

Economics 890-2
Empirical Industrial Organization and Applied Microeconomics
Spring 2014

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Class location & time: We meet at 10:30 am on Mondays and Wednesdays in Gardner 307

Office Hours: Tuesdays 9:00-11:00 and by appointment in Gardner 300A

Course goals

This course has three goals. Our main objective is to improve your ability to do research in applied microeconomics, broadly defined. To satisfy this objective, we will review the parts of the empirical industrial organization (IO) literature that are most likely to be beneficial for research outside of IO. With respect to this objective, two considerations guide the selection of course material. First, what techniques from IO are most useful for doing research in empirical microeconomics? Second, what results from IO are most useful for microeconomists who conduct research outside of IO?

A secondary objective is to provide an empirical follow-up to UNC's IO theory course. This is useful for students who will write a dissertation in empirical IO, and also for students continuing on UNC's theory track. In both cases, it is valuable to see how researchers have empirically evaluated various theories of inter- and intra-firm behavior.

The final objective is to show you some very successful dissertation papers in empirical IO. Successful dissertations across applied microeconomics will have much in common in terms of question selection, data construction, and methodology.

Our approach

We will read a selection of papers from the empirical IO literature. The emphasis will be on recent papers so that you can see the latest methods applied.

For each paper we read, you will need to evaluate:

- How is the empirical exercise motivated by theory or policy relevance?
- What is the relationship between the relevant theory and the empirical exercise?
- What about the data and modeling assumptions do you believe and/or not believe?
- Do the empirical results achieve author's objective?
- How could this paper be extended to provide additional useful results? If the present data and model are insufficient, what is needed?

We will develop your ability to answer these questions through a series of in-class activities, homework assignments, and a final paper.

Graded work

Your grade will come from four distinct activities.

1. Class participation (25%). Our class meetings will involve balanced discussion among all of us. You need to contribute constructively and frequently to classroom discussion for your own grade and to help move the class along.
2. Paper presentations (25%). Each student will do one in-class presentation of research articles during the semester. Each presentation will last about 45 minutes and provide a discussion of some central points in an article. Once the presentation schedule and articles are set, I will assign the portions of each paper that a student will discuss. For example, a student may be asked to present the data and econometric model of a particular paper, but not the paper's introduction, theory section, or results.
3. Homework assignments (25%). There will be 4 or 5 data-oriented homework assignments. You will need Stata for some of the assignments, and an advanced programming language such as Matlab or Fortran for others.
4. Final paper (25%). On Monday May 5 you will turn in a brief paper (~8 pages) that motivates and describes a novel empirical research idea that is part of industrial organization, broadly defined. Think of this paper as a condensed version of the material found in the first half of a traditional research article. You do not need to collect the data necessary to "complete" the article, but you must show that the data could be collected or created in a reasonable amount of time or with finite financial resources. During the last week of class you will give a brief presentation on your paper topic and progress.

Sakai

I will use Sakai to distribute notes, readings, homework assignments, etc. Please verify that you can log on to Sakai and access the information for this class. All grades for the course will be stored and displayed on the Sakai course page. It is your responsibility to insure that the grades on this course page are accurate.

Homework assignments

I will post assignments to Sakai about one week before they are due. You may complete your assignments in groups of 2 or 3 students, turning in one assignment per group. (You may work alone if you prefer) You are welcome to discuss the assignments and potential solutions freely with any students in the class, but each group must turn in its own version of the homework. I will provide brief answers to the assignments one week after they are due.

Classroom etiquette

My goal is to maintain a classroom environment that provides a good learning environment for everyone. To minimize distractions, you must turn off all cell phones, laptops, and other electronic devices during class. I expect you to arrive on time and prepared for the day's class.

Readings and outline

There are several high-quality background sources that you should be ready to consult. They are:

- D. Carlton and J. Perloff, *Modern Industrial Organization*, Addison Wesley, 2004.
- J. Wooldridge, *Econometric Analysis of Cross-Section and Panel Data*, MIT, 2002
- J. Tirole, *The Theory of Industrial Organization*, MIT Press, 1988
- T. Bresnahan, "Empirical Studies of Industries with Market Power." in Schmalensee and Willig (Eds.), *Handbook of Industrial Organization*, Vol. 2, Ch. 17, pp. 1011-58. 1989.
- P. Reiss and F. Wolak "Structural Econometric Modeling: Rationales and Examples from Industrial Organization," in Heckman and Leamer (Eds), *Handbook of Econometrics*, Vol. 6, Ch. 64, pp. 4277-4415.

The books are available for purchase or at the library. The handbook chapters are available at the course Sakai page.

The specific readings for this course are listed below and separated by topic. I have provided estimates of how much time each topic will take us to cover. These estimates are likely to be wrong, and we will adjust our topic coverage as needed throughout the semester.

Each listed topic identifies some papers we will cover in class, plus some extra material for students interested in any particular topic. You are required to read all of the papers under each "In class" heading before we discuss them in class. I will give you advance notice on what papers we will cover in upcoming classes. Count on reading about one paper per class meeting.

About a month into the semester, we will begin having student presentations of papers. These are likely to be drawn from the collection of papers we will cover in class. Presentation topics and timing will be assigned at least two weeks before the presentations begin.

Static demand

Homogeneous goods (0.5 week)

In class:

- R. Porter, "A Study of Cartel Stability: The Joint Executive Committee, 1880-1886," BJE 14(2), Autumn 1983, pp. 301-314.

Supplemental papers:

- K. Graddy, "Testing for Imperfect Competition at the Fulton Fish Market," RJE 26(1), Spring 1995, pp. 75-92.
- T. Bresnahan, "The Oligopoly Solution Is Identified," EL 10(1-2), 1982, pp. 87-92.
- D. Genesove and W. Mullin, "Testing Static Oligopoly Models: Conduct and Cost in the Sugar Industry, 1890-1914," RJE 29(2), Summer 1998, pp. 355-377.

Differentiated products (1.5 weeks)

In class:

- T. Bresnahan, "Competition and Collusion in the American Automobile Industry: The 1955 Price War," JIE 35(4), June 1987, pp. 457-482.
- S. Berry, "Estimating Discrete-Choice Models of Product Differentiation," RJE 25(2), Summer 1994, pp. 242-262.
- S. Berry, J. Levinsohn, and A. Pakes. "Automobile Prices in Market Equilibrium." ECTA 63(4), July 1995, pp. 841-890.

Supplemental papers:

- D. Epple, "Hedonic Prices and Implicit Markets: Estimating Demand and Supply Functions for Differentiated Products," JPE 95(1), February 1987, pp. 59-80.
- P. Bajari and L. Benkard "Demand Estimation with Heterogeneous Consumers and Unobserved Product Characteristics: A Hedonic Approach," JPE 113(6), December 2005, pp. 1239-1276.
- P. Goldberg, "Product Differentiation and Oligopoly in International Markets: The Case of the U.S. Automobile Industry," ECTA 63(4), July 1995, pp. 891-951.
- S. Berry, J. Levinsohn, and A. Pakes. "Differentiated Products Demand Systems from a Combination of Micro and Macro Data: The New Car Market," JPE 112(1), February 2004, pp. 68-105.
- I. Hendel, "Estimating Multiple Discrete Choice Models: An Application to Computerization Returns," REStud 66(2), April 1999, pp. 423-446.
- A. Nevo, "A Practitioner's Guide to Estimation of Random Coefficients Logit Models of Demand," JEMS 9(4), December 2000, pp. 513-548.

Welfare applications (1 week)

In class:

- A. Petrin, "Quantifying the Benefits of New Products: The Case of the Minivan," JPE 110(4), August 2002, pp. 705-729.
- M. Gentzkow, "Valuing New Goods in a Model with Complementarity: Online Newspapers," AER 97(3), June 2007, pp. 713-744.

Supplemental papers:

- M. Trajtenberg, "The Welfare Analysis of Product Innovations, with an Application to Computed Tomography Scanners," JPE 97(2), April 1989, pp. 444-479.
- M Rysman "Competition between Networks: A Study of the Market for Yellow Pages," REStud 71(2), April 2004, pp. 483-512.
- A. Nevo, "Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry," RJE 31(3), Autumn 2000, pp. 395-421.
- A. Goolsbee and A. Petrin, "Consumer Gains from Direct Broadcast Satellites and the Competition with Cable TV," ECTA 72(2), March 2004, pp. 351-381.

Pricing (1 week)

In class:

- P. Leslie, "Price Discrimination in Broadway Theater," RJE 35(3), Autumn 2004, pp. 520-541.
- G. Crawford and A. Yurukoglu, "The Welfare Effects of Bundling in Multichannel Television Markets," AER 102 (2), April 2012, pp. 643-85.

Supplemental papers:

- A. Shepard, "Price Discrimination and Retail Configuration," JPE 99(1), February 1991, pp. 30-53.
- G. Crawford, "The Discriminatory Incentives to Bundle in the Cable Television Industry," QME 6(1), March 2008, pp. 41-78.
- M. Grennan, "Price Discrimination and Bargaining: Empirical Evidence from Medical Devices," University of Toronto WP.
- B. McManus, "Nonlinear Pricing in an Oligopoly Market: The Case of Specialty Coffee," RJE 38(2), Summer 2007, pp. 512-532.

Dynamic demand (1 week)

In class:

- I. Hendel and A. Nevo, "Measuring the Implications of Sales and Consumer Inventory Behavior," ECTA 74(6), November 2006, pp. 1637-1673.
- G. Gowrisankaran and M. Rysman, "Dynamics of Consumer Demand for New Durable Goods," University of Arizona working paper, 2012.

Supplemental papers:

- J Rust, "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher," ECTA 55(5), September 1987, pp. 999-1033
- V.J. Hotz, and R. Miller, "Conditional Choice Probabilities and the Estimation of Dynamic Models", REStud 60(3), July 1993, pp. 497-529.
- A. Sweeting, "Equilibrium Price Dynamics in Perishable Goods Markets: The Case of Secondary Markets for Major League Baseball Tickets," Duke working paper, 2009.

Information in markets (1.5 weeks)

In class:

- D. Akerberg, "Empirically Distinguishing Informative and Prestige Effects of Advertising," RJE 32(2), Summer 2002, pp. 100-118.
- G. Jin and P. Leslie, "The Effects of Information on Product Quality: Evidence from Restaurant Hygiene Grade Cards," QJE 118(2), May 2003, pp. 409-451.
- D. Elfenbein, R. Fisman, and B. McManus, "Charity as a Substitute for Reputation: Evidence from an Online Marketplace," REStud 79(4), 2012, pp. 1441-68.

Supplemental papers:

- J. Milyo and J. Waldfogel, "The Effect of Price Advertising on Prices: Evidence in the Wake of 44 Liquormart," AER 89(5), December 1999, pp. 1081-96.
- D. Genesove, "Adverse Selection in the Wholesale Used Car Market." JPE 101(4), August 1993, pp. 644-665.
- D. Dranove, D. Kessler, M. McClellan and M. Satterthwaite, "Is More Information Better? The Effects of 'Report Cards' on Health Care Providers" JPE 111(3), June 2003, pp. 555-588.
- A. Sorensen, "Equilibrium Price Dispersion in Retail Markets for Prescription Drugs," JPE 108(4), August 2000, pp. 833-850.

Production and technology (1 week)

In class:

- C. Syverson, "Market Structure and Productivity: A Concrete Example," JPE 112(6), December 2004, pp. 1181-1222.
- S. Olley and A. Pakes. "The Dynamics of Productivity in the Telecommunications Equipment Industry." ECTA 64(6), November 1996, pp.1263-1298.

Supplemental papers:

- D. Akerberg, K. Caves and G. Frazer, "Structural Estimation of Production Functions," UCLA working paper, 2007.
- L. Christensen and W. Greene, "Economies of Scale in U.S. Electric Power Generation," JPE 84(4), August 1976, pp. 655-676.
- N. Bloom and J. van Reenen. "Measuring and Explaining Management Practices Across Firms and Countries," QJE 122(4), November 2007, pp. 1351-1408.

Inter-firm relationships (1 week)

In class:

- J. Mortimer, "Vertical Contracts in the Video Rental Industry," *REStud* 75(1), January 2008, pp. 165-199.
- R. Kellogg, "Leaning by Drilling: Interfirm Learning and Relationship Persistence in the Texas Oilpatch," *QJE* 126(4), November 2011, pp. 1961-2004.

Supplemental papers:

- J. Hastings, "Vertical Relationships and Competition in Retail Gasoline Markets: Empirical Evidence from Contract Changes in Southern California," *AER* 94(1), March 2004, pp. 317-328.
- A. Hortcasu and C. Syverson, "Cementing Relationships: Vertical Integration, Foreclosure, Productivity, and Prices," *JPE* 115(2), April 2007, pp. 250-301.
- G. Baker and T. Hubbard, "Make vs. Buy in Trucking: Asset Ownership, Job Design and Information," *AER* 93(3), June 2003, pp. 551-572.
- F. Lafontaine, "Agency Theory and Franchising: Some Empirical Results," *RJE* 23(2), Summer 1992, pp. 263-283.

Static discrete games (1.5 weeks)

In class:

- T. Bresnahan and P. Reiss, "Entry and Competition in Concentrated Markets," *JPE* 99(5), October 1991, pp. 977-1009.
- M. Mazzeo, "Product Choice and Oligopoly Market Structure," *RJE* 33(2), Summer 2002, pp. 221-42.
- A. Cohen, B. Freeborn, and B. McManus, "Competition and Crowding-Out in the Market for Outpatient Substance Abuse Treatment," *IER* 54 (1), February 2013, pp. 159-184.

Supplemental papers:

- S. Berry, "Estimation of a Model of Entry in the Airline Industry," *ECTA* 60(4), July 1992, pp. 889-917.
- T. Bresnahan and P. Reiss, "Entry in Monopoly Markets," *REStud* 57(4), October 1990, pp. 531-553.
- K. Seim, "An Empirical Model of Firm Entry with Endogenous Product-Type Choices," *RJE* 37(3), Autumn 2006, pp. 619-40.
- E. Tamer, "Incomplete Simultaneous Discrete Response Model with Multiple Equilibria," *REStud* 70(1), January 2003, pp. 147-65.
- F. Ciliberto and E. Tamer "Market Structure and Multiple Equilibria in Airline Markets," *ECTA* 77(6), November 2009, pp. 1791-1828.

Industry dynamics and dynamic games (1.5 weeks)

In class:

- R. Ericson and A. Pakes, "Markov-Perfect Industry Dynamics: A Framework for Empirical Work," *REStud* 62(1), January 1995, pp. 53-82.
- P. Bajari, L. Benkard, and J. Levin, "Estimating Dynamic Games of Imperfect Competition," *ECTA* 75(5), September 2007, pp. 1331-1370.
- S. Ryan, "The Costs of Environmental Regulation in a Concentrated Industry," *ECTA* 80 (3), May 2012, pp. 1019-61.

Supplemental papers:

- T. Dunne, M. Roberts and L. Samuelson, "Patterns of Firm Entry and Exit in US Manufacturing," *RJE* 19(4), Winter 1988, pp. 495-515
- P. Schmidt-Dengler, "The Timing of New Technology Adoption: The Case of MRI," LSE working paper, 2006.

- T. Dunne, M. Roberts and L. Samuelson, "The Growth and Failure of U. S. Manufacturing Plants," QJE 104(4), November 1989, p. 671-698.

Abbreviations for journal names:

AER – American Economic Review

BJE – Bell Journal of Economics

ECTA – Econometrica

EL - Economics Letters

IER – International Economic Review

JEMS – Journal of Economics and Management Strategy

JIE – Journal of Industrial Economics

JPE - Journal of Political Economy

RJE – RAND Journal of Economics

REStud – Review of Economic Studies

QJE -- Quarterly Journal of Economics

QME – Quantitative Marketing and Economics