Firm Dynamics: Quantitative Methods and Applications

Overview

This course will apply on estimators building on the Simulated Methods of Moments (SMM) and Generalized Method of Moments (GMM) approaches to study firm dynamics. The lectures are comprised of leading applications of these tools and will be based upon the references indicated by * below.¹

The course is built around the book by Adda and Cooper. The lectures will be applications based, drawing on dynamic optimization problems, applying these techniques to household dynamics.

Readings

Some Useful Books

- Jérôme Adda and Russell Cooper, "Dynamic Economics: Quantitative Methods and Applications", *MIT Press*, 2003. (AC)
- Canova, Fabio. "Methods for applied macroeconomic research". *Princeton university press*, 2011.
- Wooldridge, J. "Econometric Analysis of Cross Section and Panel Data ", *MIT Press*, 2010. (E)
- Gourieroux, C. and A. Monfort, et al. Simulation-based econometric methods. *Oxford university press*, 1996. (E)
- Hamilton, James D. "Time series econometrics." *Princeton U. Press, Princeton* (1994). (E)
- Miao, Jianjun, "Economic Dynamics in Discrete Time," MIT Press, 2014.
- Stokey, Nancy L., and R. E. Lucas, with E. C. Prescott. "Recursive methods in dynamic economics." *Cambridge, MA: Harvard University* (1989).

¹ Entries with an (E) are more econometrically intensive.

Course Outline (by lecture)

1. Overview of Approach (1 lecture)

- Topics
 - Asset Pricing
 - Cake Eating: Discrete
 - Cake Eating: Continuous
- Read
 - * Jérôme Adda and Russell Cooper, Dynamic Economics: Quantitative Methods and Applications, MIT Press, 2003. (AC), Chpt. 2-4
 - * Cooper, R., "An Overview of Applied Dynamic Programming", March 2023

2. Firm Capital Demand (1.5 lecture)

- * 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.
- * Bloom, Nicholas, Max Floetotto, Nir Jaimovich, Itay Saporta-Eksten, and Stephen J. Terry. "Really uncertain business cycles." *Econometrica* 86, no. 3 (2018): 1031-1065.
- Caballero, R. and E. Engel, "Explaining Investment Dynamics in U.S. Manufacturing: A Generalized (S,s) Approach", *Econometrica*, 67 (1999), 783-826.
- 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, "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.
- Rust, John. "Optimal replacement of GMC bus engines: An empirical model of Harold Zurcher." *Econometrica: Journal of the Econometric Society* (1987): 999-1033.
- * Thomas, J. "Is Lumpy Investment Relevant for the Business Cycle?" *Journal of Political Economy* 110, no. 3 (2002): 508-534.

3. Firm Labor Demand (1.5 lecture)

- Cooper, Russell, Guan Gong, and Ping Yan. "Dynamic labor demand in China: public and private objectives." *The RAND Journal of Economics* 46.3 (2015): 577-610.
- Cooper, Russell, Guan Gong, and Ping Yan. "Costly labor adjustment: general equilibrium effects of China's employment regulations and financial reforms." *The Economic Journal* (2017).
- Hopenhayn, Hugo, and Richard Rogerson. "Job turnover and policy evaluation: A general equilibrium analysis." *Journal of political Economy* 101.5 (1993): 915-938.

4. Labor Search (1 lecture)

- *Cooper, R. and J. Haltiwanger and J. Willis, "Search frictions: Matching aggregate and establishment observations" *Journal of Monetary Economics* (2007), 56-78.
- Eckstein, Zvi, and Kenneth I. Wolpin. "The specification and estimation of dynamic stochastic discrete choice models: A survey." *The Journal of Human Resources* 24, no. 4 (1989): 562-598.
- Eckstein, Zvi, and Kenneth I. Wolpin. "Duration to first job and the return to schooling: Estimates from a search-matching model." *The Review of Economic Studies* 62, no. 2 (1995): 263-286.
- Menzio, Guido, and Shouyong Shi. "Directed search on the job, heterogeneity, and aggregate fluctuations." *The American Economic Review* (2010): 327-332.
- Postel–Vinay, Fabien, and Jean–Marc Robin. "Equilibrium wage dispersion with worker and employer heterogeneity." *Econometrica* 70, no. 6 (2002): 2295-2350.
- Shimer, R. "The Cyclical Behavior of Equilibrium Unemployment and Vacancies" *The American Economic Review* (2005): 25-49.
- *Wolpin, K. "Estimating a structural search model: the transition from school to work." *Econometrica (1987)*, 801-817.