

LABOR ECONOMICS 250C, SPRING 2016
PROFESSORS KATE ANTONOVICS AND JULIAN BETTS

The course will provide a blend of theoretical labor economics and applied research.

We will cover five broad themes:

I. Race and Gender Inequality, Discrimination

II. Intergenerational Mobility

III. Wage and Employment Dynamics

IV. The Supply Side of the Labor Market

1) The Quantity of Labor Supplied

2) The Quality of Labor Supplied: Human Capital and the Economics of Education

Professor Antonovics will teach topics I - III during weeks 1-4.5 (March 29-April 21, April 28).

Professor Betts will teach Topic IV during weeks 4.5-9 (April 26, May 3-May 26). During the last week of class (May 31 and June 2), you will present your research papers.

Requirements for the Course/Schedule

To do well in this course you should have completed the microeconomics and econometrics (A-C) courses. It would be helpful if you have already taken Labor Economics 250A/B, because there we covered many of the empirical methods that we will use in this course. Of these 250A is the most important. If you are unsure, please consult one of the past 250A course syllabi, and discuss with either of us if there are holes in your knowledge of the relevant empirical methods.

You are required to: write your own original term paper, on a subject in labor economics of your choosing; and complete one final. In addition, we will ask you to present and critique two recent papers in an informal setting; you are also expected to attend and participate actively in all classes.

Here is some advice on finding a topic for your term paper. Perusing recent issues of the Journal of Labor Economics, the Journal of Human Resources, or general interest journals such as the AER, JPE, Econometrica, R.E.Stat etc. may give you some ideas on topics. NBER working papers provide another source. The reading list for this course might also help you. Second, if you already have a general area in mind (immigration, labor supply, economics of education etc.) but not a specific topic, then one of the more difficult challenges is to whittle your interest down to something more specific. The Handbook of Labor Economics provides literature reviews that may help you see which areas are overly well-trodden and which are relatively sparsely researched. A third approach is to flip through the Statistical Abstract of the United States or related government publications such as the Digest of Education Statistics – sometimes seeing what sorts of data the government collects and patterns in data can get your creative juices flowing. Fourth, *talk to both of us about your ideas. This is why we are here!*

Evaluation

5% A paper proposal. Please email both of us a one to three page proposal with a few references by Friday of Week 2 (April 8). (Feel free to consult either of us informally before that time.) We offer you three options for this paper. Consider in weeks 1 and 2 which of these options will be most helpful to you as you seek to complete your Ph.D.

1) Come up with a *proposal* for an original empirical paper. In week 2 please submit to us one or two ideas for original papers. We will work with you to decide which to pursue. The final paper should be a *proposal* for an original empirical paper, which states how this paper would contribute to the literature, devises an empirical strategy that is (ideally) based in theory, and discusses data sources that you could use. Ideally, your proposal would be of sufficient quality that you could submit it as a grant proposal to an outside organization. (We do not require submitting a grant application, but encourage you to think along these lines. We will work with you if you decide to follow this route.)

2) Alternatively you could initiate or continue an applied (or a theoretical) project. Some of you may have initiated more empirically (or theoretically) oriented projects in 250A, 250B, 220F, or other graduate courses. You are welcome to continue that work in this course, but you must clear this with us and provide us with the final version you prepared for those classes, along with a clear statement of how you will extend that analysis. Note that if the empirical project is limited in scope it may be conceivable for you to start from scratch, develop a plan, acquire and clean data, and perform the empirical analysis. (This goes beyond option 1 above.) We certainly would welcome this but do talk to us first so that we can help judge whether this sounds feasible over the 10 weeks of quarter.

3) Alternatively write a 10-15 page literature review of a topic in labor economics. This literature review **MUST** also include thoughtful suggestions for future research. This latter statement is particularly true if you would like to extend a lit review from an earlier course. You would want to come up with a more detailed and focused lit review that builds upon the original paper and which discusses new paper ideas in detail.

35% A final draft of your paper. Due on the last day of class (June 2). Please bring two copies. We also would appreciate receiving a copy by email. There will be no extensions beyond the end of quarter, and papers submitted after June 2 will lose 5 percentage points (out of 35) per day late.

10% A presentation of your paper: A 20-minute presentation of your paper in the last week of class (Tuesday, May 31 and Thursday June 2). You should present your question, the motivation for your question, the theoretical model and/or econometric technique you will use to answer this question, the data you will use (if you're doing an empirical project), any

preliminary results, and how you expect your results to shed light on the question you initially posed. After your presentation, there will be 10 minutes for discussion.

10% Two informal presentations of other research. One will be during Professor Antonovics' section of the course and one during Professor Betts' section of the course.

For Antonovics' section, presentations will take place in class on April 21 and April 28. *Given the large number of students taking 250C, please pick a partner with whom you will co-present the paper.* Please email Kate by Friday, April 8 with the title of the paper you would like to present. You will be presenting papers related to intergenerational mobility, and can choose any paper on the syllabus with a ★ next to it. On the day of your presentation, please email Kate a copy of your presentation and bring a short (1-2 page) handout for the class highlighting the paper's main points.

For Betts' section, you will present a recent NBER working paper of your choice (**but in the area of the economics of education or labor supply**). *Given the large number of students taking 250C, please pick a partner with whom you will co-present the paper.* You will be presenting papers related to dynamic labor supply or the economics of education, and can choose any paper on the syllabus with a ► next to it. Please send Julian email by Friday, May 6 with the titles and WP numbers of a few papers you would like to present in class, and the name of your partner. Feel free to consult with Professor Betts in advance. We will do the presentation related to labor supply (see Eckstein and Lifshitz p. 10) during class, and the others on economics of education we may do in class one by one or, if we can find a time all of us can meet, we could cover all of these in one longer session towards the end of quarter.

One week before the scheduled presentations, please email the paper to all classmates and to either Antonovics or Betts (depending on who's teaching), or give all of us a paper copy. In your presentation, you should plan to present the paper as if it were "yours" and offer constructive criticism and ideas for how you might extend the work. A few pages of handouts would be useful. A rough guideline for the talk might be 15 minutes for presentation of the paper, and a 5-minute discussion of your "referee comments", and 5 minutes for questions. These are meant to be informal presentations, and there may be tea and coffee and/or lunch involved.

40% A final on Antonovics' and Betts' section during finals week (June 7, 8-11am).

Textbook:

There is no required text. Students looking for a starting point or background material may wish to use Cahuc P. and Zylberberg A. *Labor Economics* (MIT press, 2004) [C&Z]. For a clear, accessible summary of much of the empirical literature try Ehrenberg, Ronald G. and Robert S. Smith (2006) *Modern Labor Economics, Theory and Public Policy*, (9th edition), HarperCollins, New York. Good writing is important. For an entertaining style manual, see Becker, Howard S. (1986) *Writing For Social Scientists*, U. of Chicago.

Office Hours: Julian will have office hours Mondays 1-2:30 in weeks 5-10. An exception is

Monday May 30 which is a holiday. That week, office hours will instead be Tuesday May 31 11-12:30. Any other time is fine as well, including weeks 1-5, although it is best to set up something by email to make sure he is available. For weeks 1-5 Julian will not hold regular office hours but feel free to set up meetings with him by email during this time. Kate's office hours will be on Wednesdays from 1:15-2:15pm.

Reading List: The list is subject to negotiation. The (*) means priority reading. We will also try to give you some guidance as to which papers are the most important.

I. Race and Gender Inequality

Basic Facts About Race and Gender Inequality

* Altonji, Joseph and Rebecca Blank. "Race and Gender in the Labor Market," in O. Ashenfelter and D. Card (ed.) *Handbook of Labor Economics*, Vol 3C, Chapter 48. New York, NY: Elsevier, 1999.

* Altonji, Joseph, P. Bharadwaj and F. Lange. "Changes in the Characteristics of American Youth: Implications for Adult Outcomes" *Journal of Labor Economics*, 2012, 30(4).

Blau, F. and L. Kahn, "Swimming Upstream: Trends in the Gender Wage Differential in the 1980s." *Journal of Labor Economics*, 15 (1997), 1-42.

Bound, John and Richard B. Freeman. "What Went Wrong? The Erosion of Relative Earnings and Employment Among Young Black Men in the 1980s." *Quarterly Journal of Economics*, February 1992, 107(1), pp. 201-32.

Brown, Charles. "Black-White Earnings Ratios Since the Civil Rights Act of 1964: The Importance of Labor Market Dropouts." *Quarterly Journal of Economics*, February 1984, 99(1), pp. 31-44.

Card, D. and Lemieux, T. "Wage Dispersion, Returns to Skill, and Black-White Wage Differentials", *Journal of Econometrics*, 1996, 74, 319-361.

Card, David and Alan Krueger. "School Quality and Black-White Relative Earnings: A Direct Assessment." *Quarterly Journal of Economics*, February 1992, 107(1), pp. 151-200.

Chandra, Amitabh. "Is the Convergence of the Racial Wage Gap Illusory?" NBER Working Paper No. 9476, February 2003

Donohue, John J III and James J. Heckman. "Continuous Versus Episodic Change: The Impact of Civil Rights Policy on the Economic Status of Blacks." *Journal of Economic Literature*, December 1991, 29(4), pp. 1603-43. [JS]

Neal, Derek. "Why Has Black-White Skill Convergence Stopped?" NBER Working Paper No. 11090, January 2005.

Smith, James P. "Affirmative Action and the Racial Wage Gap." *American Economic Review Papers and Proceedings*, May 1993, 83(2), pp. 79-84.

Discrimination--Theory

* Aigner, Dennis J. and Glen C. Cain. "Statistical Theories of Discrimination in the Labor Market." *Industrial and Labor Relations Review*, January 1977, 30(2), pp. 175-87.

Antonovics, Kate. "Statistical Discrimination and Intergenerational Income Mobility." *mimeo*, 2004.

Arrow, Kenneth, "Models of Job Discrimination" and "Some Mathematical Models of Race in the Labor Market", in A. Pascal (ed.) *Racial Discrimination in Economic Life*. Lexington, MA: Lexington Books, 1972.

Becker, Gary S., *The Economics of Discrimination*, Chicago, IL: The University of Chicago Press, 1957.

Borjas, George and Matthew Goldberg. "Biased Screening and Discrimination in Labor Markets." *American Economic Review*, December 1978, 68(5), pp. 918-922.

* Coate, S. and Loury G. "Will Affirmative Action Eliminate Negative Stereotypes?" *American Economic Review*, December 1993, 83(5), pp. 1220-1240.

Lundberg, S. and Startz, R. "Private Discrimination and Social Intervention in a Competitive Labor Market." *American Economic Review*, June 1983, 73(3), pp. 340-347.

Lundberg, Shelly J. "The Enforcement of Equal Opportunity Laws Under Imperfect Information: Affirmative Actions and Alternatives." *Quarterly Journal of Economics*, February 1991, 106(1), pp. 309-326. [JS]

Mailath, George J., Larry Samuelson and Avner Shaked. "Endogenous Inequality in Integrated Labor Markets with Two-Sided Search." *American Economic Review*, March 2000, 90(1), pp. 46-72.

McCall, J. "The Simple Mathematics of Information, Job Search and Prejudice," in A. Pascal (ed.), *Racial Discrimination in Economic Life*. Lexington, MA: Lexington Books, 1972.

Milgrom, Paul and Sharon Oster, "Job Discrimination, Market Forces, and the Invisibility Hypothesis." *Quarterly Journal of Economics*, 1987, 102(3), pp. 453-476.

Schwab, Stewart, "Is Statistical Discrimination Efficient?" *American Economic Review*, March 1986, 76(1), pp. 228-234.

Discrimination--Empirical Evidence

* Anwar, Shamena, and Hanming Fang. 2006. "An Alternative Test of Racial Prejudice in Motor Vehicle Searches: Theory and Evidence." *American Economic Review*, 96(1): 127-151.

Antonovics, Kate and Brian Knight. "A New Look at Racial Profiling: Evidence from the Boston Police Department." *Review of Economics and Statistics*, February 2009, 91(1), pp 163-177.

* Bertrand, Marianne and Sendhil Mullainathan. "Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment in Labor Market Discrimination," *American Economic Review*, September 2004, 94(4), pp. 991-1013.

- * Black, Sandra E. and Philip E. Strahan, "The Division of Spoils: Rent-Sharing and Discrimination in a Regulated Industry." *American Economic Review*, September 2001, 814-831.
- * Charles, Kerwin and Jonathan Guryan, "Prejudice and Wages: An Empirical Assessment of Becker's *The Economics of Discrimination*," *Journal of Political Economy*, 2008, 116(5), 773-809.
- Hamermesh, Daniel and Jeff Biddle. "Beauty and the Labor Market," *American Economic Review*, December 1994.
- Hellerstein, Judith K. and David Neumark. "Wages, Productivity, and Worker Characteristics: Evidence from Plant- Level Production Functions and Wage Equations." *International Economic Review*, February 1999, 40(1), pp. 95-123.
- Hernández-Murillo, Rubén and John Knowles. "Racial Profiling or Racist Policing? Bounds Tests in Aggregate Data," *International Economic Review*, August 2004, 45(3). pp. 959-89.
- Knowles, John and Persico, Nicola. "Racial Bias in Motor Vehicle Searches: Theory and Evidence." *Journal of Political Economy*, 2001, 109(1), pp. 203-229.
- Oettinger, Gerald. "Statistical Discrimination and the Early Career Evolution of the Black- White Wage Gap," *Journal of Labor Economics*, January 1996, 14(1), pp. 52-78.
- Persico, Nicola. "Racial Profiling? Detecting Bias Using Statistical Evidence" *Annual Review of Economics*, September 2009, 1, pp. 229-254, <http://nicolapersico.com/files/ARoEPersico27.pdf>

II. Intergenerational Income Mobility

Measuring Intergenerational Mobility

- G. Solon, "Intergenerational Mobility in the Labor Market", in *Handbook of Labor Economics* Vol. 3, eds. Orley Ashenfelter and David Card. Elsevier, 1999.
- Black, Sandra and Paul Devereux, 2010, "Recent Developments in Intergenerational Mobility," NBER Working Paper 15889.
- ★ Chetty, Raj, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez. 2014. "Where Is The Land Of Opportunity: The Geography Of Intergenerational Mobility In The United States." *Quarterly Journal of Economics* 129 (4): 1553-1623.
- ★ Chetty, Raj, Patrick Kline, Emmanuel Saez, and Nicholas Turner. 2014. "Is The United States Still A Land Of Opportunity? Recent Trends In Intergenerational Mobility." *American Economic Review Papers and Proceedings* 104 (5).

Causes of Intergenerational Correlations

Mazumder, Bhashkar (2008), "Sibling similarities and economic inequality in the US", *Journal of Population Economics*, 21: 685-701. (uses siblings)

★ Björklund, Anders, Markus Jäntti, and Gary Solon (2005), "Influences of nature and nurture on earnings variation: A report on a study of various sibling types in Sweden", in: Samuel Bowles, Herbert Gintis, and Melissa Osborne Groves, eds., *Unequal Chances: Family Background and Economic Success* (Princeton: Princeton University Press) pp. 145-164. (uses different types of siblings)

Behrman, Jere R. and Mark R. Rosenzweig (2002), "Does increasing women's schooling raise the schooling of the next generation?" *American Economic Review* 92:323-334. (twins)

Antonovics, Kate and Arthur S. Goldberger (2005), "Does increasing women's schooling raise the schooling of the next generation? Comment", *American Economic Review* 95: 1738-1744. (twins)

★ Sacerdote, Bruce (2007), "How large are the effects from changes in family environment? A study of Korean American adoptees," *Quarterly Journal of Economics* 122: 119-157. (adoptees)

Dahl, Gordon B., and Lance Lochner. 2012. "The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit." *American Economic Review*, 102(5): 1927-56. (natural experiment)

Oreopoulos, Philip, Marianne E. Page and Anne H. Stevens (2008), "The intergenerational effects of worker displacement", *Journal of Labor Economics*, 26: 455- 483. (natural experiment)

★ Black, Sandra, Paul Devereux, and Kjell Salvanes (2005), "Why the Apple Doesn't Fall Far: Understanding Intergenerational Transmission of Human Capital," *American Economic Review*, p. 437-449. (natural experiment)

McCrary, Justin, and Heather Royer. 2011. "The Effect of Female Education on Fertility and Infant Health: Evidence from School Entry Policies Using Exact Date of Birth." *American Economic Review*, 101(1): 158-95. (natural experiment)

★ Holmlund, Helena, Mikael Lindahl, and Erik Plug (2008) "The Causal Effect of Parent's Schooling on Children's Schooling: A Comparison of Estimation Methods" (with Mikael Lindahl and Erik Plug), IZA Discussion Paper No. 3630, August 2008. (comparison of methods)

III. Wage and Employment Dynamics

* Neal, Derek and Sherwin Rosen. "Theories of the Distribution of Earnings." In *Handbook of Income Distribution*, 2000.

Human Capital Models

Ben-Porath, Yoram. "The Production of Human Capital and the Life Cycle of Earnings." *Journal of Political Economy*, August 1967, 75(4), Part I, pp. 352-365.

Models of Learning and Sorting

Farber, H., and R. Gibbons. "Learning and Wage Dynamics." *Quarterly Journal of Economics*, November 1996, 111(4), pp. 1007-1047.

Gibbons, Robert and Michael Waldman. "A Theory of Wage and Promotion Dynamics Inside Firms." *Quarterly Journal of Economics*, November 1999, 114 (4), pp. 1321-58.

MacDonald, Glenn M. "A Market Equilibrium Theory of Job Assignment and Sequential Accumulation of Information," *American Economic Review*, December 1982, 72(5), pp. 1038-1055.

Matching Models

* Jovanovic, Boyan. "Job Matching and the Theory of Turnover." *Journal of Political Economy*, October 1979, 87(5), pp. 972-990.

* Jovanovic, Boyan. "Firm Specific Capital and Turnover." *Journal of Political Economy*, December 1979, 87(6), pp. 1246-1260.

Gittins, J.C. "Multi-Armed Bandit Allocation Indices." John Wiley and Sons (1989).

Miller, Robert. "Job Matching and Occupational Choice." *Journal of Political Economy*, December 1984, 92(6), pp. 1086-1120.

* Sargent, Thomas J. Dynamic Macroeconomic Theory. Cambridge, MA: Harvard University Press, 1987, pp. 71-83.

Insurance, Agency & Tournaments

* Harris, Milton and Bengt Holmstrom. "A Theory of Wage Dynamics." *Review of Economic Studies*, July 1982, 49, pp. 315-33 [JS]

Johnson, William. "A Theory of Job Shopping." *Quarterly Journal of Economics*, May 1978, 92(2), pp. 261-77.

Lazear, E and S. Rosen, "Rank-Order Tournaments as Optimum Labor Contracts." *Journal of Political Economy*, October 1981, 89(5), pp. 841-864. [JS]

Murphy, Kevin "Incentives, Learning and Compensation: A Theoretical and Empirical Investigation of Managerial Labor Contracts.," *Rand Journal of Economics*, Spring 1986, 17(1), pp. 59-76. [JS]

Prendergrast, Canice. "The Provision of Incentives in Firms," *Journal of Economic Literature*, March 1999, 37(1), pp. 7-63.

Empirical Work on Wage & Employment Dynamics

Abraham, K. and H. Farber. "Job Duration, Seniority, and Earnings," *American Economic Review*, June 1987, 77(3), pp. 278-297.

- * Altonji, J. and Pierret, C. "Employer Learning and Statistical Discrimination", *Quarterly Journal of Economics*, February 2001, 116(1), pp. 313-350.
- Baker, George, Michael Gibbs and Bengt Holmstrom. "The Internal Economics of the Firm." *Quarterly Journal of Economics*, November 1994, 109(4), pp. 881-919.
- Baker, George, Michael Gibbs and Bengt Holmstrom. "The Wage Policy of a Firm." *Quarterly Journal of Economics*, November 1994, 109(4), pp. 921-55.
- Nagypal, Eva, "Learning-by-Doing Versus Learning About Match Quality: Can We Tell Them Apart?" Northwestern University, *mimeo*.
- Neal, Derek. "Industry-Specific Human Capital: Evidence from Displaced Workers." *Journal of Labor Economics*, October 1995, 13(4), pp. 653-677.
- * Topel, Robert. "Specific Capital, Mobility, and Wages: Wages Rise with Job Seniority." *Journal of Political Economy*, February 1991, 99(1), pp. 145-176.

IV. The Supply Side of the Labor Market

1) The Quantity of Labor Supplied

i) The Basics and Review Articles

* Ben-Porath, Yoram (1973), "Labor Force Participation Rates and the Supply of Labor", *Journal of Political Economy* (May/June).

* Blundell, Richard and Thomas MaCurdy (1999) "Labor Supply: A Review of Alternative Approaches", in *Handbook of Labor Economics*, Volume 3A, eds O. Ashenfelter and D. Card, Amsterdam: Elsevier Science.

* Keane, Michael P. (2011), "Labor Supply and Taxes: A Survey," *Journal of Economic Literature*, 59:4, pp. 961-1075.

Killingsworth, Mark (1983), *Labor Supply*, (Cambridge: Cambridge University Press) Chapters 1 and 2.

ii) Static Labor Supply -- Theory and Estimation

Ashenfelter, Orley, Kirk Doran and Bruce Schaller (2010), "A Shred of Credible Evidence on the Long-Run Elasticity of Labor Supply," *Economica*.

* Heckman, James (1974), "Shadow Prices, Market Wages and Labor Supply", *Econometrica* (July).

* Heckman, James (1979), "Sample Selection Bias as a Specification Error With an Application to the Estimation of Labor Supply Functions", in James Smith (Ed.) *Female Labor Supply*, (Princeton: Princeton University Press).

Heim, Bradley T. (2007), "The Incredible Shrinking Elasticities: Married Female Labor Supply, 1978-2002," *Journal of Human Resources*, 42:4.

Moffitt, Robert (1984), "The Estimation of a Joint Wage-Hours Labor Supply Model", *Journal of Labor Economics*, (October).

Mroz, Thomas (1987), "The Sensitivity of an Empirical Model of Married Women's Hours of Work to Economic and Statistical Assumptions", *Econometrica*, (July).

iii) Dynamic Labor Supply -- Theory and Basic Estimation

a) Structural Models Not Using Natural Experiments

Altonji, Joseph (1986), "Intertemporal Substitution in Labor Supply: Evidence from Micro Data", *Journal of Political Economy*, (June), Supplement.

Eckstein, Zvi and Kenneth I. Wolpin (1989), "Dynamic Labour Force Participation of Married Women and Endogenous Work Experience", *Review of Economic Studies*, 56:3 (July), pp 375-390.

➤ Eckstein, Zvi and Osnat Lifshitz (2011), "Dynamic Female Labor Supply", *Econometrica*, 79:6 (November) pp. 1675-1726.

* Heckman, James (1974), "Life Cycle Consumption and Labor Supply: An Explanation of the Relationship between Income and Consumption Over the Life Cycle", *American Economic Review* (March).

Heckman, James and Thomas MaCurdy (1980), "A Life Cycle Model of Female Labor Supply", *Review of Economic Studies*, (January).

Imai, Susumu, and Michael P. Keane (2004) "Intertemporal Labor Supply and Human Capital Accumulation", *International Economic Review*, 45(2): 601-641.

Lucas. Robert E. and Leonard Rapping (1969), "Real Wages, Employment, and Inflation", *Journal of Political Economy*, (October).

* MaCurdy, Thomas (1981), "An Empirical Model of Labor Supply in a Life Cycle Setting", *Journal of Political Economy* (December).

b) Models Using Natural Experiments

Camerer C, Babcock L, Loewenstein G, et al., (1997), "Labor supply of New York City cabdrivers: One day at a time," *Quarterly Journal of Economics*, 112 (2): 407-441 May.

Connolly, Maria (2008), "Here Comes the Rain Again: Weather and the Intertemporal Substitution of Leisure," *Journal of Labor Economics*, 26 (1), January 73-100.

Carrington, William J., (1996) "The Alaskan Labor Market during the Pipeline Era," *The Journal of Political Economy*, Vol. 104, No. 1. (Feb.), pp. 186-218.

* Oettinger, Gerald S (1999), "An empirical analysis of the daily labor supply of stadium vendors," *Journal of Political Economy* 107 (2): 360-392 April.

Ziliak, James and Thomas Kneisner (1999), "Estimating Life Cycle Labor Supply Tax Effects," *Journal of Political Economy*, April, 326-59.

iv) Using Non-linear Budget Constraints Induced by Taxes and Subsidies to Estimate Labor Supply Responses

*Richard Blundell, Alan Duncan, and Costas Meghir (1998), "Estimating Labor Supply Responses Using Tax Reforms," *Econometrica*, July, 827-61.

* Imbens, Guido W., Donald B. Rubin and Bruce I. Sacerdote (2001), "Estimating The Effect Of Unearned Income On Labor Earnings, Savings, And Consumption: Evidence From A Survey Of Lottery Players," *American Economic Review*, 2001, v91(4,Sep), 778-794.

Eissa, Nada and Jeffrey Liebman (1996), "Labor supply response to the earned income tax credit" *Quarterly Journal of Economic*, May (111:2).

Moffitt, Robert (1986), "The Econometrics of Piecewise-Linear Budget Constraints," *Journal of Business and Economic Statistics*, 4:3, 317-328.

v) Pensions and Retirement

Coile, Courtney and Jonathan Gruber (2000), "Social Security and Retirement," NBER Working Paper No. 7830, August.

Samwick, Andrew (1998) "New Evidence on Pensions, Social Security, and the Timing of Retirement," *Journal of Public Economics*, November 1998, 207-36.

Gruber, Jonathan and Peter Orszag (2000), "Does the Social Security Earnings Test Affect Labor Supply and Benefits Receipt?" NBER Working Paper No. 7923, September.

vi) Health Insurance and Labor Supply

Madrian, Brigitte (1994), "Employment-Based Health Insurance and Job Mobility: Is There Evidence of Job Lock?" *Quarterly Journal of Economics*, February, 27-54.

[Gruber](#), Jonathan and [Madrian, Brigitte C](#) (1997) "Employment separation and health insurance coverage", *Journal of Public Economics*; December.

I will distribute notes on these topics to supplement what you may have studied in public economics. We may discuss briefly in class, but this will be optional reading.

2) The Quality of Labor Supplied: Human Capital and the Economics of Education

i) Human Capital Theory

Becker, Gary (1975), **Human Capital**, 2nd edition, Chicago: University of Chicago Press.

* Ben-Porath, Y, "The Production of Human Capital and the Life Cycle of Earnings," *Journal of Political Economy*, August 1967, pp. 352-65.

ii) Econometric Techniques For Estimating The Returns To Education

a) Standard Approach

b) Heckman Selectivity Correction

Mincer, Jacob (1974), *Schooling, Experience and Earnings*, New York: Columbia University Press for NBER.

* Griliches, Zvi (1977), "Estimating the Returns to Schooling: Some Econometric Problems", *Econometrica*, **45**, Jan. pp. 1-22.

* Heckman, James (1979), "Sample Selection Bias as a Specification Error", *Econometrica*, **47**, pp. 153-161.

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

c) IV Methods

* Angrist, Joshua D. and Alan B. Krueger (1991), "Does Compulsory School Attendance Affect Schooling and Earnings?", *Quarterly Journal of Economics*, **56**, #4, pp. 979-1014.

Angrist, Joshua D. and Alan B. Krueger (1991), "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**, #418, June, pp. 328-336.

Angrist, Joshua D. and Alan B. Krueger (1994), "Why do World War II Veterans Earn More than Nonveterans?", *Journal of Labor Economics*, **12**, #1, Jan., pp. 74-97.

* Ashenfelter, Orley and Alan Krueger (1994), "Estimates of the Economic Return to Schooling from a New Sample of Twins", *American Economic Review*, December.

* Bound, John, David A. Jaeger and Regina M. Baker (1995), "The Cure Can be Worse than the Disease: A Cautionary Tale Regarding Instrumental Variables", *Journal of the American Statistical Association*, June.

Card, David (1999), "The Causal Effect of Education on Earnings", in Orley Ashenfelter and David Card (eds.), *Handbook of Labor Economics Volume 3A*.

Card, David (1993), "Using Geographic Variation in College Proximity to Estimate the Return to Schooling", NBER Working Paper 4483. Published in 1995 in *Aspects of Labour Market Behaviour: Essays in Honour of John Vanderkamp, Louis Christofides et al. (eds.)*, Toronto: University of Toronto Press.

Kane, Thomas J. and Cecilia E. Rouse (1995), "Labor Market Returns to Two- and Four-Year College", *American Economic Review*, June.

Staiger, Douglas and James H. Stock (1997), "Instrumental variables regression with weak instruments", *Econometrica* v65, n3 (May 1997).

Harmon, Colm and Ian Walker (1995), "Estimates of the Economic Return to Schooling for the United Kingdom", *American Economic Review*:1278-1286.

d) Fixed Effect Methods

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.)

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

iii) Human Capital Versus Signaling

a) A Review of the Signaling Model

* Spence, Michael (1973), "Job Market Signalling", *Quarterly Journal of Economics*.

Stiglitz, Joseph (1975), "The Theory of Screening, Education, and the Distribution of Income", *American Economic Review*.

b) Empirical Evidence

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