endogeneity, and measurement error. We will then cover techniques to control for **selectivity bias** including the Heckman technique. We will then discuss the use of **fixed effects** as a means of reducing omitted variable bias in panel data. Finally we will survey **natural experiments** and **difference in difference models** as a means of identifying causal parameters. In each case we will emphasize benefits and pitfalls of each approach, and will cover real-world examples.

10/16-10/23, and 11/4-11/6
Berman will examine different types of biases and discuss examples in which **instrumental variables** convincingly allow identification. The discussion will include the ideal experimental coefficient, overidentification and small sample bias. We will also cover measurement error and other miscellaneous data issues.

10/28-10/30
Antonovics will discuss the strengths and weaknesses of employing **social experiments** to identify causal parameters.

11/13-12/2
Dahl will discuss the use of **propensity score matching** and **regression discontinuity** methods as approaches to eliminate selection bias and identify causal effects. He will also discuss **clustering** for accurate estimation of standard errors.

In the last week of classes, students will present their empirical work.

Evaluation and Course Requirements:

1. Very Short Paper. A five page paper in which you will be required to engage a data set of your choosing. It will be marked on the econometric method alone, with no marks deducted for even the most ludicrous economic analysis; so feel free to have fun. On the other hand, you will spend many intimate hours with this project, so you may as well construct it in a way that will make it interesting for you and your team.

This assignment can be completed in groups of up to three students. Below we list the main professor to whom each part of the project is due. The other three would appreciate receiving cc's by email.

Email Prof. Betts an outline of the dataset you will use and the question you will study by Thursday, October 2.

Email Prof. Betts a table of means, correlations and related information, in a format to be explained in the first lecture, by Thursday, October 9. **5 points**

Email Prof. Antonovics a rough draft of paper by Tuesday, October 28. **5 points**

The paper is due Tuesday, November 25 in class. In addition to one hardcopy, please email a copy to all four professors. **35 points**

In the final week of the course, students will present their results. **10 points**

TOTAL POINTS FOR PAPER AND PRESENTATION 55 POINTS

2) Comprehensive final exam, December 11, from 8:00 to 11:00 am. **45 points**

TOTAL POINTS FOR FINAL EXAM 45 POINTS

TOTAL POINTS IN COURSE 100 POINTS

Students are encouraged to enroll on a letter grade basis. Students who enroll on an S/U basis must complete the empirical paper and the in-class presentation (in week 10).[1]

Readings:
The readings, which begin on the next page, are mostly journal articles. However, two very useful supplementary graduate texts, the first on labor economics (the only one we know of) and the second on causal inference, are or will soon be available at the bookstore:

Cahuc, Pierre and Andre Zylberberg (2004), **Labor Economics**, Cambridge, MA: MIT Press.
William R. Shadish, Thomas D. Cook, Donald T. Campbell (2002), **Experimental And Quasi-Experimental Designs For Generalized Causal Inference**, Boston: Houghton Mifflin.

[1] By university policy, students who enroll on an S/U basis must obtain the equivalent of a B- in the course. For all students, 60 points will earn a grade of B- overall for the course. Thus a flawless paper and presentation plus 5 points earned on the final would be one way to meet the B- requirement.

Reading List

Note: In Betts and Antonovics' sections, a "*" indicates papers that you are expected to read carefully. (This is not a license to completely ignore the other papers though!)

Introduction to the Central Problems of Omitted Variable Bias, Self-Selection, Endogeneity and Measurement Error

* Angrist, Joshua and Alan Krueger (1999), "Empirical Strategies in Labor Economics," in the *Handbook of Labor Economic*s, Vol. 3A, O. Ashenfelter and D. Card, eds. Amsterdam: Elsevier Science.

Selectivity Correction

* Heckman, James (1976), "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models", *Annals of Economic and Social Measurement* 5:475-492.

*Lee, David S. (2005), "Training, Wages and Sample Selection: Estimating Sharp Bounds on Treatment Effects,", manuscript, University of California, Berkeley.
http://emlab.berkeley.edu/users/dslee/wp/Selection5all.pdf

Case Studies:
* "Willis, R.J. and S. Rosen (1979), "Education and Self-Selection", Journal of Political Economy, 87, (Supplement, October), pp. S7-S36.

Argys, L. M., Rees, D. I., Brewer, D. J., 1996. Detracking America's Schools: Equity at Zero Cost? Journal of Policy Analysis and Management 15, (4), 623-645.

Betts, Julian R. and Jamie L. Shkolnik, (2000),"The Effects of Ability Grouping on Student Math Achievement and Resource Allocation in Secondary Schools", *Economics of Education Review*, (**19**:1), pp. 1-15.

Fixed Effects and Omitted Variable Bias

See Angrist and Krueger (1999) above.

Case Study: The Returns to Education
Altonji, Joseph and Thomas Dunn, (1996), "The Effects of Family Characteristics on the Return to Education", *Review of Economics and Statistics*, (November).

Angrist, Joshua and Whitney Newey (1991), "Over-identification Tests in Earnings Functions with Fixed Effects", *Journal of Business and Economic Statistics* (July).

Ashenfelter, Orley and David Zimmerman (1997), "Estimates of the Returns to Schooling from Sibling Data: Fathers, Sons and Brothers", *Review of Economics & Statistics* v79, n1 (Feb.).

* Ashenfelter, Orley and Alan Krueger (1994), "Estimates of the Economic Return to Schooling from a New Sample of Twins", *American Economic Review* (December). (Note: This paper uses both instrumental variables and fixed effects. IV methods will be covered in greater detail in section 9 of the course.)

Light, Audrey (1995), "The Effects of Interrupted Schooling on Wages", *Journal of Human Resources* (Summer).

Natural Experiments/Difference-in-Difference Models

* Bertrand, M., E. Duflo, and S. Mullainathan (2004), "How Much Should We Trust Differences-in-Differences Estimates?", *Quarterly Journal of Economics*, February, 119(1): 249-275.

Meyer, Bruce D. (1995), "Natural and Quasi-Experiments in Economics", *Journal of Business and Economic Statistics*, (13:2), pp. 151-161.

Imbens, Guido, and Jeffrey Wooldridge "Difference in Difference Estimation", Lecture 10 What's New in Econometrics? NBER, Summer 2007. Available at http://www.nber.org/~confer/2007/si2007/WNE/lect_10_diffindiffs.pdf

See also the Angrist and Krueger paper in Section 1.

Case Study #1: The Impact of Immigrants on Local Labor Markets
* Card, David (1990), "The Impact of the Mariel Boatlift on the Miami Labor Market", *Industrial and Labor Relations Review*, 43:245-257.

Case Study #2: Minimum Wages
Card, David and Alan 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), September.

Kennan, John (1995), "The Elusive Effects of Minimum Wages", *Journal of Economic Literature*, (**33**:4) (December).

Neumark, David and William Wascher (1995), "The Effect Of New Jersey's Minimum Wage Increase On Fast-Food Employment: A Re-Evaluation Using Payroll Records", NBER Working Paper #5224. See also their article in *American Economic Review* December 2000 and reply by Card and Krueger in same issue.

Watson, Nadine (1996), Ph.D. Thesis, University of California, San Diego.

Case Study #3:
* Bansak, Cynthia and Steven Raphael (2001), "Immigration Reform and the Earnings of Latino Workers: Do Employer Sanctions Cause Discrimination?" Industrial and Labor Relations Review, January, 54(2): 275-95

BERMAN SECTION

Note: This list is short but is REQUIRED READING in the sense that *you will be expected to actually read these papers.*

Causal Inference and Experiments

Just master the notation and concept

Angrist, Joshua D., Guido W. Imbens and Donald B. Rubin, "Identification of Causal Effects Using Instrumental Variables" Journal of the American Statistical Association, June 1996 Vol 91(434)

LaLonde, Robert J. (1986) "Evaluating the Econometric Evaluations of Training Programs with Experimental Data," American Economic Review, 76(4).

Examples of Experiments (skim these):

Karthik Muralidharan and Venkatesh Sundararaman (2008), "Contract Teachers: Experimental Evidence from India," UCSD mimeo.

Esther Duflo, Glennerster, Rachel, and Michael Kremer (2007) "Using Randomization in Development Economics: A Toolkit" Centre for Economic Policy Research, Discussion Paper No. 6059.

Miguel, Edward and Michael Kremer, "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities," Econometrica, Vol. 72, No. 1 (January, 2004), 159–217.

Instrumental Variable (IV) Method

Angrist, Joshua (1990), "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Records," American Economic Review, 80:3 (June).

Angrist, Joshua and Alan B. Krueger (1991), "Does Compulsory School Attendance Affect Schooling?" Quarterly Journal of Economics, 106, 979-1014.

Bound, John, David Jaeger and Regina Baker, (1995) "Problems with Instrumental Variables Estimation when the Correlation Between the Instruments and the Endogenous Explanatory Variables is Weak," Journal of the American Statistical Association, 90 (June): 443-450.

Imbens, Guido, and Jeffrey Wooldridge "Weak Instruments and Many Instruments" Lecture 13 *What's New in Econometrics? NBER, Summer 2007. http://www.nber.org/~confer/2007/si2007/WNE/lect_13_weakmany_iv.pdf*

Measurement Error and other Data Issues

Griliches, Z. (1986) "Economic Data Issues," in Handbook of Econometrics, Volume III, (Z. Griliches and M.D. Intriligator eds.) Elsevier Science.

To reiterate: The above list is short but is REQUIRED READING in the sense that *you will be expected to arrive in class having actually read these papers.*

ANTONOVICS SECTION

Social Experiments

Burtless, Gary, "The Case for Randomized Field Trials in Economic and Policy Research," *Journal of Economic Perspectives*, Spring 1995, 9(2), pp. 63-84.

*Cullen, Julie, Brian Jacob and Steven Levitt. "The Effect of School Choice on Participants: Evidence from Randomized Lotteries," *Econometrica*, September 2006, *74*(5), pp. 1191-1230.

Duflo, Esther and Emmanuel Saez, "The Role of Information and Social Interactions in Retirement Plan Decisions: Evidence from a Randomized Experiment," *Quarterly Journal of Economic*s, August 2003, *118*(3), pp. 815-42

Heckman, James, "Randomization as an Instrumental Variable," *Review of Economics and Statistics*, May 1996, *78*(2), pp. 336-41.

Heckman, James and Jeffrey Smith, "Assessing the Case for Social Experiments," *Journal of Economic Perspectives*, Spring 1995, *9*(2), pp. 85-110.

*Heckman, James, Robert LaLonde, and Jeff Smith, "The Economics and Econometrics of Active Labor Market Programs," *Handbook of Labor Economic*s, Vol. 3A, O. Ashenfelter and D. Card, eds. Amsterdam: North Holland, 1999, pp. 1865-2097.

LaLonde, Robert, "Evaluating the Econometric Evaluations of Training Programs With Experimental Data," *American Economic Review*, September 1986, *76*(4), pp. 604-620.

Meyer, Bruce, "Lessons from the U.S. Unemployment Insurance Experiments," *Journal of Economic Literature,* March 1995, *33*(1), pp. 91-131.

DAHL SECTION

Note: This list is preliminary and subject to change.

Propensity Score Matching

Angrist, Joshua D. "Grouped-data Estimation and Testing in Simple Labor Supply Models," *Journal of Econometrics*, February/March 1991, 47:2/3, 243-267.

Deheji, Rajeev H. and Sadek Wahba, 1999. "Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs," *Journal of the American Statistical Association*, December, 94:448, 1053-1062.

Rosenbaum, Paul and Donald Rubin (1983), "The Central Role of the Propensity Score in Observational Studies for Causal Effects," *Biometrika* 70:1, 41-55.

Rosenbaum, Paul and Donald Rubin ((1985), "Reducing Bias in Observational Studies Using Subclassification on the Propensity Score," *Journal of the American Statistical Association*, 79, 516-524.

Smith, Jeffrey and Petra Todd (2001), "Reconciling Conflicting Evidence on the Performance of Propensity Score Matching Methods," *American Economic Review*, May, 91:2, 112-118.

Regression Discontinuity

Angrist, Joshua and Victor Lavy, "Using Maimonides Rule to Estimate the Effect of Class Size on Scholastic Achievement," *Quarterly Journal of Econometrics*, 1998, 114, 533-575.

DiNardo, John and David Lee, "Economic Impacts of Unionization on Private Sector Employers: 1984-2001," *Quarterly Journal of Economics*, 2004, *119*, pp. 1383-1441.

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

Imbens, Guido and Thomas Lemieux, "Regression Discontinuity Designs: A Guide to Practice," *NBER Technical Working Paper 337*, April 2007, http://www.nber.org/papers/t0337.pdf

Lee, David, "Randomized Experiments from Non-random Selection in U.S. House Elections," *Journal of Econometrics*, 2008, 142:2, 675-697.

Lee, David and David Card, "Regression Discontinuity Inference with Specification Error," *Journal of Econometrics*, 2008, 142:2, 655-674.

Lemieux, Thomas and Kevin Milligan, "Incentive Effects of Social Assistance: A Regression Discontinuity Approach," *NBER Working Paper 10541*, June 2004, http://www.nber.org/papers/w10541.pdf

Porter, Jack, "Estimation in the Regression Discontinuity Model," *mimeo*, University of Wisconsin, 2003, http://www.ssc.wisc.edu/~jrporter/reg_discont_2003.pdf

Clustered Standard Errors

Bertrand, M. E. Duflo, and S. Mullainathan, "How much Should We Trust Differences in-Differences Estimates?" *Quarterly Journal of Economics*, 119:1, 249-275.

Donald, S. and K. Lang, "Inference with Difference in Differences and Other Panel Data,"2004, Working Paper, Boston University.

Hansen, C., "Asymptotic Properties of a Robust Variance Matrix Estimator for Panel Data when T is Large," *Journal of Econometrics* (December 2007).