

Introduction to Graduate Labor Economics, with an Emphasis on Life-Cycle Dynamics
Bavarian Graduate Program in Economics
September 17th to 22nd, 2017

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Time: We will have a welcome meeting on Sunday, September 17, 2017, at 19:00. The schedule on Monday to Thursday is as follows:

9:00-10:30	Lecture
10:30-11:00	Coffee Break
11:00-12:30	Lecture
12:30-14:00	Coffee Break
14:00-16:00	Lecture
16:00-16:30	Coffee Break
16:30-18:00	Practice
19:00	Dinner

The schedule on Friday will be identical, though we will stop at 16:00.

Course Description: This workshop is designed as a first course in Ph.D.-level Labor Economics, with an emphasis on modeling theoretically and empirically individual life-cycle labor market dynamics and using these models for policy evaluation. As such, it is clearly research oriented. The overall goal is to give a fairly broad overview of topics in labor economics and the different empirical methodologies used therein. This should also give you the tools to read up on literatures that we will not cover, such as the economics of immigration or the economics of minimum wages. We will go over some of the modern empirical methods in program evaluation, such as Regression Discontinuity and Field Experiments, but also more technical methodologies that involve the formulation, numerical implementation and structural estimation of dynamic models. Some background in Dynamic Programming is helpful but not necessary. I will post a non-technical refresher of Dynamic Programming a week before the course starts.

During practice sessions I will ask you to implement some of the methods empirically, using real-world data provided by me. As a consequence, you'll need to bring a laptop. Preferred software is Stata and Matlab.

Some General Thoughts about how to approach this Course: Most likely, you are currently in your second or third year of your graduate studies. You may be particularly interested in empirical questions and methodologies. It is now time to acquire skills and knowledge that will be helpful for your thesis. The first is a good overview of labor market theory. The last decade or so of labor market research was dominated by purely empirical work that was often not firmly grounded in theory. These times are likely over. Whether you use experimental- or quasi-experimental research designs or whether you estimate a structural model, a careful mapping from theory to estimation is having a big comeback. Oftentimes the reason is that a researcher wants to do welfare analysis or establish external validity, which requires "theoretical structure". The second is a good knowledge of existing data. One reason why theory took a step back in the last decade is the large increase in the use of high-quality, often administrative and proprietary data. Nowadays it becomes increasingly hard to write a high-impact paper with publicly available data like the US Census, the PSID or the GSOEP. The best approach to learning about data is reading papers. I have selected some papers on the list explicitly for discussion of administrative data. I thus encourage you to read each paper from front to back. It is simply not enough just reading introduction and conclusion. Third, make sure to know a broad set of empirical approaches. For this reason, the papers listed below draw from an extremely wide set of estimation approaches, from simple descriptive regressions to large-scale structural estimation and calibration.

Textbooks

The course is based on academic papers, many of which we will cover in lecture. I will provide lecture notes for some sections. There are also public-use lecture notes by Daron Acemoglu and David Autor that are quite nice:

- Acemoglu, D. and D. Autor: *Lectures in Labor Economics*. (available online for free)

There are no required textbooks. However, as a Ph.D.-student you may want to think about looking at the following books, all of which I think are worthwhile having:

- Adda, J. and R. Cooper (2003): *Dynamic Economics: Quantitative Methods and Applications*, MIT press.

This is a neat little book about the numerical implementation and estimation of dynamic economic models. It exclusively focusses on dynamic models, but it does not cover many of the topics we address.

- Train, K. (2009): *Discrete Choice Methods with Simulation*, 2nd edition, Cambridge University Press. This book can also be legally downloaded for free from the Authors' webpage:
<http://elsa.berkeley.edu/books/choice2.html>

Train's book is the gold standard in discrete choice methods. It is incredibly well written and easy to read, yet it covers some advanced topics. Though it does not cover Dynamic Discrete Choice models, it provides all the necessary basics for developing algorithms for the estimation of such models. It also contains one of the best chapters on simulation methods and simulation-based estimation.

- Cameron, A. and P. Trivedi (2005): *Microeconometrics: Methods and Applications*, Cambridge University Press.

This is my favorite book in applied micro-econometrics. It is almost 1000 pages long and covers pretty much all econometric methods you need to know as an applied econometrician, including advanced topics such as non-linear panel models, bootstrap, non-parametric econometrics, simulation based estimation, regression discontinuity, and clustering. Needless to say, every applied econometrician should own it.

- Cahuc, P. and A. Zylberberg (2004): *Labor Economics*, MIT Press.

The only book in Labor Economics on the graduate level. It covers an impressively extensive list of topics, but it does not go into much depth. I will not use it in this course.

- Judd, K. (1998): *Numerical Methods in Economics*, MIT Press.

A great and much undervalued book to learn numerical methods. Although written in 1998 it is still at the frontier of numerical methods used in economics. Judd covers many advanced topics that are hard to find in most of the books on basic numerical analysis. For a structural econometrician, it is a must have.

Review Papers

For comprehensive surveys of a specific field of research, sometimes quite narrowly defined, the "Handbooks" are always a good source. Obviously, for this course the *Handbook of Labor Economics* is the most relevant one. Some surveys should be read by any empirical researcher. Here is a small list:

- Angrist, J. and A. Krueger (1999). "Empirical strategies in labor economics," *Handbook of Labor Economics*,
- Angrist, J. and A. Krueger (2001). "Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments," *Journal of Economic Perspectives*, vol. 15(4), pp. 69-85.
- Lee, D. and T. Lemieux, (2010). "Regression Discontinuity Designs in Economics," *Journal of Economic Literature*, vol. 48(2), pp. 281-355.

There are much less review articles in the structural literature, but here is a list that is a good starting point:

- Aguirregabiria, V. and P. Mira (2010): "Dynamic Discrete Choice Structural Models: A Survey." *Journal of Econometrics*, pp.38-67.
- Keane, M., P. Todd and K. Wolpin (2011): "The Structural Estimation of Behavioral Models: Discrete Choice Dynamic Programming Methods and Applications," *Handbook of Labor Economics*.

- Eckstein, Z. and G. van den Berg (2007): "Empirical labor search: A survey," *Journal of Econometrics*, vol. 136(2), pp. 531-564.

I also encourage you to read the summary paper of the literature on intertemporal labor supply by Card:

- Card, D. (1994): "Intertemporal Labor Supply: An Assessment." In *Advances in Econometrics: Sixth World Congress of the Econometric Society Vol. II*, pp. 49–78.

The following is the syllabus for the course:

1. Section 1: Labor Supply

- Two Workhorse Models: Neoclassical and Roy
- Life-cycle Dynamics in the Neoclassical Model of Labor Supply: Theory and Evidence
 - MaCurdy, T. (1981): "An Empirical Model of Labor Supply in a Life-Cycle Setting." *Journal of Political Economy*, pp. 1059-1085.
 - Oettinger, G. (1999): "An Empirical Analysis of the Daily Labor Supply of Stadium Vendors." *Journal of Political Economy*, pp. 360-392.
 - Fehr, E. and L. Goette (2007): "Do Workers Work More if Wages are High? Evidence from a Randomized Field Experiment." *American Economic Review*, pp. 298-317.
- Earnings Processes and Life-Cycle Inequality
 - Hoffmann, F. (2016): "HIP, RIP and the Robustness of Empirical Earnings Processes." mimeo, University of British Columbia.

2. Section 2: (Dynamic) Discrete Choice and Applications to Occupational Choices

- Trends in the Occupational Wage and Employment Structure: Facts and Theory
 - Acemoglu, D. and D. Autor (2011): "Skills, Tasks and Technologies: Implications for Employment and Earnings." *Handbook of Labor Economics*, Chapter 12, Vol. 4b.
 - Autor, D. and D. Dorn (2013): "The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market," *American Economic Review*, 103(5): 1553–1597.
 - Caines, D., F. Hoffmann and G. Kambourov (2017): "Complex Occupations and Labor Market Polarization: An Empirical Investigation," *Review of Economic Dynamics*, 25, pp. 298-319.
- Life-Cycle Dynamics of Earnings and Occupational Choices
 - Keane, M. P., and K. I. Wolpin (1997): "The Career Decisions of Young Men", *Journal of Political Economy*, 105(3), pp. 473-522.
 - Hoffmann, F (2017): "An Empirical Model of Life-Cycle Earnings and Mobility Dynamics", mimeo, University of British Columbia.

3. Section 3: Human Capital Theory and the Economics of Education

- The Ben-Porath Model
 - Acemoglu-Autor Lecture Notes.
 - Polachek, S. W., T. Das and R. Thamma-Apiroam (2015): "Micro- and Macroeconomic Implications of Heterogeneity in the Production of Human Capital." *Journal of Political Economy*, vol. 123(6), pp. 1410-1455.
 - Huggett, M., G. Ventura and A. Yaron (2011): "Sources of Lifetime Inequality," *American Economic Review*, vol. 101(7), pp. 2923-2954.
- The Becker Model
 - Acemoglu-Autor Lecture Notes.

- Belzil, C. and J. Hansen (2002): "Unobserved Ability and the Return to Schooling." *Econometrica*, pp. 2075-2091.

(c) Returns to Education

- Card, D. (2001): "Estimating the Returns to Schooling: Progress on Some Persistent Econometric Problems," *Econometrica*, vol. 69(5), pp. 1127-1160.
- Oreopoulos (2006): "Estimating Average and Local Average Treatment Effects of Education when Compulsory Schooling Laws Really Matter." *American Economic Review*, pp.152-175.

(d) Credit Constraints

- Solis, A. (2016): "Credit Access and College Enrollment," *Journal of Political Economy*, forthcoming.

(e) New Approaches to Modeling the Technology of Skill Development

- Cunha, F., J. Heckman, L. Lochner and D. Masterov (2006): "Interpreting the Evidence on Life Cycle Skill Formation," *Handbook of Economics of Education*, Ch. 12.
- Oreopoulos, P., R. S. Brown and A. M. Lavecchia (2016): "Pathways to Education: An Integrated Approach to Helping At-Risk High School Students," *Journal of Political Economy*, forthcoming.

4. Section 4: Labor Market Search.

(a) Empirical Evidence of Frictional Labor Markets

- Oreopoulos, P., T. von Wachter and A. Heisz (2012): "The Short- and Long-Term Career Effects of Graduating in a Recession", *AEJ-Applied Economics*, vol. 4(1), pp. 1-29.

(b) Basic Concepts and some Econometrics

- Eckstein, Z. and G. van den Berg (2007): "Empirical labor search: A survey," *Journal of Econometrics*, vol. 136(2), pp. 531-564.

(c) Equilibrium Unemployment and Unemployment Insurance

- Acemoglu, D. and R. Shimer (1999): "Efficient Unemployment Insurance." *Journal of Political Economy*, pp. 893-928.
- Shimer, R. and I. Werning (2008): "Liquidity and Insurance for the Unemployed," *American Economic Review*, vol. 98(5).

(d) Explaining Negative Duration Dependence in Unemployment Duration

- Kroft, K., F. Lange and M. Notowidigdo (2013): "Duration Dependence and Labor Market Conditions: Evidence from a Field Experiment," *Quarterly Journal of Economics*, vol. 128(3), pp. 1123-1167.
- Doppelt, R. (2017): "The Hazards of Unemployment: A Macroeconomic Model of Job Search and Resume Dynamics," mimeo, Pennsylvania State University.

(e) Equilibrium Search Models with Endogenous Residual Earnings Inequality

- Burdett, K. and D. Mortensen (1998): "Wage Differentials, Employer Size, and Unemployment." *International Economic Review*, pp. 257-273.
- Hoffmann, F. and S. Shi (2017): "Empirical Directed Search with Unobserved Heterogeneity and Human Capital Accumulation," mimeo, University of British Columbia.

5. Section 5: Some Recent Policy Issues

(a) Disability Insurance

- Maestas, N., K. Mullen and A. Strand (2013): "Does Disability Insurance Receipt Discourage Work? Using Examiner Assignment to Estimate Causal Effects of SSDI Receipt," *American Economic Review*, 103(5), pp. 1797-1829.
- Autor, D., A. Kostal, M. Mogstad and B. Setzler (2017): "Disability Receipt, Consumption Insurance, and Family Labor Supply," mimeo, University of Chicago.

- Low, H. and L. Pistaferri (2015): "Disability Insurance and the Dynamics of the Incentive Insurance Trade-Off," *American Economic Review*, 105(10), pp. 2986-3029.

(b) Teacher Quality and Student Achievement.

- Hoffmann, F. and P. Oreopoulos (2009): "Professor Qualities and Student Achievement," *Review of Economics and Statistics*, 91 (1), pp. 83-92.
- Chetty, R., J. Friedman, and J. Rockoff (2014): "Measuring the Impacts of Teachers I: Evaluating Bias in Teacher Value-Added Estimates," *American Economic Review*, 104(9), pp. 2593-2632.
- Chetty, R., J. Friedman, and J. Rockoff (2014): "Measuring the Impacts of Teachers II: Teacher Value Added and Student Outcomes in Adulthood," *American Economic Review*, 104(9), pp. 2633-2679.
- Rothstein, J. (2017): "Measuring the Impact of Teachers: Comment." *American Economic Review*, 107(6), pp. 1656-1684.