1 Overview

This is a course in the Graduate Industrial Organization sequence. The aim to give a solid grounding in the modern empirical tools that have proved useful in understanding the structure of markets, and the strategic behavior of firms and their consumers. The focus is in preparing you for research. This means that some things will happen very quickly: the understanding is that you will need to go back and study the details if you intend to use it in your own work. At the very least, you should end up with a basic road map of the toolbox, and how to think about the issues in using its elements.

2 On Learning and Doing IO

Like everything else, the secret to a successful research or professional career in IO is practice, practice, practice. However, like everything else in life this is a constrained problem.

We suggest (and in some cases require) that you read papers ahead of time. Also read them after and make sure you understand them. Discuss them with your friends. What questions does this work lead you to ask? What is good/convincing/insightful? Where does it leave you unsatisfied? Think about these questions first (and thinking might mean mulling over a period of days or weeks) before chasing through the literature. You are more likely to come up with something original if you haven’t already read 57 loosely related papers around the subject. If there is a gap then thinking about the issues beforehand should help you find that, rather than staring at the literature and trying to figure out where it is.

Outside of classwork, we strongly recommend that you attend the IO seminar and pro-seminar, this will give you a sense of where the frontier is, and will give you an insight into how the process of research actually works (rather than seeing the culmination of that process).

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*Email: johnasker@econ.ucla.edu. Parts of the course material build on material first developed by Ariel Pakes, and then was further developed when versions of this class was (co-)taught with Heski Bar-Isaac, Allan Collard-Wexler, Joyee Deb, Kei Kawai, Robin Lee and Jidong Zhou.
Non-attendance at the workshop and pro-seminar will be taken as a clear signal that you are not serious about IO as a field.

3 Course Requirements

1. Participation: where the syllabus lists a paper with a star next to it, this indicates reading is required before class. This paper will be discussed in class and an inability to discuss the paper will reflect badly on you and, more importantly, you won’t get much from the class.

2. Problem Sets: a few problem sets will be given

3. Referee report: An important aspect of doing research (and for that matter of a successful academic career) is the ability to evaluate work - most importantly your own, but also others'. Most likely the final will require you to write a series of referee reports.

Relevant documents for the course and other announcements are going to be posted at http://www.johnasker.com/IO.html

4 Background Reading

You are expected to remember the micro-theory, game theory, and econometrics that you have already been exposed to.

4.1 Books

Below is a list of books generally useful for work in Industrial Organization:

- Tirole’s *The Theory of Industrial Organization* is a required text. If you haven’t got it already, buy it. It is an invaluable reference.

- If you don’t face financial constraints, you will also find the *Handbook of Industrial Organization*, particularly volume 3 edited by Armstrong and Porter: very worthwhile but usually crazy expensive

- John Sutton, *Technology and Market Structure*

- Luis Cabral *Introduction to Industrial Organization* or Oz Shy, *Industrial Organization* [undergraduate versions of Tirole that are useful when you want to see the simplest possible version of a model - good bedtime reading] **If you want to be an IO economist you should read one of these books cover to cover before starting the third year.**

- Andersen, de Palma and Thisse, *Discrete Choice Theory of Product Differentiation* [a very useful companion to the section on demand estimation that provides all the conceptual underpinnings of the models used to think about product differentiation]
• Robert Wilson, *Nonlinear Pricing*

• Fumio Hayashi, *Econometrics* - a great text with a strong GMM approach to econometrics. Most empirical IO work is done in the GMM setting.

• Pagan and Ullah, *Nonparametric Econometrics* - where we use nonparametrics, this is the best reference.

• Davis and Garces, *Quantitative Techniques for Competition and Antitrust Analysis* - useful for the application of empirical work to applied problems and very useful for demand estimation and antitrust applications.

• Kenneth Train, “*Discrete Choice Methods with Simulation*”, and Kenneth Judd, “*Numerical Methods in Economics*”, also prove useful for implementing recent numerical empirical methods.

• Finally, Paolo Buccirossi (ed.) *Handbook of Antitrust Economics* is a useful reference as well.

### 4.2 Overview and comments on empirical work

The course aims to prepare you as both a producer and consumer of empirical work in IO. The last 25 years has seen a resurgence in empirical work in IO. A large amount of work in IO is now empirical, often combining sophisticated econometrics with serious theory. Even as a theorist interested in IO it is important to be able to be an informed consumer of empirical work.

The empirical component will do four things: first it will provide a coverage of demand estimation. Demand systems often provide the bedrock of empirical IO work and understanding how to deal with the problems that arise in dealing with estimation of demand from micro-econometric data sets is a core skill for the applied IO economist (it is also useful for public finance and other applied micro areas). We will spend about three lectures on this area and its applications.

Second, we will talk about the estimation of entry games and briefly mention dynamics more generally.

Third we will briefly discuss the empirics of auction models. It is important to get some sense of how asymmetric information is handled in an empirical context.

Last, if time permits, we will look at several different applied topics from an empirical point of view. These classes will be run as a reading group. **It is a waste of time to turn up to these classes if you have not done the assigned reading.** When doing the assigned reading try to make sure you can understand the following questions about the paper:

1. What is the research question?
   
   - How does the research question relate to existing theoretical and empirical literature?
   - Why is it worth asking?

2. What is are the data being used here?
   
   - How was it collected?
• What are the important variables?
• How are they defined?
• What is the unit of observation?

3. What is the empirical strategy for answering this research question?
• If you had an ideal data set, what would it look like? What empirical strategy would you use on it?
• How is the data set in this paper different from that ideal data set?
• How does identification work in this paper?
• What are the sources of exogenous variation?
• How much of the identification is coming from the model and how much from the data?

4. What econometric techniques are being used in this paper?
• Are they appropriate?
• What is the central estimating equation (or equations)?
• What is in the unobservable component?
• What are the instruments being used? Do you think they are valid?
• How does the econometric model relate to the theoretical framework?

5. What are the main results of the paper?
• What are the economic implications of the results?

6. What do we learn from this paper?

7. What questions does this paper leave unanswered? How might you answer them?

5 Outline and selected reading

An asterisk next to a paper means it is required reading before class, two asterisks means that you need to read it carefully before class (i.e. be prepared to lead a ten minute discussion).

1. Demand Estimation (2.5)

• * Working (1927) What do Statistical Demand Curves Show? QJE 41 212-35
• Deaton and Muellbauer (1980) An Almost Ideal Demand System AER
• * Berry, Levinsohn and Pakes (1995) Automobile Prices in Market Equilibrium Econometrica 63(4) 841-90 [see also the NBER working paper version for arguably a more pleasant read]

Applications

• Gentzkow (2007) Valuing new goods in a model with complementarities: online newspapers, AER

Textbook References

• Hayashi (2000) *Econometrics* [Ch3 has a nice discussion of the standard endogeneity problems in demand estimation in a GMM framework]
• Davis Garces (2010) “Quantitative Techniques for Competition and Antitrust Analysis” [Ch9 has an overview of demand estimation techniques]
• Train (2009) “Discrete Choice Methods with Simulation” is also a useful reference

2. Antitrust and Horizontal Merger Analysis (0.5)

• DOJ and FTC Antitrust Guidelines

3. Static Entry / Exit Models (2)

• * Berry, S.T., “Estimation of a Model of Entry in the Airline Industry”, Econometrica, 1992, 60 (4)
• Berry, S.T. and E. Tamer, “Identification in Models of Oligopoly Entry”, (invited lecture at the 2005 World Congress of the Econometric Society)

4. Moment Inequalities in Applied Work (2)

• Ho (2009) “Insurer Provider Networks in the Medical Care Market”, AER

5. Auction Markets (2)

• *Athey, Susan and Phillip Haile (2005a), Non-Parametric Approaches to Auctions
• * Athey, Susan and Phillip Haile (2005b), Empirical Models of Auctions
• Haile, Phil and Elie Tamer (2003), Inference with an Incomplete Model of English Auctions, JPE, 111, 1-52
• *Guerre, Perrigne and Vong (2000), Optimal Nonparametric Estimation of First Price Auctions, E’metrica, 68, 525
• Asker (2010), A Study of the Internal Organisation of a Bidding Cartel American Economic Review, v100(3), 724-762,
• Asker and Cantillon (2008), Properties of Scoring Auctions, RAND Journal of Economics
• Li, Perrigne and Vong (2002), Structural Estimation of the Affiliated Private Value Auction Model, RAND, 33, 171
• Campo, Perrigne and Vong (2003), Assymetry in First Price Auctions with Affiliated Private Values, Journal of Applied Econometrics, 18, 197

6. Other Issues (1)
Content TBD

6 Other Useful References (not exhaustive)

1. Empirical Models of Price Discrimination
   Shepard (1991) Price Discrimination and Retail Configuration, JPE 99(1), 30-51

2. Empirical work on the boundaries of the firm
   Baker and Hubbard (2003), Make vs Buy in Trucking: Asset Ownership, Job Design and Information, AER 551-572
   Garicano and Hubbard (2003) Specialization, Firms, and Markets: The Division of Labor Within and Between Law Firms, Mimeo Chicago GSB
3. Vertical Markets (3)

Theory:
Tirole, Chapter 4
Whinston (2006) Lectures on Antitrust Economics Chapter 4
Fumagalli and Motta (2006) “Exclusive Dealing and Entry when Buyers Compete”, AER
Segal and Whinston (2000) Exclusive contracts and protection of investments, RAND
Segal and Whinston (2000), “Naked Exclusion - Comment”, AER
Spengler (1950) “Vertical Integration and Anti-trust Policy”, JPE 58, 347-352

Empirics
Hastings (2004) “Vertical relationships and competition in the retail gasoline markets” AER (see also AER comment: Taylor Kreisle Zimmerman (2010))
Ho (2009) “Insurer Provider Networks in the Medical Care Market”, AER

4. Bargaining in Vertical Markets (2)

**Theory:**

Muthoo (1999), *Bargaining Theory with Applications*


**Bi/Multi-lateral Contracting, Buyer-Seller Networks:**

Cremer and Riordan (1987), “Governing Multilateral Transactions with Bilateral Contracts”, RAND


Segal and Whinston (2003), “Robust Predictions for Bilateral Contracting with Externalities”, ECMA

**Empirics:**


5. **Two Sided Markets (2)**

*Theory:*


*Empirics:*


6. **Single Agent Dynamics, Estimation Approaches, and Dynamic Demand (3)**

*Single Agent Dynamics*


*Dynamic Demand*


7. Multi-Agent Dynamics and Games (4)

Theory, Framework, and Computation:


Extensions, Alternative Frameworks:


Applications:


Estimation:


