January 2012

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Advanced Block I and II 2012

Dynamic Economics: Quantitative Methods and Applications

Course Overview

Goal

The purpose of this course is to take the tools you have learned in theory and econometrics and use them to study applied problems. Thus the course will rely on your understanding of optimization methods, equilibrium analysis, statistics and econometrics. We start from this core material and begin to explore how models are taken to data.

Requirements

You will be required to complete two projects over the two blocks. Each project will count equally in the determination of the final grade. The due dates for the projects are indicated in the course schedule. More details on the projects will be provided later. In addition, there will be homework exercises and some quizzes. The quizzes will be given a 10% weight in your final grade. Class participation in the form of reading material prior to class and doing the homework exercises will be given 10% weight in your final grade. The paper is worth 80%.

Course Information

Course information, including assignments, reading material etc. will be published on the course Moodle at http://192.168.36.196. The course is called AC: 2012. You will need to register for the course on the Moodle.

Reading List

The reading list is provided below. It may be updated and reposted on the Moodle page from time to time. Entries with a * will be the basis of class lecture

Meeting Schedule

Our official meeting times are:

Advanced Block I: March 1- April 4, Wednesday, Friday: 8:45-11
Advanced Block II: April 19- June 4, Tuesday, Wednesday: 8:45-11

Deviations from this schedule will be posted on the Moodle.

Outline and Readings

I. Tools: Dynamic Programming and Numerical Analysis

A. Basic Theory: **[Cooper: Week 1]**

- Jérôme Adda and Russell Cooper, Dynamic Economics: Quantitative Methods and Applications, MIT Press, 2003. [AC, Chpt. 2]
- Bertsekas, D. Dynamic Programming and Stochastic Control, New York: Academic Press, 1976.
- Judd, K " Review of Recursive Methods in Economic Dynamics," Journal of Economic Literature, 29 (1991), 69-77.
- Sargent, T. Dynamic Macroeconomic Theory, Cambridge, Mass.:Harvard University Press: 1987, chapter 1.
- Stokey, N. and R. Lucas, Recursive Methods in Economic Dynamics, Cambridge, Mass.: Harvard University Press, 1989, chapter 4.

B. Numerical Analysis **[Cooper: Week 1]**

- AC, Chpt. 3
- Value function iteration examples
  - non-stochastic growth model
  - stochastic discrete cake eating problem

C. Stochastic Growth Model **[Cooper: Week 1]**

- AC, Chpt. 5
- N. Kocherlakota, B.F. Ingram and N.E. Savin, "Explaining Business Cycles: A Multiple Shock Approach," *Journal of Monetary Economics*, 34, 1994, 415-28.
- Krusell, P. and A. Smith, "Income and Wealth Heterogeneity in the Macroeconomy," *Journal of Political Economy*, 106, 1998, 867-896.
- Smith, A. "Estimating Nonlinear Time-Series Models using Simulated Vector Autoregressions," *Journal of Applied Econometrics*, 8 (1993), S63-84.

D. Econometrics: [Adda, Week 2]

- **AC, Chpt. 4**

II. Household Behavior

A. Non-durable Consumption **[Cooper, Week 3/4]**

- AC, Chpt. 6
- * Alan, Sule, "Entry Costs and Stock Market Participation over the Life Cycle," *Review of Economic Dynamics*, 9)2006), 588-611.

- Bonaparte, Y. and R. Cooper, "Costly Portfolio Adjustment" NBER Working Paper #15277, July 2009.
- Browning, M., François Bourguignon; Pierre-André Chiappori; Valérie Lechene, "Income and Outcomes: A Structural Model of Intrahousehold Allocation, " *The Journal of Political Economy*, Vol. 102, No. 6. (Dec., 1994), pp. 1067-1096.

- Carroll, C. "Death to the Log-Linearized Consumption Euler Equation," NBER Working Paper #6298, 1997.
- Chiaporri ,"Introducing Household Production in Collective Models of Labor Supply," *Journal of Political Economy*, 105 (1997), 191-209.
- Deaton, A. "Savings and Liquidity Constraints," *Econometrica*, 59 (1991), 1121-42.
- Eichenbaum, M., Hansen, L. and K. Singleton, " A Time Series Analysis of Representative Agent Models of Consumption and Leisure Choice under Uncertainty," *Quarterly Journal of Economics*, 103 (1988), 51-78.
- Gourinchas, P. and J. Parker, "Consumption over the Life Cycle", *Econometrica*, 70 (2002), 47-89.
- ∗ Hall, R. "Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence," *Journal of Political Economy*, 86 (1978), 971-87.
- ∗ Hansen, L. and K. Singleton, "Generalized Instrumental Variables Estimation of Nonlinear Rational Expectations Models," *Econometrica*, 50 (1982), 1269-86.
- Zeldes, S. "Consumption and Liquidity Constraints: An Empirical Investigation," *Journal of Political Economy*, 97 (1989), 305-46.

B. Durable Goods **[Cooper, Week 3/4]**

- ∗ AC, Chpt. 7
- ∗ Adda, J. and R. Cooper, "Balladurette and Juppette: A Discrete Approach," *Journal of Political Economy*, August, 2000.
- Adda, J. and R. Cooper. "The Dynamics of Car Sales: A Discrete Choice Approach," NBER Working Paper #7785, July 2000. (http://papers.nber.org/papers/W7785)
- Caballero, R. "Durable Goods: An Explanation for Their Slow Adjustment," *Journal of Political Economy*, 101 (1993), 351-84.
- Eberly, J. "Adjustment of Consumers' Durables Stocks: Evidence from Automobile Purchases" Journal of Political Economy, 102 (1994), 403-36.
- ∗ Mankiw, N.G. "Hall's Consumption Hypothesis and Durable Goods," Journal of Monetary Economics, 10 (1982), 417-25.

C. Labor Supply and Health **[Adda, Week 5]**

1. Labor Supply

- Adda et al (2009) "Career Progression and Formal versus On-the-Job Training", mimeo UCL.
- Eckstein and Wolpin (1989), "Dynamic Labor Force Participation of Married Women and Endogenous Work Experience" Review of Economic Studies, 56, 375-390.
- Keane and Wolpin (1997) "The Career Decisions of Young Men" Journal of Political Economy, 105, 3,473—522.
- ∗ Killingsworth, M. Labor Supply, Chapter 4.
- McCurdy, T. "An Empirical Model of Labor Supply in a Life-Cycle Setting," Journal of

Political Economy, 89 (1981), 1059-85.

2. Health and Longevity

- ∗ Cutler, Deaton and Lleras-Muney (2006) "The Determinant of Mortality", *Journal of Economic Perspective*.
- Fogel, Robert W. (1994). "Economic Growth, Population Theory, and Physiology: The Bearing of Long-Term Processes on the Making of Economic Policy". *American Economic Review*. June, 84:3, pp. 369-95.
- Preston, Samuel H. 1975. The Changing Relation Between Mortality and Level of Economic Development. *Population Studies*. July, 29:2, pp. 231-48.
- ∗ Murphy and Topel (2006), "The Value of Health and Longevity", *Journal of Political Economy*, 114:5, 871-904.

3. Demand for Health

- Adda and Cornaglia (2006) "Taxes, Cigarette Consumption and Smoking Intensity" *American Economic Review*.
- Almond (2006)"Is the 1918Influenza Pandemic Over? Long-Term Effects of *In Utero* Influenza Exposure in the Post-1940 U.S. Population." *JPE*.
- ∗ Becker and Murphy (1988) "Rational Addiction", Journal of Political Economy.
- Case, Lubotsky and Paxson(2002)"Economic status and health in childhood: the origins of the gradient", *American Economic Review*.
- Chaloupka (1991),"Rational Addictive Behavior and Cigarette Smoking", *Journal of Political Economy*.
- French (2005) "The Effects of Health, Wealth, and Wages on Labour Supply and Retirement Behavior", ReStud.
- Grossman (1972) "On the Concept of Health Capital and the Demand for Health", *Journal of Political Economy*.
- Gruber and Koszegi (2005) "Is Addiction Rational? Theory and Evidence", QJE.
- Lechner and Vazquez-Alvarez (2003) "The Effect of Disability on Labour Market Outcomes in Germany". IZA DP 967.
- Lleras-Muney (2005) The Relationship Between Education and Adult Mortality in the United States. *REStud*

Project I: Due April 16

III. Firm Behavior

A. Production Functions [Adda, Week 6]

Ackerberg, D.A., K. Caves, and G. Frazer (2006): "Structural Identification of Production Functions." Mimeo, UCLA.

Benkard, L. (2000), "Learning and Forgetting: The Dynamics of Aircraft Production," *American Economic Review*, 90(4), pp. 1034-1054.

Doraszelski, U., and J. Jaumandreu (2008), "R&D and Productivity: Estimating Production Functions when Productivity is Endogenous," CEPR Discussion Paper No. 6636.

* Olley, S., and A. Pakes (1996), "The Dynamics of Productivity in the Telecommunications Equipment Industry," *Econometrica*, 64, 1263-97.

Levinsohn, J. and A. Petrin (2003): "Estimating Production Functions Using Inputs to Control for Unobservables," *Review of Economic Studies*, 70 pp. 317-342.

Van Biesebroeck, J. (2003): "Productivity Dynamics with Technology Choice: An Application to Automobile Assembly," *Review of Economic Studies*, 70, pp. 167-198.

Wolak, F. (1996), "Estimating Regulated Firm Production Functions with Private Information: An Application to California Water Utilities," *Annales d'Economie et de Statistique*, 34, pp. 13-69.

B. Dynamic Factor Demand

1. Capital **[Cooper, Week 7]**

- AC, Chpt. 8
- Abel, A. and J. Eberly, "A Unified Model of Investment Under Uncertainty," *American Economic Review*, 94 (1994), 1369-84.
- Bloom, N. "The Impact of Uncertainty Shocks," *Econometrica*, 2009.

- Caballero, R. and E. Engel, "Explaining Investment Dynamics in U.S. Manufacturing: A Generalized (S,s) Approach", *Econometrica*, 67 (1999), 783-826.Bloom, N. ""Eca.
- Caballero, R., E. Engel and J. Haltiwanger, "Plant Level Adjustment and Aggregate Investment Dynamics," *Brookings Papers on Economic Activity*, 2 (1995b), 1-39.

- Cooper, R. and J. Ejarque, "Exhuming Q: Market Power vs. Capital Market Imperfections," NBER Working Paper #8182, March 2001. (http://papers.nber.org/papers/W8182)
- Cooper, R. and J. Ejarque, "Financial Frictions and Investment: A Requiem in Q," *Review of Economic Dynamics*, 6 (2003), 710-28.
* Cooper, R. and J. Haltiwanger, "On the Nature of Capital Adjustment Costs," *Review of Economic Studies*, 73 (2006), 611-33.
- Cooper, R., J. Haltiwanger and L. Power, "Machine Replacement and the Business Cycle: Lumps and Bumps", *American Economic Review*, 89 (1999), 921-946.
* Cooper, R., J. Haltiwanger and J. Willis, "Euler Equation Estimation for Discrete-Choice Models: A Capital Accumulation Application" November 2005.
· Thomas, J. "Is Lumpy Investment Relevant for the Business Cycle?", Federal Reserve Bank of Minneapolis, Staff Report \#302, March 2002. (http://minneapolisfed.org/research/sr/sr302.pdf) . Published in *Journal of Political Economy* 110, no. 3 (2002): 508-534.

2. Labor **[Cooper, Week 7]**

* AC, Chpt. 9
- Caballero, R. and E. Engel, "Microeconomic Adjustment Hazards and Aggregate Dynamics", Quarterly Journal of Economics, 108 (1993), 313-58.

- Caballero, R., E. Engel and J. Haltiwanger, "Aggregate Employment Dynamics: Building from Microeconomic Evidence", American Economic Review, 87 (1997), 115-137.
- Cooper, R. and J. Willis, "The Dynamics of Labor Adjustment: Minding the Gap," Federal Reserve Bank of Minneapolis, Staff Report #310, September 2002. (http://minneapolisfed.org/research/sr/sr310.pdf)., AER, ...

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