Instructor Information:

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Schedule Information:

Class: T/TR 11:00-12:15 pm
Office Hours: T/TR 12:30-1:45pm in Gardner 300A and by appointment

Course organization and goals:

This is the second of two empirical industrial organization (IO) courses offered each year at UNC. The courses are designed to be taken in sequence. The first course covers static demand estimation, information issues, vertical relations between firms, productivity, and networks. This course, the second in the sequence, covers static discrete games of complete and incomplete information, dynamic demand, dynamic games, auctions, and potentially topics that are of particular interest to the class. These courses are intended (in part) to complement the IO theory course offered by Professor Gary Biglaiser each fall.

This sequence of courses in IO, and this course specifically, has three objectives. The main objective is to prepare you to do original research in empirical IO. To this end, we survey some of the main areas of the IO literature. Our survey focuses on introducing modeling and estimation techniques that are central to modern empirical IO, and we will also review some topics that are prominent in current research. Our second objective is to improve your ability to do research in applied microeconomics, broadly defined. To satisfy this objective, we will put extra weight on parts of the empirical IO literature that are most likely to be beneficial for research outside of IO. In some cases these benefits will come through exposure to particular econometric techniques, and in other cases they will come through economic models or empirical results that are useful for all microeconomists to know. 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. To accomplish all three of these goals, there will be a strong emphasis on applying econometric and modeling techniques. This is reflected in the assignments throughout the course.
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 (10%). 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 (30%). Each student will do two in-class presentations of a research article during the semester. Each presentation will last about 25-30 minutes and provide a discussion of the question, motivation, objective, method, and results, as well as comments and criticisms. Think of the exercise as an extended referee report, similar to a detailed discussion offered at an academic conference. One of the papers will be chosen from the syllabus in an area of interest to the student (open to papers not on syllabus), the other will be among those written by an empirical IO job-market candidate in the last 2 years (both approved by the instructor).

3. Homework assignments (30%). There will be 2 homework assignments that focus on empirical and modeling techniques. You will need Stata for some of the assignments, and a low-level programming language for others. I can offer the most assistance with Matlab or Python, but you are free to use the software of your choosing. I strongly recommend getting a research computing account and familiarizing yourself with use of those resources in this process, as it will be a valuable bit of human capital going forward.

4. Final paper (30%). On the day of the final, you will turn in a brief paper (15-20 pages) that motivates and describes a novel empirical research idea that is part of industrial organization, broadly defined. This paper should advance any work done in the fall to include a simplified model or discussion of a modeling approach, empirical model and identification strategy. It should also include a discussion of the relevant literature. During the last week of class you will give a brief presentation on your paper topic and progress.

For homework assignments, any requests to have the grade altered or corrected must be made to me within 7 days of the assignment being handed back. I will use Sakai (or other agreed upon electronic means) to distribute notes, readings, homework assignments, etc. We will agree upon these means the first day of class and stick to it throughout the semester. I will post assignments
one week before they are due. Some assignments must be done individually, while others can be completed in groups of 2 or 3 students. You are welcome to discuss all assignments and potential solutions freely with any students in the class, but each individual or group must turn in their own version of the homework.

**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 phones, laptops, and other electronic devices during class, except in those situations where using such a device is desirable. That is, there will be times when we will be programming in class to demonstrate something, and a laptop would be desirable. I will notify you ahead of time, so that you may bring a laptop if you’d like (not required). I expect you to arrive on time and prepared for the day’s class.

**General References:**

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


The books are available for purchase or at the library. I will make required handbook chapters available through Sakai (or other convenient means).

**Course Readings, Additional References, and Outline:**

Readings for this course are listed below and separated by topic. I have provided (rough) estimates of how much time each topic will take us to cover. We will adjust these as needed throughout the semester based upon typical fluctuations and the interests of the class. Each listed topic identifies papers we will cover in class, plus some extra material for students interested in any particular topic. You are required to read the papers under the *in-class* header before we discuss them in class. For many of these papers, you’ll only need to read specific sections, which I’ll point out. 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 half way into the semester, we will begin having student presentations of papers. Presentation topics and timing will be decided about two weeks before the presentations begin.
The following abbreviations are used for journal titles below:

*AER: American Economic Review*
*JET: Journal of Economic Theory*
*BJE: Bell Journal of Economics*
*JIE: Journal of Industrial Economics*
*EMA: Econometrica*
*JLE: Journal of Law and Economics*
*EJ: Economic Journal*
*JPE: Journal of Political Economy*
*IJO: International Journal of Industrial Organization*
*QJE: Quarterly Journal of Economics*
*JE: Journal of Econometrics*
*RJE: Rand Journal of Economics*
*JEH: Journal of Economic History*
*ReStat: Review of Economics and Statistics*
*JEL: Journal of Economic Literature*
*ReStat: Review of Economics and Statistics*
*AEJ-XXX: American Economic Journal - XXX*
*QE: Quantitative Economics*
*JOF: Journal of Finance*
*MOR: Mathematics of Operations Research*
*JES: Journal of Economic Surveys*
*HOE: Handbook of Econometrics*
*HIO: Handbook of Industrial Organization*
*JEP: Journal of Economic Perspectives*
*JAE: Journal of Applied Econometrics*
*ARE: Annual Review of Economics*
*OR: Operations Research*
*JEMS: Journal of Economics & Management Strategy*

**Empirical Methods in Industrial Organization**


Leamer E., “Let’s Take the Con Out of Econometrics,” AER 1983


Reiss P. and F. Wolak, “Structural Econometric Modeling: Rationales and Examples from Industrial Organization,” *HOE*


Sims C., “But Economics Is Not an Experimental Science,” JEP 2010


**Dynamic Models of Demand:**

*In Class:*


Gowrisankaran G. and M. Rysman "Dynamics of Consumer Demand for New Durable Goods," JPE 2012


Nevo, A., J. Turner, and J. Williams, “Usage-Based Pricing and Demand for Residential Broadband”, EMA forthcoming

Pakes, A. ”Patents as Options: Some Estimates of the Value”, EMA 1986


Aryal, G., F. Ciliberto, C. Murry, and J. Williams, “Price Discrimination in International Airline Markets.”, Working Paper

*Supplemental:*


Aguirregabiria V. “The Dynamics of Markups and Inventories in Retail Firms,” ReStud 1999.


Fox J. and A. Gandhi, "Nonparametric Identification and Estimation of Random Coefficients in Multinomial Choice Models" RAND


Gilligan T. “Lemons and Leases in the Used Business Aircraft Market,” JPE 2004


**Discrete Games:**

*In Class:*


Tamer, E. “Incomplete Simultaneous Discrete Response Model with Multiple Equilibria,” ReStud 2003

**Supplemental:**

Andrews D., S. Berry, and P. Jia, “Confidence Regions for Parameters in Discrete Games with Multiple Equilibria, with an Application to Discount Chain Store Location,” EMA forthcoming


Ciliberto F., A. Miller, H. Nielsen, and M. Simonsen, “Playing the Fertility Game At Work,” IER forthcoming


De Paula A. and X. Tang “Inference of Signs of Interaction Effects in Simultaneous Games with Incomplete Information EMA 2012

De Paula, A. “Econometric Analysis of Games with Multiple Equilibria”, ARE 2013

De Paula, A. “Inference in a Synchronization Game with Social Interactions” JOE 2009

Ellickson, P. B., Does Sutton apply to supermarkets?”, RJE 2007

Ho K., “Insurer-Provider Networks in the Medical Care Market,” AER 2009.

Ho, K., "The welfare effects of restricted hospital choice in the US medical care market," JAE 2006


Mankiw, N. G. and M.D. Whinston. Free Entry and Social Inefficiency. RJE 1986


Snider C. and J. Williams “Barriers to Entry in the Airline Industry: A Multi-Dimensional Regression-Discontinuity Analysis of AIR-21” ReStat 2015


**Dynamic Games:**

**In Class:**


Collard-Wexler, A. "Demand Fluctuations and Plant Turnover in the Ready-Mix Concrete Industry." EMA 2013


Evans, W. and I. Kessides. ``Living by the 'Golden Rule': Multimarket Contact in the U.S. Airline Industry," QJE 1994


Sweeting, A. “A Model of Non-Stationary Dynamic Price Competition with an Application to Platform Design” WP 2015


**Supplemental:**


Borenstein, S. and A. Shepard ``Dynamic Pricing in Retail Gasoline Markets,’’ RJE 1996

Brock, W., and J. Scheinkman, ``Price-Setting Supergames with Capacity Constraints," ReStud 1985


Compte, O. F., Jenny, and P. Rey, "Capacity Constraints, Mergers, and Collusion," EER 2002


Gowrisankaran G. and R. Town, "Dynamic Equilibrium in the Hospital Industry,", JEMS 1997
Judd, K. ``Credible Spatial Preemption,” RJE 1978
Kalouptsidi, M. ``Time to Build and Shipping Prices," WP 2015
Milgrom, P. and J. Roberts. ``Limit Pricing and Entry Under Incomplete Information: An Equilibrium Analysis.” EMA 1982
Ordover, J. and Saloner G., “Predation, Monopolization, and Antitrust,” in HIO.
Pakes, A., Ostrovsky, M., Steven Berry. ``Simple Estimators for the Parameters of Discrete Dynamic Games (with Entry/Exit Examples),” RJE 2007
Takahashi, Y. “Pooling Data across Markets in Dynamic Markov Games” QE forthcoming
Tirole, “Indusrial Organization”, Chapter 6
Vasconcelos, H., “Tacit Collusion, Cost Asymmetries, and Mergers;” RJE 2005


**Auctions:**

**In Class:**


Laffont, J., O. Herve, and Q. Vuong, "Econometrics of First-Price Auctions," EMA 1995

Laffont, J. and Q. Vuong, "Structural Analysis of Auction Data," AER P&P 1996

**Supplemental:**


Bhattacharya, V., J. Roberts, and A. Sweeting, "Regulating Bidder Participation in Auctions" RJE 2014


Vickrey, W. “Counterspeculation, Auctions and Competitive Sealed Tenders,” JOF 1961,

**Other Topics of Interest (What I’m Reading Now):**

*Advertising, Bargaining, and Pharmaceuticals/Healthcare:*


Grennan M. “Price Discrimination and Bargaining: Empirical Evidence from Medical Devices” AER 2013


Gowrisankaran G., A. Nevo, R. Town, "Mergers When Prices Are Negotiated: Evidence from the Hospital Industry" AER 2015

Shapiro B. “Positive Spillovers and Free Riding in Advertising of Prescription Pharmaceuticals: The Case of Antidepressants” WP 2015


Shapiro B. “Estimating the Cost of Strategic Entry Delay in Pharmaceuticals: The Case of Ambien CR.” WP 2015

*Learning and Experience Goods:*


Crawford G. and M. Shum, “Uncertainty and Learning in Pharmaceutical Demand,” EMA 2005


*Telecommunications Industry:*


Crawford G. “The Discriminatory Incentives to Bundle: The Case of Cable Television,” QME 2008

Crawford G. and M. Shum “Monopoly Quality Degradation and Regulation in Cable Television,” JLE 2007


Luo, Y. "Bundling and Nonlinear Pricing in Telecommunications" WP 2015


Airline Industry:
