

JOHNS HOPKINS UNIVERSITY  
Department of Economics  
180.671 Industrial Organization (Fall 2009)

Instructor: Joe Harrington  
Class Time: Th 1:00-3:30  
Office: Mergenthaler 437  
Office Hours: Th 3:30-5:00 or by appointment

This course explores firm and industry behavior with an emphasis on markets characterized by imperfect competition. The central issues addressed concern the determinants of the intensity of competition, entry and exit, industry dynamics, and market dominance. This semester is largely theoretical, while the spring semester will focus more on empirical methods.

### Required Text Books

Tirole, Jean, *The Theory of Industrial Organization*, MIT Press, 1988.  
Vives, Xavier, *Oligopoly Pricing: Old Ideas and New Tools*, MIT Press, 1999.

### Course Requirements

Paper Proposal: 25% (due December 3rd)  
Discussant's Report: 25%  
Final exam: 50%

**Problem Sets** will be issued approximately weekly. They will not be graded and answers will be handed out a week later. The only real way to learn theory is to struggle with solving problems so I strongly encourage you to do them. I'd recommend first working on the problem set individually and then getting together as a group where: i) you'll share your solutions (or partial solutions) so as to collectively solve the problem; and ii) go over the answers from the previous week's problem set.

**Paper Proposal** involves around 5-10 pages proposing a research project. It must have three parts: i) statement of the research question(s); ii) description of the theoretical and/or empirical model (with the latter you should also describe the type of data that is required and, if possible, identify an appropriate data set); and iii) how you plan to use that model to address the research question(s) (that is, the types of results you plan to derive, e.g., comparative statics). If it were successfully executed, the project must be an original contribution which means either that you've proposed an original research question or you've proposed a new approach to tackling an existing research question.

**Discussant's Report** involves providing an oral critique in class (for an absolute maximum of ten minutes) of a paper which I will present as part of normal lectures. Please scan the required readings, choose one you would like to present, and then come to me for approval. The written version of this report is to be turned in the day of your oral presentation.

Required readings are denoted by an asterik (\*) and can be downloaded from at the course website:

[www.econ.jhu.edu/people/harrington/671.htm](http://www.econ.jhu.edu/people/harrington/671.htm)

All other readings are supplemental. Journal abbreviations are at the end of the syllabus.

## 1. INTRODUCTION

\*Tirole, Introduction, Theory of the Firm - Section 1, Chp. 1; Chp. 11-11.3.

## 2. STATIC THEORIES OF OLIGOPOLY

### 2.1. Quantity Competition.

\*Tirole, Chp. 5.

\*Vives, Chp. 1.

\*Kim, E. Han and Vijay Singal, "Mergers and Market Power: Evidence from the Airline Industry," AER, 83 (1993), 544-569.

Klemperer, Paul D. and Margaret A. Meyer, "Supply Function Equilibria in Oligopoly under Uncertainty," EM, 57 (1989), 1243-1277.

Shapiro, Carl, "Theories of Oligopoly Behavior," HIO.

### 2.2. Price Competition with Homogeneous Products.

\*Tirole, Chps. 2 and 7.1-7.2. and pp. 205-208.

\*Vives, Chp. 5.

\*Baye, Michael, John Morgan, and Patrick Scholten, "Price Dispersion in the Small and Large: Evidence from an Internet Price Comparison Site," JIE, 52 (2004), 463-496.

Hong, Han and Matthew Shum, "Using Price Distributions to Estimate Search Costs," RJE, 37 (2006), 257-275.

Kreps, David and Jose Scheinkman, "Quantity Precommitment and Bertrand Competition Yield Cournot Outcomes," BJE, 14 (1983), 326-337.

Levitan, Richard and Martin Shubik, “Duopoly with Price and Quantity as Strategic Variables,” *IJGT*, 6 (1978), 1-11.

Spulber, Daniel, “Bertrand Competition When Rivals’ Costs are Unknown,” *JIE*, 43 (1995), 1-11.

\*Stahl, Dale O. II, “Oligopolistic Pricing with Sequential Consumer Search,” *AER*, 79 (1989), 700-712.

### **2.3. Price Competition with Differentiated Products.**

\*Vives, Chp. 6.1-6.3

\*Anderson, Simon and Régis Renault, “Pricing, Product Diversity, and Search Costs: A Bertrand-Chamberlain-Diamond Model,” *RJE*, 30 (1999), 719-735.

Caplin, Andrew and Barry Nalebuff, “Aggregation and Imperfect Competition: On the Existence of Equilibrium,” *EM*, 59 (1991), 25-59.

Deneckere, Raymond J. and Michael Rothschild, “Monopolistic Competition and Preference Diversity,” *RES*, 59 (1992), 361-373.

Vives, Xavier, “On the Efficiency of Bertrand and Cournot Equilibria with Product Differentiation,” *JET*, 36 (1985), 166-175.

## 3. EQUILIBRIUM MARKET STRUCTURE

### **3.1. Symmetric Equilibrium.**

Anderson, Simon P., Andre de Palma, and Y. Nesterov, “Oligopolistic Competition and the Optimal Provision of Products,” *EM*, 63 (1995), 1281-1301.

Berry, Steven and Joel Waldfogel, “Free Entry and Social Inefficiency in Radio Broadcasting,” *RJE*, 30 (1999), 397-420.

\*Mankiw, N. Gregory and Michael Whinston, “Free Entry and Social Inefficiency,” *RJE*, 17 (1986), 48-58.

Novshek, William, “Cournot Equilibrium with Free Entry,” *RES*, 47 (1980), 473-486.

\*Sutton, John, *Sunk Costs and Market Structure: Price Competition, Advertising and the Evolution of Concentration*, MIT Press, 1991 (Chapters 3-5).

### 3.2. First-Mover Advantage.

\*Tirole, Chapters 8.2-8.6 and 9.

\*Dixit, Avinash, "The Role of Investment in Entry Deterrence," *EJ*, 90 (1980), 95-106.

Eaton, B., Curtis and R. Lipsey, "Capital, Commitment and Entry Equilibrium," *BJE*, 12 (1981), 593-604.

Fudenberg, Drew and Jean Tirole, "Capital as a Commitment: Strategic Investment to Deter Mobility," *JET*, 31 (1983), 227-250.

\*Goolsbee, Austan and Chad Syverson, "How Do Incumbents Respond to the Threat of Entry? Evidence from the Major Airlines," *QJE*, 123 (2008), 1611-1633.

Spence, A. Michael, "Investment Strategy and Growth in a New Market," *BJE*, 10 (1979), 1-19.

## 4. DYNAMIC THEORIES OF OLIGOPOLY

### 4.1. Investment.

\*Besanko, David and Ulrich Doraszelski, "Capacity Dynamics and Endogenous Asymmetries in Firm Size," *RJE*, 35 (2004), 23-49.

\*Doraszelski, Ulrich and Ariel Pakes, "A Framework for Applied Dynamic Analysis in I.O.," *HIO Volume III*, 2007.

Maskin, Eric and Jean Tirole, "A Theory of Dynamic Oligopoly II: Price Competition, Kinked Demand Curves and Edgeworth Cycles", *EM*, 56 (1988), 571-599.

Maskin, Eric and Jean Tirole, "Markov Perfect Equilibrium, I: Observable Actions," *JET*, 100 (2001), 191-219.

Pakes, Ariel and Paul McGuire, "Computing Markov Perfect Nash Equilibrium: Numerical Implications of a Dynamic Differentiated Product Model," *RJE*, 25 (1994), 555-589.

### 4.2. Collusive Pricing.

\*Tirole, Chp. 6.

\*Vives, Chp. 9.1.

Abreu, Dilip, "Extremal Equilibria of Oligopolistic Supergames," *JET*, 39 (1986), 191-225.

- Abreu, Dilip, David Pearce and Ennio Stacchetti, "Optimal Cartel Equilibria with Imperfect Monitoring," JET, 39 (1986), 251-269.
- Athey, Susan and Kyle Bagwell, "Optimal Collusion with Private Information," RJE, 32 (2001), 428-465.
- Bernheim, B. Douglas and Michael D. Whinston, "Multimarket Contact and Collusive Behavior," RJE, 21 (1990), 1-26.
- Corts, Kenneth S., "Conduct Parameters and the Measurement of Market Power," JE, 88 (1999), 227-250.
- \*Fersthman, Chaim and Ariel Pakes, "A Dynamic Oligopoly with Collusion and Price Wars," RJE 31 (2000), 207-236.
- Harrington, Joseph E. Jr. and Andrzej Skrzypacz, "Collusion with Monitoring of Sales," RJE, 38 (2007), 314-331.
- \*Harrington, Joseph E. Jr., "Detecting Cartels," in *Handbook of Antitrust Economics*, P. Buccirossi, ed., The MIT Press, 2008.
- \*Porter, Robert H., "Optimal Cartel Trigger Price Strategies," JET, 29 (1983), 313-338.
- Rotemberg, Julio J. and Garth Saloner, "A Supergame-Theoretic Model of Price Wars During Booms," AER, 76 (1986), 390-407.
- 4.3. Increasing Dominance.**
- Bagwell, Kyle, Garey Ramey, and Daniel Spulber, "Dynamic Retail Price and Investment Competition," RJE, 28 (1997), 207-227.
- Beggs, Alan and Paul Klemperer, "Multi-Period Competition with Switching Costs," EM, 60 (1992), 651-666.
- Budd, Christopher, Christopher Harris, and John Vickers, "A Model of the Evolution of Duopoly: Does the Asymmetry between Firms Tend to Increase or Decrease?," RES, 60 (1993), 543-573.
- \*Cabral, Luis and Michael Riordan, "The Learning Curve, Market Dominance, and Predatory Pricing," EM, 62 (1994), 1115-1140.
- Chen, Jiawei, Ulrich Doraszelski, and Joseph E. Harrington, Jr., "Avoiding Market Dominance: Product Compatibility in a Market with Network Effects," December 2007.
- Katz, Michael and Carl Shapiro, "Network Externalities, Competition, and Compatibility," AER, 75 (1985), 424-440.

**4.4. Horizontal Merger Analysis.** *Cover Pesendorfer, empirical post-mortem analysis?*

Chen, Jiawei, “The Effects of Mergers with Dynamic Capacity Accumulation,” *IJIO*, *add year*.

Farrell, Joseph and Carl Shapiro, “Horizontal Mergers: An Equilibrium Analysis,” *AER*, 80 (1990), 107-126.

Gowrisankaran, Gautam, “A Dynamic Model of Endogenous Horizontal Mergers,” *RJE*, 30 (1999), 56-83.

Pesendorfer, Martin, “Mergers under Entry,” *RJE*, 36 (2005), 661-679.

Werden, Greg and Luke Froeb, “The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy,” *JLE*, 10 (1994), 407-426.

Zhou, Wen, “Endogenous Horizontal Mergers under Cost Uncertainty,” *IJIO*, 4 (2008), 903-912.

### Abbreviations

AER - *American Economic Review*  
BJE - *Bell Journal of Economics*  
EER - *European Economic Review*  
EM - *Econometrica*  
GEB - *Games and Economic Behavior*  
HIO - *Handbook of Industrial Organization*  
IER - *International Economic Review*  
IJGT - *International Journal of Game Theory*  
IJIO - *International Journal of Industrial Organization*  
JE - *Journal of Econometrics*  
JEBO - *Journal of Economic Behavior and Organization*  
JEDC - *Journal of Economic Dynamics and Control*  
JEE - *Journal of Evolutionary Economics*  
JEMS - *Journal of Economics and Management Strategy*  
JET - *Journal of Economic Theory*  
JIE - *Journal of Industrial Economics*  
JLE - *Journal of Law and Economics*  
JPE - *Journal of Political Economy*  
MS - *Management Science*  
QJE - *Quarterly Journal of Economics*  
RES - *Review of Economic Studies*  
RIO - *Review of Industrial Organization*  
RJE - *RAND Journal of Economics*