Department of Economics
UCLA
Professor V. Joseph Hotz
8351 Bunche Hall
Email: hotz@econ.ucla.edu

Spring Quarter, 2007
10:45 a.m. – 12 noon, MW, 9384 Bunche Hall
Office Hours: M 2:00 – 4:00 p.m.
Course Website: http://www.econ.ucla.edu/hotz/e262p_07S/
Revised: May 15, 2007

Economics 262P
Topics in Labor Economics
Reading List (First Half of Course)

1. The Effects of Treatments and Causal Inference

1.1 An Overview: The Program Evaluation Framework, Causal Inference, The Selection Problem, and Parameters of Interest

Blundell, R. and M. Costa Dias (2002), "Alternative Approaches to Evaluation in Empirical Microeconomics," *Portuguese Economic Journal*, Volume 1, Issue 2, 2002.

Heckman, J. *The Scientific Model of Causality,* http://www.nuff.ox.ac.uk/users/nielsen/res/Heckman/Heckman_sci-causality.pdf

Heckman, J. "Alternative Approaches to the Evaluation of Social Programs: Econometric and Experimental Methods," Barcelona Lecture, World Congress of the Econometric Society, 1990.

Heckman, J. J., Lalonde, R. and J. Smith (1999), "The Economics and Econometrics of Active Labor Market Programs" In *Handbook of Labor Economics*, Volume III, Eds. O. Ashenfelter and D. Card (Elsevier: Amsterdam). [www.sciencedirect.com/science/handbooks/]

Heckman, J., J. Tobias, and E. Vytlacil (2001), "Four Parameters of Interest in the Evaluation of Social Programs," *Southern Economic Journal*, Vol. 68, No. 2. (Oct., 2001), pp. 210-223.

Hotz, V. J. (1994), *Lectures on Evaluation of Social Programs*, Lectures given at the World Bank, July 1994, Lectures 1 and 2.

Manski, C. (1989), "Anatomy of the Selection Problem," *Journal of Human Resources*, 24, pp.343—360.

Manski, C. (1995), *Identification Problems in the Social Sciences*, Cambridge, MA: Harvard University Press.

1.2 Randomized Experimental Designs

Angrist, J. and G. Imbens, "Sources of Identifying Information in Evaluation Models," NBER Working Paper Series, 1991.

Burtless, G. (1995), "The Case for Randomized Field Trials in Economic and Policy Research," *Journal of Economic Perspectives*, Vol. 9, No. 2, pp. 63-84

Heckman, J. and J. Smith (1998), "Assessing the Case for Social Experiments," *Journal of Economic Perspectives*, Vol. 9, No. 2, pp. 85-110.

Heckman, J. J., H. Ichimura, J. Smith and P. Todd (1998), "Characterizing Selection Bias Using Experimental Data," *Econometrica*, Vol. 66, 1017-1098.

Hotz, V. J. (1994), *Lectures on Evaluation of Social Programs*, Lectures given at the World Bank, July 1994, Lectures 3 and 4.

1.3 Non-Experimental Methods for Estimating Treatment Effects (for Conducting Causal Inference)

1.3.1 Overview

Angrist, J.and A. B. Krueger. "Empirical Strategies in Labor Economics" in *Handbook of Labor Economics*, Vol. 3A, Ashenfelter and Card (eds.), 1999.

Cameron, C. and P. Trevidi. 2005. *Microeconometrics. Methods and Applications*. Cambridge University Press.

Heckman, J. and R. Robb, "Alternative Methods for Evaluating the Impact of Interventions," in *Longitudinal Analysis of Labor Market Data*, J. Heckman and B. Singer, eds., New York: Cambridge University Press, 1985.

Heckman, J., R. Lalonde, and J. Smith (1999), "The Economics and Econometrics of Active Labor Market Programs," *Handbook of Labor Economics*, Volume 3, Ashenfelter, A. and D. Card, eds., Amsterdam: Elsevier Science.

Hotz, V. J. (1994), *Lectures on Evaluation of Social Programs*, Lectures given at the World Bank, July 1994, Lecture 5.

Manski, C. (1995), *Identification Problems in the Social Sciences*, Cambridge, MA: Harvard University Press.

Meyer, B. 1995. "Natural and Quasi-Experiments in Economics." *Journal of Business and Economic Statistics.* 13: 151-161.

Mitnik, O. 2004. Differential effects of welfare to work programs: identification with unknown treatment status. Unpublished manuscript, Department of Economics, University of Miami, May.

Moffitt, R. "New Developments in Econometric Methods for Labor Market Analysis," in *Handbook of Labor Economics*, Vol. 3A, Ashenfelter and Card (eds.), 1999.

Moffitt, R. 2005. "Remarks on the Analysis of Causal Relationships in Population Research." *Demography* 42(1), 91-108.

Smith, J. 2000. "A Critical Survey of Empirical Methods for Evaluating Employment and Training Programs." *Schweizerische Zeitschrift für Volkswirtschaft und Statistik* 136(3), 247-268.

Wooldridge, J. 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

1.3.2 Bounding Treatment Effects

Hotz, V.J., Mullin, C., and S. Sanders (1997), "Bounding Causal Effects Using Data from a Contaminated Natural Experiment: Analyzing the Effects of Teenage Childbearing," *Review of Economic Studies*, 64, pp.575—603.

Manski, C. (1990), "Nonparametric Bounds on Treatment Effects," *American Economic Review*, 80, pp.319—323.

Manski, C. (1995), *Identification Problems in the Social Sciences*, Cambridge, MA: Harvard University Press.

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Manski, C. (1997), "The Mixing Problem in Programme Evaluation," *Review of Economic Studies*, 64, pp.537-553.

Manski, C., G. Sandefur, S. Mclanahan, and D. Powers (1992), "Alternative Estimates of the Effect of Family Structure During Adolescence on High School," Journal of the *American Statistical Association*, Vol. 87, no. 417, 25—37.

1.3.3 Control Function Estimators

Blundell, R., L. Dearden and B. Sianesi. 2003. "Evaluating the Impact of Education on Earnings in the UK: Models, Methods and Results from the NCDS." *Journal of the Royal Statistical Society, Series A* 168(3), 473-512.

Cameron and Trivdei (2005), Sections 16.5-16.7

Hotz, V. J. (1994), *Lectures on Evaluation of Social Programs*, Lectures given at the World Bank, July 1994, Lectures 3 and 4.

Wooldridge (2002), Section 17.4

1.3.4 Matching Methods and the Propensity Score

Abadie, A. and G. Imbens, "Large Sample Properties of Matching Estimators for Average Treatment Effects," *Econometrica* 74(1), 2006, 235-267.

Angrist, J. 1998. "Estimating the Labor Market Impact of Voluntary Military Service Using Social Security Data on Military Applicants." *Econometrica* 66(2), 249-288.

Angrist and J. Hahn, "When to Control for Covariates? Panel-Asymptotic Results for Estimates of Treatment Effects," *Review of Economics and Statistics,* February 2004.

Ashenfelter, O. "Estimating the Effect of Training programs on Earnings," *The Review of Economics and Statistics* 60 (1978), 47-57.

Ashenfelter, O. and D. Card (1985), "Using the Longitudinal Structure of Earnings to Estimate the Effect of Training Programs on Earnings," *The Review of Economics and Statistics* 67 (1985), 648- 66.

Campbell, D. (1969), "Reforms as Experiments," *American Psychologist* 24 (April 1969), 409-429.

Dehejia, R. and S. Wahba, "Causal Effects in Nonexperimental Studies: Re-evaluating the Evaluation of Training Programs," *Journal of the American Statistical Association* 94 (Sept. 1999).

Dehejia, R., (2005), "Final Thoughts." Unpublished Manuscript, Columbia University. [http://www-personal.umich.edu/~econjeff/Papers/dehejia_final.pdf]

Dehejia, R. (2005), "Practical Propensity Score Matching: A Reply to Smith and Todd." *Journal of Econometrics* 125(1-2), 355-364. [http://www-personal.umich.edu/~econjeff/Papers/dehejia on smith todd.pdf]

Heckman, J. J., H. Ichimura and P. Todd (1998), "Matching As An Econometric Evaluation Estimator," *Review of Economic Studies*, Vol. 65, 261-294.

Heckman, J., H. Ichimura, and P. Todd (1997), "Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Program", *Review of Economic Studies*, 64, 605-654.

Imbens, G, (2000), "The role of the propensity score in estimation dose-response functions," *Biometrika*, 87, no. 3:706-710.

King, G. 2006. "Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference." Unpublished Manuscript, Harvard University. [http://gking.harvard.edu/files/matchp.pdf]

Lechner, M. 2001. Identification and estimation of causal effects of multiple treatments under the conditional independence assumption," In *Econometric evaluation of labour market*

policies, ed. Michael Lechner and Friedhelm Pfeiffer. Heidelberg, Germany: Physica/Springer.

Rosenbaum, P. 1987. The role of a second control group in an observational study. *Statistical Science* 2, no. 3:292-316.

Rosenbaum, R., "Choice as an Alternative to Control in Observational Studies," *Statistical Science* 14 [3] (1999), 259-304.

Rosenbaum, P. and D. Rubin, "Reducing Bias in Observational Studies Using Subclassification on the Propensity Score," *Journal of the American Statistical Association* 79[387], September 1984, 5 16-524.

Rosenbaum, P. R. and D. B. Rubin, 1983, "The Central Role of the Propensity Score in Observational Studies for Causal Effects," *Biometrika* 70[1], April 1983, 41-55.

Rosenbaum, P., and D. Rubin, (1983), "Assessing Sensitivity to an Unobserved Binary Covariate in an Observational Study with Binary Outcome," Journal of the Royal Statistical Society, Series B, 45, 212-218.

Rubin, D. 1973a. Matching to remove bias in observational studies. *Biometrics* 29:159-183.

Rubin, D. 1973b. The use of matched sampling and regression adjustments to remove bias in observational studies. *Biometrics* 29:185-203.

Rubin, D. B., 1974, "Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies," *Journal of Educational Psychology, 66,* 688-701.

Rubin, D. B., 1977, "Assignment to Treatment Group on the Basis of a Covariate," *Journal of Educational Statistics* [1], Spring 1977 1-26.

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Wooldridge (2002), Chapter 18, Sections 18.1 to 18.3.

1.3.5 Regression Discontinuity

Hahn, J., P. Todd and W. van der Klaauw. 2001. "Identification and Estimation of Treatment Ef-

fects with a Regression-Discontinuity Design." *Econometrica* 69(1), 201-09.

Lee, D. 2006. "Randomized Experiments from Non-Random Selection in U.S. House Elections." *Journal of Econometrics,* forthcoming. [http://emlab.berkeley.edu/users/dslee/wp/randomizerdfinal2.pdf]

McCrary, J. and H. Royer. 2005. "The Effect of Maternal Education on Fertility and Infant Health: Evidence from School Entry Policies Using Exact Date of Birth." Unpublished manuscript, University of Michigan. [http://www-personal.umich.edu/~jmccrary/mccrary_and_royer2005.pdf]

Van der Klaauw, W. 2002. "Estimating the Effect of Financial Aid Offers on College Enrollment: A Regression-Discontinuity Approach." *International Economic Review* 43(4), 1249-87.

1.3.6 Instrumental Variable Methods

Angrist, J. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records," *American Economic Review,* June 1990.

Angrist, J. "Treatment Effect Heterogeneity in Theory and Practice," *The Economic Journal* 114, March 2004, C52-C83.

Angrist, J. and A. Krueger. 2001. "Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments." *Journal of Economic Perspectives* 15(4), 69-86.

Angrist, J. and A. Krueger, "Split-Sample Instrumental Variables Estimates of the Returns to Schooling," *JBES,* April 1995.

Angrist, J. and A. Krueger, "The Effect of Age at School Entry on Educational Attainment: An Application of Instrumental Variables with Moments from Two Samples," *Journal of the American Statistical Association 87* (June 1992).

Angrist, J. and G. Imbens (1994), "Identification and Estimation of Local Average Treatment Effects," *Econometrica*, 62, pp.467-475.

Angrist, J. and G. Imbens, "Two-Stage Least Squares Estimation of Average Causal Effects in Models with Variable Treatment Intensity," *Journal of the American Statistical Association,* June 1995.

Angrist, J., G. Imbens, K. Graddy, "The Interpretation of Instrumental Variables Estimators in Simultaneous Equations Models with an Application to the Demand for Fish," *Review of Economic Studies* 67[3], July 2000, 499-528.

Angrist, J., Imbens, G. and D.B. Rubin (1996), "Identification of Causal Effects Using Instrumental Variables," *Journal of the American Statistical Association*, 91, pp.444-455.

Cameron and Trivdei (2005), Sections 4.8, 4.9, 6.4, 8.3, 8.4

Card, D. "The Causal Effect of Education on Earnings," *The Handbook of Labor Economics, Volume IIIA,* Elsevier Science Publishers, 1999.

Heckman, J. and E. Vytlacil (2005), "Local Instrumental Variables," NBER Technical Working Paper #0252.

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Heckman, J. 1997. "Instrumental Variables: A Study of Implicit Behavioral Assumptions Used in Making Program Evaluations." *Journal of Human Resources.* 32(3). 441-452.

Kling, J. 2001. "Interpreting Instrumental Variables Estimates of the Returns to Schooling." *Journal of Business and Economic Statistics* 19(3), 358-364.

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Manski, C. and J. Pepper (2000), "Monotone Instrumental Variables: With An Application To The Returns To Schooling," *Econometrica*, Vol. 68, No. 4.

Wooldridge (2002), Chapter 5

1.3.7 Panel Data Methods: Fixed Effect Estimators

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

Cameron and Trivedi (2005), Chapter 21

McKinnish, T. 2000. "Model Sensitivity In Panel Data Analysis: Some Caveats About the Interpretation of Fixed Effects and Differences Estimators." [http://spot.colorado.edu/~mckinnis/fe053100.pdf]

Moffitt, R. 1991. "Program Evaluation with Nonexperimental Data." *Evaluation Review.* 15(3). 291-314. [Available on http://www.econ.jhu.edu/People/Moffitt/progEv.html as "Paper on Introduction to Program Evaluation"]

Wolfers, J. 2003. "Did Unilateral Divorce Laws Raise Divorce Rates? A Reconciliation and New Results" NBER Working Paper No 10014. [http://bpp.wharton.upenn.edu/jwolfers/Papers/Divorce.pdf]

1.3.8 Difference-in-Difference Methods

Angrist, J. and A. Krueger (1991), "Does Compulsory School Attendance Affect Schooling and Earnings?" *Quarterly Journal of Economics*, 106, pp.979-1014.

Angrist, J. and V. Lavy, "The Effect of High Stakes High School Achievement Awards: Evidence from a School-Centered Randomized Trial," IZA DP 1146, May 2004.

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Blundell, R. and T. MaCurdy (1999), "Labor Supply: A Review of Alternative Approaches," in *Handbook of Labor Economics*, Vol. 3A, 1999, 1560-1695. [C]

Blundell, R., M. Costa Dias, C. Meghir and J. Van Reenan. 2004. "Evaluating the Employment Impact of a Mandatory Job Search Assistance Program." *Journal of the European Economic Association* 2(4), 569-606.

Cameron and Trevedi (2005), Sections 22.6 and 25.5

Card, D. and A. Krueger, (1994), "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania" *American Economic Review*, 84: 772-93.

Card, D. and A. Krueger, "Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States," *Journal of Political Economy,* 100, Feb. 1992, 1-40.

Conley, T. and C. Taber, "Inference with 'Difference in Differences' with a Small Number of Policy Changes," mimeographed, Northwestern University, 2004.

Donald, S. and K. Lang, "Inference with Difference-in-Differences and Other Panel Data", mimeographed, Boston University, 2001.

Eissa, N. 1996. "Labor Supply and the Economic Recovery Tax Act of 1981." In Martin Feldstein and James Poterba, eds., *Empirical Foundations of Household Taxation.* Chicago: University of Chicago Press. 5-3 2.

Heckman, J. 1996. "Comment." In Martin Feldstein and James Poterba, eds., *Empirical Foundations of Household Taxation.* Chicago: University of Chicago Press. 32-3 8.

Wooldridge (2002), Section

1.4 Using Experimental Data to Evaluate Selection Bias and Alternative Non-Experimental Methods

Bloom, H., C. J. Hill and J. Riccio. 2005. Modeling cross-site experimental differences to find out why program effectiveness varies. In *Learning more from social experiments: evolv-*

ing analytic approaches, ed. Howard Bloom. New York: Russell Sage Press.

Card, D. and D. Sullivan, (1988), "Measuring the Effect of Subsidized Training Programs on Movements In and Out of Employment," *Econometrica*, Vol. 56, No. 3, pp. 497-530.

Cook, T. "Within-Study Comparisons of Experiments and Non-Experiments: Can they Help Decide on Evaluation Policy?," Northwestern University, mimeo, December 2005 (and recent references therein).

Dehejia, R., and S. Wahba (1999), "Causal Effects in Non-Experimental Studies: Re-Evaluating the Evaluation of Training Programs," *Journal of the American Statistical Association*, Vol. 94, No. 448, pp. 1053-1062.

Fraker, T. and R. Maynard, "Evaluating Comparison Group Designs with Employment Related Programs," *Journal of Human Resources*.

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Heckman, J. and V. J. Hotz, "Choosing Among Alternative Nonexperimental Methods for Estimating the Impact of Manpower Training on Earnings," *Journal of the American Statistical Association*, 1989.

Heckman, J., H. Ichimura, J. Smith, and P. Todd (1998), "Characterizing Selection Bias Using Experimental Data," *Econometrica*, 66, 1017-1098.

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Heckman, J., J. Smith, and N. Clements (1997), "Making the Most Out of Programme Evaluations and Social Experiments: Accounting for Heterogeneity in Programme Impacts," *Review of Economic Studies*, Vol. 64, pp. 487-535.

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LaLonde, R. (1986), "Evaluating the Econometric Evaluations of Training Programs with Experimental Data," *American Economic Review*, Vol. 76, No. 4, pp. 604-620.

1.5 Readings for Student Presentation Topics

1.5.1 Difference-in-Differences Papers

Angrist, J. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records," *American Economic Review,* June 1990.

Angrist, J. and A. Krueger. 1991. "Does Compulsory School Attendance Affect Schooling and Earnings?" *Quarterly Journal of Economics* 106:979–1014.

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Currie, J. and D. Thomas. "Does Head Start Make a Difference?" *American Economic Review*, June 1995.

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

1.5.2 Instrumental Variables Papers

Imbens, G. W., and J. D. Angrist. 1994. "Identification and Estimation of Local Average Treatment Effects." *Econometrica* 62(2):467-76.

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1.5.3 Evaluating Non-Experimental (and Matching) Methods with Experimental Data

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1.5.4 Regression-Discontinuity Design Methods

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

Black, S. (1999): "Do 'Better' Schools Matter? Parental Valuation of Elementary Education," *Quarterly Journal Economics*, 114: 577-599.

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1.5.5 Bounding Treatment Effects

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Manski, C. and J. Pepper (2000), "Monotone Instrumental Variables: With An Application To The Returns To Schooling," *Econometrica*, Vol. 68, No. 4.

2. The Roy Model: The Theory of Self-Selection

*Bjorklund, A. and Moffitt, R. (1986), "Estimation of wage gains and welfare gains from self selection models," *Review of Economics and Statistics* 24, 1–63.

*Borjas, G. (1987), "Self-Selection and the Earnings of Immigrants," *American Economic Review*, 77(4), September, 531-553.

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*Gould, E. (2002), "Rising Wage Inequality, Comparative Advantage, and the Growing Importance of General Skills in the United States," *Journal of Labor Economics*, vol. 20, no. 1, 105-147.

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