

# **Econ 8747: Industrial Organization Theory**

**Fall 2010**

Professor Yongmin Chen

Office: Econ 112

Tel. (303)492-8736

Classroom: ECON 5

Class Time: 9:00-10:15 a.m. MW

Office Hours: 10:30-12:00 a.m. MW

Course Description: Industrial organization studies the functioning of markets. It is concerned with business behavior and strategy, as well as their implications for economic efficiency. It also studies the role of public policies in promoting efficiency. The course will cover selected topics in industrial organization theory. Recommended textbooks include: (1) *The Theory of Industrial Organization* by Jean Tirole, MIT Press, and (2) *Industrial Organization: Contemporary Theory and Practice* by Peppall, Richards, and Norman, 4<sup>th</sup> edition. A good source for references is the *Handbook of Industrial Organization, Vol. 1, 2, and 3. HIO3* (2007, Mark Armstrong and Robert Porter edits) surveys the major developments in IO since Tirole.

Grading: Grades are based on homework and class participation (20%); a midterm exam (40%), and a term paper (40%). You are encouraged to form study groups to discuss homework and lecture materials. Requirements for the term paper will be discussed later.

The course materials are arranged by topics (the topics are listed below), and each topic is usually covered over several classes. For homework, you are encouraged to work out the various exercise problems in Tirole, and I will also ask you to write short reviews for papers (each review is about two pages long, double spaced).

A tentative course schedule is attached. There can be changes to this schedule during the semester, which will be announced in class. It is your responsibility to update information about the course according to announcements made in class.

Course Schedule:

## 1. Introduction

- The Research Framework of Industrial Organization Theory

## 2. Monopoly Pricing

- Monopoly pricing: an overview
- Price discrimination
- Multiproduct pricing
- Dynamic pricing (learning consumer demand, durable-good pricing, ...)
- Selling formats: listing prices vs. bargaining vs. auctions; marketing channels

### References

- Maskin, E., and J. Riley, "Monopoly with Incomplete Information", RAND (1984), 171-196.
- Varian, H., "Price Discrimination and Social Welfare", AER (1985), 870-875.
- Fudenberg and Tirole, "Upgrades, Trade-ins, and Buybacks " RAND (1998).
- Armstrong, Mark, "Recent Developments in the Economics of Price Discrimination", 2006.
- Bagwell and Riordan, "High and declining prices signal product quality", AER, 1991.
- McAfee, McMillan, and Whinston, "Multiproduct Monopoly, Commodity Bundling, and Correlation of Values", QJE (1989), 371-384.
- Armstrong, Mark, "Price discrimination by a multiproduct firm", RES, 1999. 151-168.
- Segal, I., "Optimal Pricing Mechanisms with Unknown Demand," AER 2003, pp. 509-529.
- Johnson, J.P. and D.P. Myatt. "On the Simple Economics of Advertising, Marketing, and Product Design." AER, 2006, 96(3), pp. 756-784.
- Iñaki Aguirre, Simon Cowan and John Vickers, "Monopoly Price Discrimination and Demand Curvature", AER, 2010.
- Oz Shy and Zhu Wang, "Why Do Payment Card Networks Charge Proportional Fees?" AER, 2010.

## 3. Static Models of Oligopoly with Homogeneous Products

- The Cournot Model
- Bertrand Competition

## 4. Product Differentiation and Price Competition

A Historical Overview

- The Cournot Model
- Bertrand's Critic
- Instability of the Bertrand Model
- Hotelling's Contribution
- Alternative Approaches to Product Differentiation

## Spatial Models of Product Differentiation

### The Hotelling Model (Hotelling, 1929)

- Formulation
- Price Equilibrium and Its Interpretation
- Equilibrium Product Choice and Its Welfare Property

### The Circle Model of Localized Competition (Salop, 1979)

- Motivation and Formulation
- Price Equilibrium
- Equilibrium vs. Socially Optimal Product Varieties
- Features and Limitations of the Circle Model

### The Spokes Model of Non-localized Competition (Chen and Riordan, 2007)

- Motivation and Formulation
- Price Equilibrium
- Product Varieties
- Features and Limitations of the Spokes Model

## The Representative Consumer Approach

- Formulation
- Utility Maximization Subject to the Budget Constraint
- Example: Quadratic Utility – Linear Demand Function
- Equilibrium Existence and Uniqueness
  - Reaction Functions
  - Slopes of the Reaction Functions
  - Sufficient Conditions for Equilibrium Existence and Uniqueness
- Useful Comparative-statics Results
  - Equilibrium Price and Marginal Cost
  - Equilibrium Profit and Marginal Cost
  - Application: Incentives to Raise Rival's Cost

## Discrete Choice Models

- Formulation
- The Independent Case without Outside Good (Perloff and Salop, 1985)
- The Copula approach to product variety (Chen and Riordan, 2008)
- Price and Performance in Differentiated Industries with General Distributions of Consumer Preferences (Chen and Riordan, 2010)

## References

- Anderson, S.P., de Palma, A. and Thisse, J-F. (1992). *Discrete Choice Theory of Product Differentiation*, Cambridge: The MIT Press.
- Armstrong, Mark and John Vickers (2010), "Competitive Nonlinear Pricing and Bundling", *Review of Economic Studies*, 77: 30-60.
- Bulow, Jeremy, John Geanakoplos, and Paul Klemperer (1985), "Multimarket Oligopoly: Strategic Substitutes and Complements," *Journal of Political Economy*, 488-511.
- Caplin, A. and B. Nalebuff (1991), "Aggregation and Imperfect Competition: On the Existence of Equilibrium", *Econometrica*, 25-59.
- Chen, Y. and M. Riordan (2007), "Price and Variety in the Spokes Model", *Economic Journal*, 897-921.
- Chen, Y. and M. Riordan (2008), "Price-Increasing Competition", *RAND*.
- Chen, Y. and M. Riordan (2010), "Preferences, Prices, and Performance in Multiproduct Industries," working paper.
- Deneckere, R. and C. Davidson (1985), "Incentives to form coalitions with Bertrand competition," *RAND Journal of Economics*, 473-486.
- Dixit, A. and Stiglitz, J.E. (1977). "Monopolistic competition and optimum product diversity", *American Economic Review*, 297-308.
- Fudenberg, D. and J. Tirole (2001), "Customer Poaching and Brand Switching", *RAND Journal of Economics*, 634-657.
- Eaton, B.C. and Lipsey, R.G. (1989). "Product differentiation", In (R. Schmalensee and R.D. Willig eds.), *Handbook of Industrial Organization*, Vol. I, pp. 723-763, Amsterdam: North-Holland.
- Hart, O.D. (1985). "Monopolistic competition in the spirit of Chamberlin: a general model", *Review of Economic Studies*, 529-546.
- Hotelling, H. (1929). "Stability in Competition", *Economic Journal*, vol. 39, pp. 41-57.
- Perloff, J.M. and Salop, S.C. (1985). "Equilibrium with product differentiation", *Review of Economic Studies*, vol. 52, pp. 107-120.
- Salop, S.C. (1979). "Monopolistic competition with outside goods", *Bell Journal of Economics*, vol. 10, pp. 141-156.
- Shaked and Sutton (1982), "Relaxing Price Competition through Product Differentiation", *Review of Economic Studies*, 3-13.
- Stole, Lars, "Price Discrimination in imperfectly competitive markets." *HIO* 3.

## Planning for Term Paper

## 5. Dynamic Models of Oligopoly

- Strategic Behavior: Ideas and Applications
- Dynamic Price Competition
- Dynamic Pricing Based on Consumer Purchase Histories
  - A Model of Ex-post Differentiation due to Consumer Switching Costs (Chen, 1997)
    - Motivation
    - The Model
    - Second-Period Demand
    - Second-Period Equilibrium: The Irrelevance Result; the Role of Switching Cost; The Ratio of markups; The Role of Market Shares
    - First-Period Equilibrium
    - Comparing with Uniform Pricing
    - Welfare Implications
  - A Model of Ex ante Differentiation due to Heterogeneous Consumer Preferences (Fudenberg and Tirole, 2000)
    - Motivation
    - The Model
    - Second-Period Demand
    - Second-Period Equilibrium: The Ratio of markups; The Role of Market Shares
    - First-Period Equilibrium
    - Comparing with Uniform Pricing
    - Welfare Implications

## References

- Klemperer, Paul, “Competition when Consumers Have Switching Costs: An Overview”, RES (1995), 515-539.
- Klemperer, Paul, “The Competitiveness of Markets with Switching Costs”, RAND (1987), 138-150.
- Joseph Farrell and P. Klemperer, “Competition in Markets with Switching Costs and Lock-In”, HIO 3.
- Chen, Y. “Paying Customers to Switch”, JEMS (1997), 877-897.
- Taylor, Curtis, “Supplier Surfing: Competition and Consumer Behavior in Subscription Markets”, “RAND, 2003
- Fudenberg, D and J. Tirole, “Consumer Poaching and Brand Switching,” RAND (2001), 634-657

## 6. Vertical Contractual Relations

## References

- Deneckere, R., H. Marvel, and J. Peck, "Demand Uncertainty, Inventories, and Resale Price Maintenance," *QJE* (1996), pp. 885-913.
- Perry, M. and R. Porter, "Can Resale Price Maintenance and Franchise Fees Correct Sub-optimal Levels of Retail Service?" *IJIO* (1990), pp. 115-141.
- Aghion, P. and P. Bolton, "Contracts as a Barrier to Entry," *AER*, Vol. 77 (1987), pp. 388-401
- Bernheim, B.D. and M.D. Whinston, "Exclusive Dealing," *JPE*, Vol. 106 (1998), pp. 64-103
- Besanko, D and M. Perry, "Equilibrium Incentives for Exclusive Dealing in a Differentiated Products Oligopoly," *RAND*, Vol. 24 (1993), pp. 646-667.
- Chen, Y., "Oligopoly Price Discrimination and Resale Price Maintenance", *RAND*, 1999, 441-455.
- Chen, Y and D. Sappington, "Exclusive Contracts, Innovation, and Welfare", working paper, 2008.
- Marvel, H.P., "Exclusive Dealing," *Journal of Law and Economics*, Vol. 25 (1982), pp. 1-25.
- Rasmusen, E.B., Ramseyer, J.M., and Wiley, Jr. J.S., "Naked Exclusion," *AER*, Vol. 81 (1991), pp. 1137-1145.
- Segal, I.R. and M.D. Whinston, "Exclusive Contracts and Protection of Investments," *RAND*, Vol. 31 (2000), pp. 603-633.
- Fumagalli, Chiara, and Massimo Motta. 2006. "Exclusive Dealing and Entry when Buyers Compete." *AER*, 96(3): 785-795.
- Wright, Julian, "Exclusive Dealing and Entry, When Buyers Compete: Comment," *AER*, 2009, p. 1070-81.
- Simpson, John, and Abraham Wickelgren. "Naked Exclusion, Efficient Breach, and Downstream Competition." *AER*, 97(2007), p. 1305-1320.
- Spier, K. and M.D. Whinston, "On the Efficiency of Privately Stipulated Damages for Breach of Contract: Entry Barriers, Reliance, and Renegotiation," *RAND*, Vol. 26 (1995), pp. 180-202.
- Williamson, O.E., *The Economic Institutions of Capitalism*, 1985, New York: Free Press.

## Proposal for Term Paper

## 7. Vertical Mergers and Vertical Organization of Industries

### References

- Chen, Y. “On Vertical Mergers and Their Competitive Effects,” RAND, 2001.
- Chen, Y. “Vertical Disintegration,” JEMS, 2005.
- Chen and Riordan, “Vertical integration, exclusive dealing, and ex post cartelization”, RAND, 2007
- Choi, J.P. and S-S. Yi, “Vertical Foreclosure with the Choice of Input Specification,” RAND, Vol. 31 (2000), pp. 717-743.
- Hart and Tirole, “Vertical integration and market foreclosure”. Brookings Papers on Economic Activity, 1990.
- Ordoover, J.A., G. Saloner, and S. Salop, “Equilibrium Vertical Foreclosure,” AER, Vol. 80 (1990), pp. 127-142.
- Ray and Tirole, “A primer on foreclosure.” HIO 3.
- Riordan, M.H., “Anticompetitive Vertical Integration by A Dominant Firm,” AER, 1998, 88, 1232-1248.
- Riordan, M.H. and S.C. Salop, “Evaluating Vertical Mergers: A Post-Chicago Approach,” Antitrust Law Journal, 1995, 63, 513-568.
- Salinger, M.A., “Vertical Mergers and Market Foreclosure”, QJE, 1988, 103, 345-56.
- Nocke, Volker, and Lucy White, “Do Vertical Mergers Facilitate Upstream Collusion,” AER, 2007.

### Exam

## 8. Innovation and Intellectual Property Rights

### 1. Market Structure and Innovation Incentive

- Arrow’s Analysis (1962): Process Innovation
- Preempting Monopoly: Gilbert and Newbery (1982)
- Product Innovation: Can Arrow’s Ranking Be Reversed?

### 2. A Model of Vertical Organization and Innovation Incentive

- Formulation
- Upstream Innovation Under Downstream Cournot Competition
- Upstream Innovation Under Downstream Bertrand Competition
- Vertical Integration and Innovation Incentive

### 3. Intellectual Property Rights (IPRs) and Innovation

- The Basic Trade-off
- Common Forms of IPRs
- Intellectual Property Rights (IPRs) and Innovation in Developing Countries: Theory and Evidence

#### References

- Arrow, K. (1962). "Economic Welfare and the Allocation of Resources for Innovations," R. Nelson ed. *The Rate and Direction of Inventive Activity*, Princeton University Press.
- Gilbert, R. and Newbery, D. (1982). "Preemptive Patenting and the Persistence of Monopoly," *American Economic Review*, 72: 514-526.
- Chen, Y and T. Puttitanun (2005). "Intellectual Property Rights and Innovation in Developing Countries", *Journal of Development Economics*, 78: 474-493.
- Chen, Y. (2006), "Marketing Innovation," *JEMS*.
- Chen, Y and D. Sappington (2010). "Innovation in Vertically Related Markets", *Journal of Industrial Economics*.
- Chen, Y and M. Schwartz (2009). "Product Innovation Incentives: Monopoly vs. Competition", working paper.

### **Completing Term Paper**

Abbreviations for journals:

AER: American Economic Review

EM: *Econometrica*

IJIO: *International Journal of Industrial Organization*

JB: *Journal of Business*

JEMS: *Journal of Economics and Management Strategy*

JIE: *Journal of Industrial Economics*

JLEO: *Journal of Law, Economics, and Organization*

JPE: *Journal of Political Economy*

QJE: *Quarterly Journal of Economics*

RAND (BELL): *Rand (Bell) Journal of Economics*

RES: *Review of Economic Studies*