

LABOR ECONOMICS 250A
SYLLABUS
Empirical Methods in Labor Economics
UCSD
Fall 2006

Professors Julian Betts, Eli Berman and Kate Antonovics

Location: Because we need a big room this course will meet in CICC 109. Confused already?! This is the Deutz Conference room in the Copley International Conference Center. To get there from Economics head north from the department. Just past IRPS take the outdoor stairs that are on the left side of the walkway, and walk down to the complex of buildings housing, among other things, the Center for U.S. Mexican studies. CICC is the southwest building in this complex, and the Deutz Conference Room is on the north end of the building. On Wednesday October 11, 2006 this class will tentatively meet in ECON 210 (instead of CICC 109.) We may try to find another room for that date.

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.

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 and propensity score matching. 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.

In weeks 4-7 (Berman) we 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, miscellaneous other data issues and clustering for accurate estimation of standard errors.

In weeks 7-10 (Antonovics) we will discuss a number of recent papers that use regression discontinuity to identify causal effects and we will highlight the assumptions upon which identification relies. We will then turn to an analysis of both the strengths and weaknesses of employing social experiments to identify causal parameters. Finally, we will introduce identification using structural estimation.

Requirements for the Course

Evaluation:

1) Very Short Paper. A five page paper in which you will be required to engage a data set of your own 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 done in groups of up to three students.

Please email Prof. Betts with an outline of the dataset you will use, and the question you will study, by week 2 lecture 1 (October 2).

Hand in table of means, correlations and related information, in a format to be explained in the first lecture, due by email (to Prof. Betts) week 3 lecture 2 (October 11)

5 points

Hand in rough draft of paper due by email (to Prof. Berman) week 6 lecture 1 (Oct. 30)

5 points

The paper is due week 10 lecture 1 (November 27) in class.

35 points

In the final class of the course, week 10 lecture 2 (November 29), students will give presentations of their results.

10 points

TOTAL POINTS FOR PAPER AND PRESENTATION

55 POINTS

2) Week 4: Wednesday Oct. 19, evening. Quiz on the Betts section of the course.

10 points

3) Week 7: Wednesday Nov. 9, evening. Quiz on the Berman section of the course.

10 points

4) Final exam, which will be cumulative but weighted approximately 1:1:3 across the Betts/Berman/Antonovics sections.

25 points

TOTAL POINTS FOR QUIZZES AND EXAMS

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

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 any combination of quiz 1, 2 and the final would be one way to meet the B- requirement.

Brief Syllabus

1. Omitted Variable Bias, Self-Selection, Endogeneity and Measurement Error: W1 L1 (Week 1 Lecture 1 i.e. Monday Sept. 25) -- All
2. Selectivity Correction and Propensity Score Matching: W1 L1 (part) to W2 L2 -- Betts
3. Fixed Effects and Omitted Variable Bias: W3 L1 – Betts
4. Natural Experiments/Difference-in-Difference Models: W3 L2– Betts
5. Causal Inference and Experiments: W4 – Berman
6. Instrumental Variable (IV) Method: W5 – Berman
7. Measurement Error and other Data Issues: W6 – Berman
8. Regression Discontinuity: W7 – Antonovics
9. Social Experiments: W8 – Antonovics
10. Structural Estimation: W9 L1 to W9 L2 or W10 L1
11. Student Presentations of Empirical Projects: W10 L2 and perhaps W10 L1-- All

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.

A More Detailed Agenda

Note: In sections 1-4 a “*” indicates papers that you are expected to read carefully. (This is not a license to completely ignore the other papers though!)

1. 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 Economics*, Vol. 3A, O. Ashenfelter and D. Card, eds. Amsterdam: Elsevier Science.

2. Selectivity Correction and Propensity Score Matching

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, pp. 516-524.

- * 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>

- * 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.

* Todd, Petra (1999), “A Practical Guide to Implementing Propensity Score Estimators”, manuscript, University of Pennsylvania,
<http://athena.sas.upenn.edu/~petra/papers/prac.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.

Dehejia, 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.

3. 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).

4. Natural Experiments/Difference-in-Difference Models

* Bertrand, M., E. Duflo, and S. Mullainathan (2002), "How Much Should We Trust Differences-in-Differences?", NBER WP No. 8841, March.

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

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 show up in class having actually read it.

5. Causal Inference and Experiments

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).

6. 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.

7. Measurement Error and Misc. other Data Issues, Clustered Std. Errors

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

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

Donald, S. and K. Lang (2004), "Inference with Difference in Differences and Other Panel Data" Boston U. mimeo.

To reiterate: The above list is short but is REQUIRED READING in the sense that you will be expected to show up in class having actually read it.

ANTONOVICS SECTION

8. Regression Discontinuity

- Angrist, Joshua and Alan Krueger, "Empirical Strategies in Labor Economics," in *Handbook of Labor Economics*, Volume 3A, North Holland, 1999, Chapter 23.
- Cook, Thomas and Donald Campbell, "The Regression-Discontinuity Design," in *Quasi-Experimentation, Design & Analysis Issues for Field Settings*, Houghton Mifflin, 1979, pp. 137-146.
- DiNardo, John and David Lee, "Economic Impacts of Unionization on Private Sector Employers: 1984-2001", NBER Working Paper 10598, July 2004
- Hahn, Jinyong, P. Todd and W. Van Der Klaauw (2001) "Identification and estimation of treatment effects with a regression-discontinuity design", *Econometrica*, Jan., 69:1, 201-209.
- Lee, David, "The Electoral Advantage of Incumbency and Voter's Valuation of Politician's Experience: A Regression Discontinuity Analysis of Elections to the U.S. House," NBER Working Paper 8441, August 2001
- Lemieux, Thomas and Kevin Milligan, "Incentive Effects of Social Insurance: A Regression Discontinuity Approach," NBER Working Paper 10541, June 2004
- Porter, Jack, "Asymptotic Bias and Optimal Convergence Rates for Semiparametric Kernel Estimators in the Regression Discontinuity Model," Harvard Institute of Research Working Paper No. 1989, December 2002. <http://ssrn.com/abstract=373081>

9. Social Experiments

- Burtless, Gary (1995) The Case for Randomized Field Trials in Economic and Policy Research," *Journal of Economic Perspectives* 9 (Spring), 63-84.
- Duflo, Esther and Emmanuel Saez, Emmanuel, "The Role of Information and Social Interactions in Retirement Plan Decisions: Evidence from a Randomized Experiment," *Quarterly Journal of Economics*, August 2003, 118(3), pp. 815-42
- Heckman, James, "Randomization as an Instrumental Variable," NBER Technical Working Paper 184, September 1995.
- Heckman, James and Jeffrey Smith, "Assessing the Case for Social Experiments," *Journal of Economic Perspectives*, Spring 1995, 9(2), pp. 85-110.
- Lahey, Joanna, "Age, Women, and Hiring: An Experimental Study," NBER Working Paper: 11435, 2005.
- 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.

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

10. Structural Estimation

Heckman, James, "Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective," *Quarterly Journal of Economics*, February 2000, 115(1), pp. 45-97

Hoynes, Hilary, "Welfare Transfers in Two-Parent Families: Labor Supply and Welfare Participation Under ADFC-UP," *Econometrica*, March 1996, 64(2), pp.295-332.

Lise, Jeremy, Shannon Seitz and Jeffrey Smith, "Equilibrium Policy Experiments and the Evaluation of Social Programs," mimeo, April 2005.
<http://qed.econ.queensu.ca/pub/faculty/seitz/ssp16.pdf>

Todd, Petra and Kenneth Wolpin, "Using Experimental Data to Validate a Dynamic Behavioral Model of Child Schooling and Fertility: Assessing the Impact of a School Subsidy Program in Mexico," mimeo, September 2002.
<http://athena.sas.upenn.edu/~petra/papers/revpaper.pdf>