

JOHNS HOPKINS UNIVERSITY
Department of Economics
180.671 Industrial Organization (Fall 2011)

Instructor: Joe Harrington
Class Time: Th 1:00 - 4:00
Office: Mergenthaler 437
Office Hours: Th 4:00 - 6:00 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 (though not entirely) theoretical, while the spring semester (180.672) will focus on empirical methods. Students interested in doing their thesis in industrial organization - whether theoretical or empirical - should be sure to take 180.672, Multi-Agent Numerical Methods (180.617) (which will only be offered this fall), Game Theory (180.618), and Microeconometrics (180.637 and/or 180.638).

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

Research Proposal: 25%
 Topic due Nov 3rd
 Paper due Dec 1st
Discussant's Report: 25% (selection of paper is due Sept 22nd)
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 you should do them if you are serious about learning the material. I'd recommend first working on the problem set individually and then all students getting together as a study group to share your solutions (or partial solutions) so as to collectively solve the problem.

Research Proposal is a written report proposing - but not executing - a research project. It must have four parts: i) statement of the research question(s); ii) brief survey of the literature addressing that question; iii) 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 iv) how you plan to use that model to address the research question (that is, the types of results you plan to derive, e.g., comparative statics, policy experiments). 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. I anticipate a length of 10-15 pages though there is no minimum or maximum.

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

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: PRICE AND QUANTITY

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.

Acemoglu, Daron, Kostas Bimpikis, and Asuman Ozdaglar, "Price and Capacity Competition," *GEB*, 66 (2009), 1-26.

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.

Ellison, Glenn and Sara Fisher Ellison, "Search, Obfuscation, and Price Elasticities on the Internet," *EM*, 77 (2009), 427-452.

*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.

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. Non-Collusion.

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

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

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

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

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

*Wang, Zhongmin, "(Mixed) Strategy in Oligopoly Pricing: Evidence from Gasoline Pricing Cycles Before and Under a Timing Regulation," *JPE*, 117 (2009), 987-1030.

4.2. Collusion.

*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, "Private Monitoring and Communication in Cartels: Explaining Recent Collusive Practices," working paper, 2010 (AER, forthcoming).

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," RJE, 40 (2009), 455-485.

Katz, Michael and Carl Shapiro, "Network Externalities, Competition, and Compatibility," AER, 75 (1985), 424-440.

5. OTHER TOPICS

5.1. Two-Sided Markets.

Anderson, Simon P. and Jean J. Gabszewicz, "The Media and Advertising: A Tale of Two-Sided Markets," in *Handbook on the Economics of Art and Culture*, 2006.

*Armstrong, Mark, "Competition in Two-Sided Markets," RJE, 37 (2006), 668-691.

Rochet, Jean-Charles and Jean Tirole, "Platform Competition in Two-Sided Markets," JEEA, 1 (2003), 990-1029.

Rochet, Jean-Charles and Jean Tirole, "Two-Sided Markets: A Progress Report," RJE, 37 (2006), 645-667.

Rysman, Marc, "Competition between Networks: A Study of the Market for Yellow Pages," RES, 71 (2004), 483-512.

Rysman, Marc, "The Economics of Two-Sided Markets," JEP, 23 (2009), 125-143

Weyl, Glen, "A Price Theory of Multi-Sided Platforms," Harvard University, working paper, 2009 (forthcoming, AER).

5.2. Horizontal Merger Analysis.

- Chen, Jiawei, "The Effects of Mergers with Dynamic Capacity Accumulation," *IJIO*, 27 (2009), 92-109.
- 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.
- Nocke, Volker and Michael Whinston, "Dynamic Merger Review," *JPE*, 118 (2010), 1200-1251.
- 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.

5.3. Behavioral Economics and IO.

- Brown, Jennifer Brown, Tanjim Hossain and John Morgan, "Shrouded Attributes and Information Suppression: Evidence from the Field," *QJE* 125 (2010), 859-876.
- Eliaz, Kfir and Ran Spiegler, "Consumer Optimism and Price Discrimination," *TE*, 3 (2008), 459-497.
- Gabaix, Xavier and David Laibson, "Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets," *QJE* 121 (2006), 505-540.
- Grubb, Michael, "Selling to Overconfident Consumers," *AER*, 99 (2009), 1770-1807.
- Heidhues, Paul and Botond Kőszegi, "Competition and Price Variation when Consumers are Loss Averse," *AER*, 98 (2008), 1245-1268.
- Huck, Steffen, and Jidong Zhou, "Consumer Behavioural Biases in Competition: A Survey," Office of Fair Trading, May 2011.
- P. Kircher, Phillip and Andrew Postlewaite, "Strategic Firms and Endogenous Consumer Emulation," *QJE*, 123(2008), 621-661.
- Oster, Sharon M. and Fiona M. Scott Morton, "Behavioral Biases Meet the Market: The Case of Magazine Subscription Prices," *BE Journal of Economic Analysis and Policy: Advances in Economic Analysis and Policy*, 5 (2005), 1-30.

Spiegler, Ran, *Bounded Rationality and Industrial Organization*, Oxford University Press, 2011.

Journal 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*
JEP - *Journal of Economic Perspectives*
JEE - *Journal of Evolutionary Economics*
JEEA - *Journal of the European Economic Association*
JEL - *Journal of Economic Literature*
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*
TE - *Theoretical Economics*