14.273 Advanced Topics in Industrial Organization

Spring 2008
Lecture: Tuesday 12:00n-2:30p E52-232
Recitation: Friday TBA

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This course provides a graduate-level introduction to empirical industrial organization, both in terms of techniques and applications. Our aim is to provide the tools necessary to write a solid dissertation in empirical industrial organization, and our hope is that the techniques in this class will be useful to students from other fields as well.

The course has some difficult econometrics, and it is expected that students have a basic comfort level with estimation. It is also expected that students will do requisite background reading in econometric theory where necessary.

There is no textbook for this class. We will be using a combination of lecture notes and journal articles. The required articles are listed below in each section. It is expected that the students will have read the required readings before attending class. Most of the material in this class has a high learning curve, and you are doing yourself a favor by being prepared ahead of time. All of the articles below are easily accessible from the web.

The course will be graded on the basis of empirical exercises and class presentations. The empirical exercises will require you to apply the techniques described in class. Programming skills in Matlab and Stata are going to be extremely helpful in completing them. We encourage group work on these exercises. In addition, each student will be asked to lead a 45 minute presentation and discussion of an assigned paper at one of the class meetings.

The course website is located at:
http://stellar.mit.edu/S/course/14/sp07/14.273/index.html.
The teaching assistant is Dan Cao (dancao@mit.edu).

1 Demand (Sara): Feb 5, 12, 26

Required Readings

- Deaton, A., and Muellbauer, J. (1980a), "An Almost Ideal Demand System," *American Economic Review*, 70, 312-336.
- Sara Fisher Ellison, Iain Cockburn, Zvi Griliches, and Jerry Hausman, "Characteristics of Demand for Pharmaceutical Products: An Exploration of Four Cephalosporins," RAND Journal of Economics, 28(3), 426-446, 1997.
- Shubham Chaudhuri, Penny Goldberg, and Panle Jia, "Estimating the Effects of Global Patent Protection in Pharmaceuticals: A Case Study of Quinolones in India", AER, 2006.
- Glenn Ellison and Sara Fisher Ellison, "Internet Retail Demand: Taxes, Geography, and Online-Offline Competition," MIT mimeo.
- Penny Goldberg, "Product Differentiation and Oligopoly in International Markets: The Case of the U.S. Automobile Industry," Econometrica, Jul. 1995, pp. 891-951.
- S. Berry, "Estimating Discrete-Choice Models of Product Differentiation," *RAND Journal of Economics*, 25 (2) (Summer 1994), pp. 242-262.
- S. Berry, J. Levinsohn, and A. Pakes, "Automobile Prices in Market Equilibrium," *Econometrica*, 63 (July 1995), pp. 841-890.
- S Berry, J Levinsohn, A Pakes, (2004), "Differentiated Products Demand Systems from a Combination of Micro and Macro Data: The New Car Market," *Journal of Political Economy*, 112, 1, p. 68.

2 Auctions (Sara and David): March 4, 7, 11

Required Readings

- S. Athey and P. Haile, "Empirical Models of Auctions," Yale University working paper.
- E. Guerre, I. Perrigne and Q. Vuong, "Optimal Nonparametric Estimation of First-Price Auctions," *Econometrica* 68(3), pp. 525-574.
- P. Haile and E. Tamer, "Inference with an Incomplete Model of English Auctions," *Journal of Political Economy*, 2003, p. 1–51
- E. Cantillon and M. Pesendorfeer, "Combination Bidding in Multi-Unit Auctions," mimeo.
- D. McAdams, "Partial Identification and Testable Restrictions in Multiunit Auctions," mimeo.

Papers for Student Presentations

- J. Kastl, "Discrete Bids and Empirical Inference in Divisible Good Auctions," Stanford University working paper.
- A. Hortacsu and D. McAdams, "Mechanism Choice and Strategic Bidding in Divisible Good Auctions: An Empirical Analysis of the Turkish Treasury Auction Market," mimeo.
- Hu and Shum, "Estimating First-Price Auction Models with Unknown Number of Bidders: A Misclassification Approach," mimeo.
- E. Krasnokutskaya, "Identification and Estimation in Highway Procurement Auctions under Unobserved Auction Heterogeneity," mimeo.

3 Entry (Sara): March 18, April 1

Required Readings

- T. Bresnahan and P. Reiss, "Entry and Competition in Concentrated Markets," *Journal of Political Economy,* 95(5), 1991, pp. 977-1009.
- T. Bresnahan and P. Reiss "Econometric Models of Discrete Games," *Journal of Econometrics*, 48 (1991) 57-81.
- E. Tamer "Incomplete Simultaneous Discrete Response Model with Multiple Equilibria," *Review of Economic Studies*, Vol 70, No 1, 2003, pp. 147-167.
- A. Sweeting, "Coordination Games, Multiple Equilibria, and the Timing of Radio Commercials," mimeo.

Papers for Student Presentations

- P. Jia (2006) "What Happens When Wal-Mart Comes to Town: An Empirical Analysis of the Discount Retail Industry," MIT working paper.
- K. Seim (2006), "An Empirical Model of Firm Entry with Endogenous Product-Type Choices," *The RAND Journal of Economics.*
- M. Mazzeo (2002), "Product Choice and Oligopoly Market Structure," *The RAND Journal of Economics.*

4 Production (Panle): April 8, 15

Required Readings

- S. Olley and A. Pakes, "The Dynamics of Productivity in the Telecommunications Equipment Industry," *Econometrica* 64:1263-98.

- A. Petrin and J. Levinsohn, "Estimating Production Functions Using Inputs to Control for Unobservables," *Review of Economic Studies*, Vol. 70(2), No. 243 (April), pp. 317-342, 2003.
- D. Ackerberg, K. Caves, G. Frazer, "Structural Estimation of Production Functions", UCLA working paper
- U. Doraszelski and J. Jaumandreu, "R&D and Productivity: The Knowledge Capital Model Revisited," Harvard University working paper.

Methodological Readings

- Semiparametric: polynomial, B-splines, and sieve estimation
- IV references

5 Dynamics (Panle): April 29, May 6, 13

Required Readings

- R. Ericson and A. Pakes (1995), "Markov Perfect Industry Dynamics: A Framework for Empirical Work" pp 53-82, *Review of Economic Studies*, Vol.62.
- A. Pakes and P. McGuire (1994), "Computing Markov Perfect Nash Equilibrium: Numerical Implications of a Dynamic Differentiated Product Model," *RAND Journal of Economics*,pp. 555-589.
- P. Bajari, L. Benkard, and J. Levin (2007), "Estimating Dynamic Models of Imperfect Competition," forthcoming Econometrica.
- V. Aguirregabiria and P. Mira (2007), "Sequential Estimation of Dynamic Discrete Games," forthcoming Econometrica
- M. Pesendorfer and Philipp Schmidt-Dengler (2007), "Asymptotic Least Squares Estimators for Dynamic Games," LSE working paper.
- A. Pakes, M. Ostrovsky, and S. Berry (2004), "Simple Estimators for the Parameters of Discrete Dynamic Games," NBER Working Paper #10506.

Methodological Readings

- V. Chernozhukov and H. Hong, "An MCMC Approach to Classical Estimation," 2003, *J. Econometrics*, 115(2), pp. 293-346.

Additional References

- S. Ryan and C. Tucker (2006), "Diversification and the Dynamics of Technology Adoption," MIT working paper.
- S. Ryan (2006), "The Costs of Environmental Regulation in a Concentrated Industry," MIT working paper.
- C. Fershtman and A. Pakes (2000), "A Dynamic Oligopoly with Collusion and Price Wars," *RAND Journal of Economics*, Vol. 31(2), pages 207-236, Summer.
- A. Gavazza, "Leasing and Secondary Markets: Theory and Evidence from Commercial Aircraft," Yale SOM working paper.
- I. Hendel and A. Nevo, "Measuring the Implications of Sales and Consumer Inventory Behavior," forthcoming *Econometrica*.