

Topics in Markets and Institutions B **“Dynamic Models in Empirical IO” (Summer 2017)**

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Office Hour by appointment
Meetings 18.04.2017 (2 pm – 4 pm) Kick-off meeting
02.05 – 03.05.2017 (10 am – 6 pm)
22.05 – 24.05.2017 (10 am – 6 pm)
10.07 – 12.07.2017 (10 am – 6 pm)
Room 4210 SSC

Course requirements

Each student is required to submit and present a research proposal by the end of the semester.

(Topics and literature listed below are tentative and non-exhaustive)

I/ Overview

Aguirregabiria, Victor and Pedro Mira, “Dynamic Discrete Choice Structural Models: A Survey”, Journal of Econometrics, 2010, pp. 38 – 67.

Doraszelski, Ulrich and Ariel Pakes, “A Framework for Applied Dynamic Analysis in IO”, Handbook of Industrial Organization, Vol 3, Chapter 30, 2007.

Stokey Nancy, Robert Lucas and Edward Prescott, “Recursive Methods in Economic Dynamics”, Harvard University Press, 1989.

II/ Introduction

In this section students are introduced to the basic of Matlab, gain practical experience in using computational tools to solve economic models numerically and program econometric methods. Topics to be covered include for instance solving nonlinear equations, numerical integration, dynamic programming.

Applied Computational Economics and Finance by Mario J. Miranda and Paul L. Fackler, MIT Press, 2002.

Bertsekas Dimitri, “Dynamic Programming and Optimal Control”, Athena Scientific, Vol.1, 2, 2012.

Numerical Methods in Economics by Kenneth L. Judd, MIT Press, 1998.

III/ Single Agent Decisions

This section focuses on the model set up and estimation of dynamic discrete choice models in the single agent framework. These models allow for firms to act independently and do not consider strategic interaction across firms. Goal is to model and estimate agent's 0/1 decision which can be applied to a wide ranges of economic questions such as discrete investment decisions, entry and exit decisions. The agents are forward-looking and the decisions are made when future states (firm characteristics/market conditions) are uncertain.

Rust, John, "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher", *Econometrica*, September 1987, pp. 999 -1033.

Pakes, Ariel, "Patents as Option: Some Estimates of the Value of Holding European Patent Stocks", *Econometrica*, July 1986, pp. 755 – 784.

Hotz, Joseph and Robert A. Miller, "Conditional Choice Probabilities and the Estimation of Dynamic Models", *Review of Economic Studies*, July 1993, pp. 497 – 529.

Aw, Bee Yan, Mark J. Roberts and Daniel Yi Xu, "R&D Investment, Exports and Productivity Dynamics", *American Economic Review*, June 2011, pp. 1312 – 1344.

Peters, Bettina, Mark J. Roberts, Van Anh Vuong and Helmut Fryges, "Estimating Dynamic R&D Choice: An Analysis of Costs and Long-Run Benefits", *RAND Journal of Economics* (forthcoming).

IV/ Dynamic Games

In this section we focus on dynamic oligopoly models explaining different industry dynamics. Each agent's payoff depends on its rivals' actions in a dynamic framework. The agents' decisions are estimated and the long-run market structure is treated as endogenous.

Pakes, Ariel and Richard Ericson, "Markov Perfect Industry Dynamics: A Framework for Empirical Work", *Review of Economic Studies*, January 1995, pp. 53 - 82.

Bajari, Patrick, C. Lanier Benkard, Jonathan Levin, "Estimating Dynamic Models of Imperfect Competition", *Econometrica*, 2007, pp. 1331 - 1370.

Pakes, Ariel, Michael Ostrovsky, and Steve Berry, "Simple Estimators for Parameters of Discrete Dynamic Games (with Entry/Exit Examples)", *RAND Journal of Economics*, Summer 2007, pp. 373 - 399.

Pesendorfer, Martin and Philipp Schmidt-Dengler, "Asymptotic Least Squares Estimators for Dynamic Games", *Review of Economic Studies*, July 2008, pp. 901 – 928.

Ryan, Stephen, "The Cost of Environmental Regulation in a Concentrated Industry", *Econometrica*, 2012, pp. 1019 - 1061.

