

881 - Labor Economics II

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Office hours: by appointment

This is a graduate course in labor economics, which meets on Tuesdays and Thursdays, from 9:30 to 10:45 am in room 307, Gardner Hall.

Scope:

The course covers topics related to the specification and estimation of models of individuals' choices about education, occupation, labor supply, marriage and fertility. The course focuses on dynamic models and structural approaches to empirical research. The two key frameworks will be discrete choice dynamic models and labor search models. For each topic, we will discuss the theory, estimation and identification issues and policy relevant applications.

Course Requirements:

Students will be evaluated based on:

- a. A problem set in which students will be asked to implement the methods learned in class on a simple dynamic model of labor supply. The last part of the problem set will be an original extension/variation proposed and estimated by the student.
- b. A 45mn presentation of one of the key papers in the reading list

General references:

Two econometrics textbooks provide a general reference for empirical methods used in this course.

- (1) T. Amemiya, *Advanced Econometrics*, Harvard University Press, 1985.
- (2) W. Greene, *Econometric Analysis*, MacMillan Publishing Company, 1990.

Another good reference is

- (3) C. Manski and D. McFadden, *Structural Analysis of Discrete Data with Econometric Applications*, MIT Press, Cambridge, 1981
(Available for downloading at <http://emlab.berkeley.edu/users/mcfadden/discrete.html>)

References by topics:

1. Dynamic discrete choice models: an econometric framework

1. The latent variable framework in DDCM

[MAIN REFERENCE]

Keane, M.P., P.E. Todd and K. I. Wolpin, "The structural estimation of behavioral models: Discrete choice dynamic programming methods and applications" in *Handbook of Labor Economics*, 2011, Vol. 4a, 331-361

J. Heckman, "Sample Selection Bias as a Specification Error," *Econometrica*, 1979, 153-161.

Heckman, James, and Burton Singer. "A method for minimizing the impact of distributional assumptions in econometric models for duration data." *Econometrica: Journal of the Econometric Society* (1984): 271-320.

Dubin, Jeffrey A., and Daniel L. McFadden. "An econometric analysis of residential electric appliance holdings and consumption." *Econometrica: Journal of the Econometric Society* (1984): 345-362.

2. Application to female labor force participation

*Eckstein, Zvi, and Kenneth I. Wolpin. "Dynamic labour force participation of married women and endogenous work experience." *The Review of Economic Studies* 56.3 (1989): 375-390.

*Van der Klaauw, Wilbert. "Female labour supply and marital status decisions: A life-cycle model." *The Review of Economic Studies* 63.2 (1996): 199-235.

Francesconi, Marco. "A joint dynamic model of fertility and work of married women." *Journal of Labor Economics* 20.2 (2002): 336-380.

Keane, Michael P., and Kenneth I. Wolpin. "The role of labor and marriage markets, preference heterogeneity, and the welfare system in the life cycle decisions of Black, Hispanic, and White women" *International Economic Review* 51.3 (2010): 851-892.

3. Solution and estimation methods

[MAIN REFERENCE]

Aguirregabiria, Victor and Pedro Mira (2010). Dynamic Discrete Choice Structural Models:A Survey." *Journal of Econometrics*, 156(1): 38-67.

*Rust, John. "Optimal replacement of GMC bus engines: An empirical model of Harold Zurcher." *Econometrica* (1987): 999-1033.

Eckstein, Z., Wolpin, K.I., 1989a. "The specification and estimation of dynamic stochastic discrete choice models. *Journal of Human Resources* 24, 562-598

D. McFadden, "A Method of Simulated Moments for Estimation of Response Models without Numerical Integration," *Econometrica*, Vol. 57, 1989.

Rust, J., 1993. Structural estimation of markov decision models. In: Engle, R., McFadden, D. (Eds.), *Handbook of Econometrics*, vol. 4. North Holland, Amsterdam

*Hotz, V. Joseph, and Robert A. Miller. "Conditional choice probabilities and the estimation of dynamic models." *The Review of Economic Studies* 60.3 (1993): 497-529.

Rust, J., 1994. Numerical dynamic programming in economics. In: Amman, H.M., et al. (Eds.), *Handbook of Computational Economics*, North Holland, Amsterdam.

*Keane, Michael P., and Kenneth I. Wolpin. "The solution and estimation of discrete choice dynamic programming models by simulation and interpolation: Monte Carlo evidence." *The Review of Economics and Statistics* (1994): 648-672.

Rust, J., 1997. Using randomization to break the curse of dimensionality. *Econometrica* 65, 487-516

Gourieroux, Christian, and Alain Monfort. *Simulation-based econometric methods*. Oxford University Press, USA, 1997.

S. Stern, "Simulation-Based Estimation," *Journal of Economic Literature*, December 1997.

4. Identification results

[MAIN REFERENCE]

French, Eric, and Christopher Taber. "Identification of models of the labor market." *Handbook of Labor Economics* 4 (2011): 537-617

Taber, C., 2000. Semiparametric identification and heterogeneity in dynamic programming discrete choice models. *Journal of Econometrics*.

Ichimura, Hidehiko, and Christopher Taber. "Semiparametric reduced-form estimation of tuition subsidies." *American Economic Review* (2002): 286-292.

Magnac, Thierry, and David Thesmar. "Identifying dynamic discrete decision processes." *Econometrica* 70.2 (2003): 801-816.

Heckman, James J., and Salvador Navarro. "Dynamic discrete choice and dynamic treatment effects." *Journal of Econometrics* 136.2 (2007): 341-396.

Aguirregabiria, V., 2010. Another look at the identification of dynamic discrete decision processes: an application to retirement behavior. *Journal of Business and Economic Statistics* 28, 201–218.

II. Models of labor search

[SURVEYS]

Rogerson, R., Shimer, R. and Wright, R. (2005), "Search-theoretic models of the labor market: A survey", *Journal of Economic Literature*, Vol.43, pp.959-988.

Eckstein, Z., van den Berg, G. J., 2007 "Empirical labor search: A survey" *Journal of Econometrics* 136 (2007) 531-564

1. The Classical job search model:

R. Lucas, E. Prescott "Equilibrium search and unemployment" *Journal of Economic Theory*, 7 (1974), pp. 188–209

A. *Estimating stationary models*

C.J. Flinn, J.J. Heckman "New methods for analyzing structural models of labor force dynamics" *Journal of Econometrics*, 18 (1982), pp. 115–168

S. Stern "Estimating a simultaneous search model" *Journal of Labor Economics*, 7 (1989), pp. 348–369

D.M. Blau "Search for nonwage job characteristics: a test of the reservation wage hypothesis" *Journal of Labor Economics*, 9 (1991), pp. 186–205

B. *Estimating non-stationary models*

K.I. Wolpin "Estimating a structural job search model: the transition from school to work" *Econometrica*, 55 (1987), pp. 801–818

G.J. vandenBerg "Nonstationarity in job search theory" *Review of Economic Studies*, 57 (1990), pp. 255–277

Fougère, D., Pradel, J., Roger, M., 1998. Public employment offices and the transition rate from unemployment to employment. Working paper. CREST-INSEE, Paris.

2. On-the-job search:

K. Burdett "Employee search and quits" *American Economic Review*, 68 (1978), pp. 212–220

Empirical studies:

K.I. Wolpin "The determinants of black–white differences in early employment careers: search, layoffs, quits and endogenous wage growth" *Journal of Political Economy*, 100 (1992), pp. 535–560

C.J. Flinn "Labor market structures and inequality: a comparison of Italy and the US" *Review of Economic Studies*, 69 (2002), pp. 611–645

3. Search and matching:

P.A. Diamond, E. Maskin "An equilibrium analysis of search and breach of contracts, I: steady states" *Bell Journal of Economics*, 10 (1979), pp. 282–316

B. Jovanovic "Job-matching and the theory of turnover" *Journal of Political Economy*, 87 (1979), pp. 972–990

C.A. Pissarides "Equilibrium Unemployment Theory" Basil Blackwell, Oxford (1990)

D. Mortensen "The matching process as a noncooperative bargaining game" J.J. McCall (Ed.), *The Economics of Information and Uncertainty*, University of Chicago Press, Chicago (1982)

Empirical studies:

Z. Eckstein, K.I. Wolpin "Duration to first job and return to schooling: estimates from a search-matching model" *Review of Economic Studies*, 62 (1995), pp. 263–286

C.J. Flinn "Interpreting minimum wage effects on wage distributions: a cautionary tale" *Annales d'Économie et de Statistique*, 67/68 (2002), pp. 309–355

4. Wage posting models:

(T) K. Burdett, D.T. Mortensen "Wage differentials, employer size, and unemployment" *International Economic Review*, 39 (1998), pp. 257–273

Empirical studies:

Z. Eckstein, K.I. Wolpin "Estimating a market equilibrium search model from panel data on individuals" *Econometrica*, 58 (1990), pp. 783–808

G.J. van den Berg, G. Ridder "Estimating an equilibrium search model from wage data" H. Bunzel (Ed.) et al., *Panel Data and Labor Market Analysis*, North-Holland, Amsterdam (1993)

N.M. Kiefer, G.R. Neumann "Wage dispersion with homogeneity: the empirical equilibrium search model" H. Bunzel (Ed.) et al., *Panel Data and Labor Market Analysis*, North Holland, Amsterdam (1993)

G.J. vandenBerg, G. Ridder "An empirical equilibrium search model of the labor market" *Econometrica*, 66 (1998), pp. 1183–1221

C. Bontemps, J.M. Robin, G.J. van den Berg "An empirical equilibrium job search model with search on the job and heterogeneous workers and firms" *International Economic Review*, 40 (1999), pp. 1039–1074

Postel-Vinay and Robin (2002) "Equilibrium wage dispersion with worker and employer heterogeneity"

III. Dynamic models of Human Capital Accumulation

[EARLY REFERENCES]

G. Becker *Human Capital*, University of Chicago Press, 1975.

J. Mincer *Schooling, Experience and Earnings*, Columbia University Press, 1974.

Y. Ben-Porath, "The Production of Human Capital and the Life Cycle of Earnings" *Journal of Political Economy*, 75, 1967, 352-65.

Rosen, S., 1977. *Human capital: a survey of empirical research*. IN: Ehrenberg, R. (Ed.), *Research in Labor Economics*, vol. 1. JAI Press, Greenwich, CT.

R. Willis, "Wage Determinants: A Survey of Human Capital Earnings," in O. Ashenfelter and R. Layard, (eds.), *Handbook of Labor Economics*, vol. 1, North-Holland, 1986.

1. Occupational choice: Dynamic extensions of the Roy model

R. D. Roy, "Some Thoughts on the Distribution of Earnings," *Oxford Economics Papers*, 3(2), 1951.

Heckman, J., and G. Sedlacek, "Heterogeneity, Aggregation, and Market Wage Functions: An Empirical Model of Self-Selection in the Labor Market" *Journal of Political Economy* 1985

Heckman, J., and B. Honore, "Empirical Content of the Roy Model," *Econometrica*, Sept., 1990.

Gotz, G.A., McCall, J.J., 1984. A dynamic retention model for air force officers : theory and estimates. RAND, R-3028-AF

Miller, R.A., 1984. Job matching and occupational choice. *Journal of Political Economy* 92, 1086-1120

Keane, M. And Wolpin, K. 1997 "Career Decisions of Young Men" in *Journal of Political Economy*

Sullivan (2010) "A dynamic analysis of educational attainment, occupational choices, and job search" *International Economic Review*

Kennan and Walker (2011) "The Effect of Expected Income on Individual Migration Decisions" *Econometrica*

2. Dynamic Structural models of schooling choice

Willis, R. and Rosen, S. (1979). "Education and Self-Selection." *Journal of Political Economy*, 87(5): S7-S36.

Keane, M. And Wolpin, K. 1997 "Career Decisions of Young Men" in *Journal of Political Economy*

Keane, M.P., Wolpin, K.I., 2000 "Eliminating racial differences in schooling attainment and labor market success. *Journal of labor economics* 18 (4), 614-652

Keane, M.P., Wolpin, K.I., 2001. The effect of parental transfers and borrowing constraints on educational attainment. *International Economic Review* 42, 1051-1103

Belzil and Hansen (2002) "Unobserved ability and the return to schooling" *Econometrica*

Belzil and Hansen (2007) "A structural analysis of the correlated random coefficient wage regression" *Journal of Econometrics*

Heckman, James J., Lance J. Lochner, and Petra E. Todd. "Earnings functions, rates of return and treatment effects: The Mincer equation and beyond." *Handbook of the Economics of Education* 1 (2006): 307-458.

3. Dynamic Equilibrium models

J. Heckman, L. Lochner and C. Taber 1998, "Explaining Rising Wage Inequality with a Dynamic General Equilibrium Model with Heterogeneous Agents," in *Review of Economics and Dynamics* 1:1-58.

D. Lee, "An Estimable Dynamic General Equilibrium Model of Work, School and Occupational Choice," manuscript. (download from <http://homepages.nyu.edu/~dl64/labor36.pdf>)

Lee, D., Wolpin, K.I., 2006. "Intersectoral labor mobility and the growth of the service sector", *Econometrica* 74, 1-46

IV. Other applications:

1. Fertility

Becker, Gary and Lewis, H. Greg (1973): "On the Interaction between the Quantity and Quality of Children" *Journal of Political Economy*, 81, 4, Part 2, S143-62.

Wolpin, Kenneth (1984). "An Estimable Dynamic Stochastic Model of Fertility and Child Mortality." *Journal of Political Economy*. 92: 852-874.

Hotz, V. Joseph, and Robert Miller (1988). "An Empirical Analysis of Life Cycle Fertility and Female Labor Supply." *Econometrica*. 56: 91-118.

Heckman, James and James Walker (1990). "The Relationship Between Wages and Income and the Timing and Spacing of Births: Evidence from the Swedish Longitudinal Data." *Econometrica*. 58(6): 1411-1441.

P. Todd and K. Wolpin, "Using a Social Experiment to Validate a Dynamic Behavioral Model of Child Schooling and Fertility: Assessing the Impact of a School Subsidy Program in Mexico," manuscript (you can download this paper from web page <http://athena.sas.upenn.edu/~petra>)

2. Retirement and savings

MaCurdy, T.E., 1981. "An empirical model of labor supply in a life cycle setting" *Journal of Political Economy* 89, 1059-1085

MaCurdy, T.E., 1983. "A simple scheme for estimating an intertemporal model of labor supply and consumption in the presence of taxes and uncertainty" *International Economic Review* 24, 265-289

Gustman A.L., Steinmeier, T.L., (1986). "A structural retirement model." *Econometrica* 54, 555-584

Sotck, J. Wise, D.A., 1990 "Pensions, the option value of work and retirement" *Econometrica* 58, 1151-1180

Berkovec, James and Steven Stern (1991). "Job Exit Behavior of Older Men." *Econometrica*. 59(1): 189-210.

Rust and Phelan (1997) "How social security and medicare affect retirement behavior in a world of incomplete markets" *Econometrica*

French, E., 2005. "The effects of health, wealth, and wages on labour supply and retirement behaviour". *Review of Economic Studies* 72 , 395-427

Blau, D.M., Gilleskie, D.B., 2006 "Health insurance and retirement of married couples" *Journal of Applied Econometrics* 21, 935-953

Blau, D.M., Gilleskie, D.B., 2008. "The role of retiree health insurance in the employment behavior of older men." *IER* 49(2), 475-514

Van der Klaauw, W., Wolpin, K.I. 2008 " Social security and the retirement and savings behaviro of low-income households" *Journal of Econometrics* 145 21-42

French, E., Jones, J.B., 2011. "The effects of health insurance and self-insurance on retirement behavior." *Econometrica* Volume 79, Issue 3, pages 693–732, May 2011

V. Methodological questions: Natural experiments, reduced form and structural approaches to empirical economics

Marschak, Jacob. 1953. "Economic Measure-ments for Policy and Prediction." In *Studies in Econometric Method* (Cowles Commission for Research in Economics Monograph No. 14), ed. William C. Hood and Tjalling C. Koopmans, 1-26. New York: Wiley.

Keane Michael P., and Kenneth I. Wolpin. 2007. "Exploring the Usefulness of a Non-Random Holdout Sample for Model Validation: Welfare Effects on Female Behavior." *International Economic Review*, 8(4): 1351–78.

Angrist, Joshua D., and Jörn-Steffen Pischke. 2010. "The Credibility Revolution in Empirical Economics: How Better Research Design Is Taking the Con out of Econometrics." *Journal of Economic Perspectives*, 24(2): 3–30.

James J. Heckman. 2010. Building Bridges between Structural and Program Evaluation Approaches to Evaluating Policy. *Journal of Economic Literature* 48:2, 356-398.

Heckman, James, and Sergio Urzua (2010). "Comparing IV with Structural Models: What Simple IV

Can and Cannot Identify." *Journal of Econometrics*, Vol. 156, No. 1, pages 27-37.

Keane Michael P. (2010), "Structural vs. atheoretic approaches to econometrics." *Journal of Econometrics* 156 (2010) 3-20

Leamer, Edward E. 2010. "Tantalus on the Road to Asymptopia." *Journal of Economic Perspectives*, 24(2): 31–46.

Nevo, Aviv, and Michael D. Whinston. 2010. "Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference." *Journal of Economic Perspectives*, 24(2): 69–82.

Rosenzweig, M. and Wolpin, K. (2000): "Natural 'Natural Experiments' in Economics" in *Journal of Economic Literature*.

Wolpin, K., 2007. Model validation and model comparison ex ante policy evaluation, structural estimation, and model selection. *American Economic Review* 97, 48-52.

