

## Empirical methods in Public and Labor Economics

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**Objective:** This course is about learning how to critically assess empirical microeconomics papers. We will focus quite a lot on the “identification” of causal impacts, and on what types of empirical strategies can convincingly tease out these impacts. Although we’ll be doing this in the context of a few (interesting) programs and examples, the empirical skills are universal. A secondary goal of the course is to develop fluency in the statistical programming package Stata, and “hands on” experience working with large micro data sets.

**Course Requirements:**

**Class Participation  
Replication Project**

**Empirical problem (about 4)  
Referee Report project**

### Class Participation

The course will be organized in the following way: usually on Thursdays I will provide a lecture which gives a general overview of the topic. At the end of class I will assign approximately two or three papers on that topic. You are responsible for completing the assigned readings before Tuesday’s class and being ready to present your interpretation of the work. At the beginning of class on Tuesday I will ask you to write a short response for one of the assigned readings. [this may be modified for an alternate mechanism]

### Problem Sets

There will be approximately 4 problem sets. I strongly encourage you to work on problem sets together. Work in teams of 2-3 people, and submit one problem set per team (clearly indicate the members of the team on the problem set). Present your answers in a clear, concise fashion. Typed answers are preferred. In your solution packet, include relevant Stata output (e.g., key regression output, key graphs, etc.) and well-annotated Stata .do files. (Do NOT include pages and pages of “undigested” Stata log files.) Place the .do files in an appendix and make clear reference to regression output and figures in your written answers.

### Referee report project

The third requirement for this course is to write a referee report, which will be due approximately November 28. Early in the course, I will distribute a list of unpublished empirical public/labor/ development papers. From this list, you will choose one paper to review. In general, the purpose of a referee report is to assist a journal editor in deciding whether to pursue publication of a paper, and if so, which revisions to request. Your report should therefore detail—in *your own words*—the paper’s contribution to the literature, key weakness(es), and thoughts on/recommendations for future improvement. Said differently, it should be a critical assessment of the paper, not simply a summary.

Your completed report should be no longer than 5 (single-spaced) pages. (And by no means does it need to be this long.) Please work on your report independently. (You can consult with me; however, do not consult with your classmates.) I will give you sample referee reports to assist in this project.

## Replication project

This project will be to replicate (as best possible) the key results in Angrist and Krueger, “Does Compulsory School Attendance Affect Schooling and Earnings?” Quarterly Journal of Economics, 106, 979-1014. This paper uses data from compulsory schooling laws (which they provide in an appendix) and from the 60 70 and 80 censuses. You only need to focus on the results that are based on the 1980 Census.

Your replication is due to approximately December 7. Because extracting and cleaning data takes time, you should start on this project as soon as possible. Early in the course, I will distribute a list of dates by which you should have accomplished various aspects of the project. Successful completion of the project may require that you submit evidence of your progress on these dates.

If you wish to do an alternate data-based project, talk to me within the first two weeks of class about this option. I am open to students pursuing their own projects, but want to make sure the ball gets rolling quickly.

## Rough Outline:

### Week (Thursday and following Tuesday)

- 1 Problems and pitfalls of OLS in the search for causal impacts
  - 2 Causal analysis; Experiments
  - 3 Descriptive analysis, nonparametric regression, issues in inference
  - 4 Differences-in-differences; Job training; Matching
  - 5 Instrumental variables; Returns to Education
  - 6 Returns to Education
  - 7 Policy changes as source of variation; Ex 1: Indonesian school construction
  - 8 Ex 2: US Medicaid expansions
  - 9 Regression discontinuity theory and applications
  - 10 Decompositions
- (or) Social networks and externalities
- (or) the Imbens framework and: IV and Differences in Differences.
- (or) Structural models

## Reading list

This syllabus has a moderately long reading list. Don't let that discourage you! Many of the papers listed here are simply "background" for your future reference. With the exception of the texts, most of the readings for this course can be downloaded, provided that you are using a campus computer or the library proxy service when off-campus. (Instructions on establishing proxy service are at <http://www.lib.ucdavis.edu/ul/services/connect/>.) There will be several papers that I expect you all to read. I have marked (will mark) these with a star (\*). There are some papers that I expect you all to read before class. These are (will be) marked with two stars (\*\*). [dml: finish the stars] Note also that there will likely be revisions/updates to the reading list – I will provide an updated list to you when these happen.

## Good background material and other resources

### Two great applied econometrics books:

Colin Cameron's book (Microeconometrics) is great, and as close to “required” as it gets. I like to have a set of econometrics books ranging in technical difficulty for background. The three books that I refer to most frequently are (in decreasing order of technical sophistication): Cameron and Trivedi, Johnston and DiNardo, and Kennedy.

You probably want to also buy the Deaton book if you think you will be doing empirical micro research. This is especially true if you have any interest in Development economics.

Cameron and Trivedi, *Microeconometrics*, 2005  
Deaton, Angus, *The Analysis of Household Surveys*, Johns Hopkins Press, 1997  
Johnston and DiNardo, *Econometric Methods*, 1997  
Peter Kennedy, *A Guide to Econometrics*, 2003 (I strongly advise one of the more recent editions, as they cover sampling distributions and the revolution in natural experiments)

**Undergraduate Public and labor textbooks:**

Stiglitz, "Economics of the public sector"; Rosen, "Public Finance"; Borjas, *Labor Economics*, 3ed, 2004; Eherenberg and Smith, *Modern Labor Economics, Theory and Public Policy*.

**Other public and labor syllabi: (on CD, to be provided)**

**Stata resource:**

Colin Cameron has a series of sample Stata code that may be useful in getting up to speed. (note however that it is for an older version of Stata.) The code can be found on his website at: <http://www.econ.ucdavis.edu/faculty/cameron/stata/stata.html>

**Reading list**

**Part 1**

**1.1 Intro and Problems and pitfalls of OLS in the search for causal impacts**

Good background material is Peter Kennedy, *A Guide to Econometrics*, Chapters 1-3, pp 1-59

\*\*Freedman, David, "Statistical Models and Shoe Leather," *Sociological Methodology*, 21, 1991, pp.291-313.

\*\*DiNardo, John, and Jorn-Steffen Pischke "Returns to Computer Use Revisited: Have Pencils Changed the Wage Structure Too?" *Quarterly Journal of Economics* 112(1): 291-303.

**1.2 The goals in empirical work**

\* Peter Kennedy, "A Guide to Econometrics", Appendix A "Sampling distributions, the foundation of statistics" pp 418-422

Monte Carlos – experimental econometrics!

**1.3 Introduction to Causal Analysis**

**1.3.1 Introduction to the treatment effects literature**

\*Angrist, Joshua D., and Alan B. Krueger. "Empirical Strategies in Labor Economics." *Handbook of Labor Economics*, Vol. 3A, 1277-1291. [Available as working paper 401 at [http://www.irs.princeton.edu/pubs/working\\_papers.html](http://www.irs.princeton.edu/pubs/working_papers.html)]

\*Smith, Jeffrey, "A critical survey of empirical methods for evaluating active labor market policies," *Schweiz Zeitschrift für Volkswirtschaft und Statistik*, Vol 166 (3), 2000 pp. 1-22.

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

Angrist, "Treatment Effects" for New Palgrave: [http://econ-www.mit.edu/faculty/download\\_pdf.php?id=1351](http://econ-www.mit.edu/faculty/download_pdf.php?id=1351)

\* C&T Chapters 2, 25

J. Heckman, R. Lalonde, and J. Smith, "The Economics and Econometrics of Active Labor Market Programs," in *Handbook of Labor Economics*, Volume 3A, 1999.

### **1.3.2 True Experiments**

\*C&T , pg 48-54

\*Burtless, JEP 1995

\*Heckman and Smith JEP 1995

\*Kremer, Michael, Edward Miguel, and Rebecca Thornton, "Incentives to Learn," unpublished manuscript, undated (2006). [http://elsa.berkeley.edu/~emiguel/miguel\\_incentives.pdf](http://elsa.berkeley.edu/~emiguel/miguel_incentives.pdf)

Krueger, Alan, (1999) "Experimental Estimates of Education Production Functions," *The Quarterly Journal of Economics*, Vol. 114, No. 2. (May, 1999), pp. 497-532.

Marianne Bertrand; Sendhil Mullainathan (2004). "Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination," *The American Economic Review*, Vol. 94, No. 4. (Sep., 2004), pp. 991-1013.

Willard G. Manning; Joseph P. Newhouse; Naihua Duan; Emmett B. Keeler; Arleen Leibowitz (1987), "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *The American Economic Review*, Vol. 77, No. 3. (Jun., 1987), pp. 251-277.

Brook, et. al., (1983) "Does Free Care Improve Adults' Health?" *New England Journal of Medicine*. Vol 309, No 23, pp 1426-1434.

Esther Duflo et al 2006, "Saving incentives for low and middle income families: evidence from a field experiment with H&R Block," *QJE* 2<sup>nd</sup> half of 2006.

Banerjee, Cole, Duflo, Linden 2007, "Remedying Education: Evidence from two Randomized Experiments in India", *QJE*, August 2007.

Benjamin Olken, 2007, "Monitoring Corruption: Evidence from a Field Experiment in Indonesia," *Journal of Public Economy*, Vol 118, No 2.

A **great** looking overview essay (soon to be a chapter in a *Handbook of Development Economics*?) is Banerjee, Duflo, Glennester, and Kramer, "Using Randomization in Development Economics Research: A Toolkit", <http://econ-www.mit.edu/files/806>

## **2 Descriptive analysis, nonparametric regression, issues in inference**

### **2.1 Nonparametric Regression**

\*Deaton, pages 169-203.

C&T, Chapter 9

\*Kremer, Michael, Edward Miguel, and Rebecca Thornton, "Incentives to Learn," unpublished manuscript, undated (2006). [http://elsa.berkeley.edu/~emiguel/miguel\\_incentives.pdf](http://elsa.berkeley.edu/~emiguel/miguel_incentives.pdf)

### **2.2 Issues related to Inference in descriptive and regression analysis**

Clustered data; Bootstrapping; Monte Carlos again

\* C&T, sections 24.5; 11.1; 11.2

\*Deaton pages 44-78

Cameron, Gelbach, Miller (2006) "Bootstrap-Based Improvements for Inference with Clustered Errors" [http://www.econ.ucdavis.edu/working\\_paper\\_info.cfm?pid=368](http://www.econ.ucdavis.edu/working_paper_info.cfm?pid=368)

Cameron, Gelbach, Miller (2006) "Robust Inference with Multi-way clustering," NBER technical working paper 327.

## 2.3 Weighting

### Part 3

#### 3.1 Differences in Differences and fixed effects

\*\*Card, David, "The impact of the Mariel Boatlift on the Miami Labor Market," *Industrial and Labor Relations Review* 43, January 1990, p251.

\*\*Currie, Janet, and Duncan Thomas (1995) "Does Head Start make a difference?" *American Economic Review* 85(3): 341-364.

\*Garces, Eliana, Duncan Thomas, and Janet Currie, "Longer-term effects of head start," *American Economic Review*, September 2002, pp. 999-1012.

#### 3.2 Event study analysis

Jacobson LaLonde and Sullivan

Cascio

Lindo

#### 3.3 Analysis of Job Training programs / Matching

\*\*R. Lalonde, "Evaluating Econometric Evaluations of Training Programs with Experimental Data," *AER*, September 1986.

\*\*R. Dehejia and S. Wahba. "Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs." *Journal of the American Statistical Association*. 94:448 (1999), 1062.

\*J. Heckman and J. Hotz "Choosing Among Alternative Non-Experimental Methods for Estimating the Impact of Social Programs: The Case of Manpower Training", *Journal of the American Statistical Association*, December 1989.

\*Smith, Jeffrey and Petra Todd (2005). "Does Matching Overcome Lalonde's Critique of Nonexperimental Methods?" *Journal of Econometrics*, 125(1-2): 305-353. [Available at <http://uclibs.org/PID/2512>.]

Newer matching paper?

#### 3.4 Issues in Instrumental Variables

Doug Miller handout.

Angrist, Joshua, "Lifetime earnings and the Vietnam era draft lottery: Evidence from social security administration records," *American Economic Review*, Vol. 80, No. 3, June 1990, pp. 313-336.

Differential distance as an IV example?

Other good IV example?  
Fish paper?

## **Part 4 – Human capital and measuring Returns to Education**

### **4.1 RTE: Theory & traditional estimates**

Becker, Gary S., Human Capital (The University of Chicago Press, 1983)  
Card chapter?

\*Willis, Robert J. and Sherwin Rosen, "Education and Self-Selection," Journal of Political Economy, 87, S7-S36.

\*Spence, Michael, "Job Market Signalling," Quarterly Journal of Economics, 87, 355-374.

Traditional estimates

### **4.2 Classic measurements of the RTE**

\*\*Angrist, Joshua D. and Alan B. Krueger, "Does Compulsory School Attendance Affect Schooling and Earnings?" Quarterly Journal of Economics, 106, 979-1014.

\*\*Ashenfelter, Orley and Alan Krueger, "Estimates of the Economic Returns to Schooling from a New Sample of Twins," American Economic Review, 84(5), 1157-73.

\*Bound, John, and Gary Solon (1999) "Double Trouble: On the value of Twins-Based Estimation of the Return to Schooling," Economics of Education Review. 18(2) (April) 169-82.

### **4.3 Methodological issues inspired by the RTE literature**

\*Bound, John, David A. Jaeger, and Regina M. Baker, "Problems with instrumental variables estimation when the correlation between the instruments and the endogenous explanatory variable is weak," Journal of the American Statistical Association, Vol 90, No. 420, June, 1995, pp. 443-540.

Staiger, Douglas, and James H. Stock, "Instrumental variables regression with weak instruments," Econometrica, Vol. 65, No. 3, May 1997, pp. 557-586.

Cruz, Luis and Marcelo Moreira (2005). "On the Validity of Econometric Techniques with Weak Instruments: Inference on Returns to Education Using Compulsory School Attendance Laws." Journal of Human Resources 40(2): 393-410. [Available at <http://post.economics.harvard.edu/faculty/moreira/papers/ValidEconometric.pdf>.]

Andrews, Donald W.K. and James H. Stock (2005). "Inference with Weak Instruments," Cowles Foundation Discussion Paper No. 1530. [Available at <http://ssrn.com/abstract=781286>.]

Newer weak IV stuff?

## **Part 5 – More good topics**

### **5.1 Policy change as a source of identification**

#### **5.1.1 Indonesia and School Construction**

\*\*E. Duflo, "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment," American Economic Review 91 (2001), 795-813.

Duflo, Esther, "The Medium Run Effects of Educational Expansion: Evidence from a Large School Construction Program in Indonesia" mimeo, MIT, October 2000.

### **5.1.2 Medicaid Expansions in the US, 1985-1992**

\*J. Gruber, "Health Insurance for Poor Women and Children Over the Past Decade," in J. Poterba, ed., *Tax Policy and the Economy*, Volume 11 (Cambridge: MIT Press, 1997).

\*J. Currie and J. Gruber, "Saving Babies: The Efficacy and Cost of Recent Changes in the Medicaid Eligibility of Pregnant Women," *Journal of Political Economy* 104 (December 1996), 1263-1296.

J. Currie and J. Gruber. "Health Insurance Eligibility, Utilization of Medical Care, and Child Health" *QJE*, 1996.

L. Baker and A. Royalty, "Medicaid Policy, Physician Behavior, and Health Care for the Low-Income Population," *JHR* 35(3), Summer 2000, pages 480-502.

D. Cutler and J. Gruber, "Does Public Insurance Crowd Out Private Insurance?," *QJE*, 111 (May 1996), 391-430.

Ham & Shore-Sheppard? Huckfeldt?

### **5.2 Some issues with state/year panels**

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, "How much should we trust differences-in-differences estimates?" *Quarterly Journal of Economics*, Vol 119, Issue 1, February 2004, pp. 249-275.

### **5.3 Regression discontinuity**

\*\*J. Angrist and V. Lavy "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement," *Quarterly Journal of Economics*, 114:2 (May 1999), 533-575.

Kane, Thomas J. "A quasi-experimental estimate of the impact of financial aid on college-going," NBER working paper 9703, May 2003.

Lee, David S., "Randomized experiments from non-random selection in the U.S. House elections," manuscript, UC Berkeley department of economics, September 2003.

Lee, David S., Enrico Moretti, and Matthew J. Butler, "Do voters affect or elect policies? Evidence from the U.S. House," forthcoming, *Quarterly Journal of Economics*, 2004.

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

Porter, Jack, "Inference in the Regression Discontinuity Model," manuscript, Harvard University, Sept. 25, 2003.