

ECONOMICS 2900: INDUSTRIAL ORGANIZATION (IO)

(Fall Semester: Monday's 11:00 am to 1:00 pm, RT 142)

- Professor:** Frank Mathewson
- Office/Phone:** Room 8074, 105 St. George Street
Phone: (416) 978 – 6127
e-mail: frankm@chass.utoronto.ca
web: <http://www.chass.utoronto.ca/~io2900>;
login (user name): eco2900; (password): ipa2900
- Office Hours:** By Appointment
- Evaluation:** There will be a final exam (date to be determined) that will determine your grade in the course. Previous exams are posted on the course web site. Some problem sets will be distributed during the semester. While these will not be graded, answers template will be posted.
- Other courses:** **ECO 2404F** (Fall Semester; Empirical Applications of Economic Theory) is offered by Professor Carlos Serrano
ECO 2901S (Winter Semester; IO) is offered by Professor Victor Aguirregabiria.
- Course Content:** The field of industrial organization is applied microeconomics/price theory concerned with the function of markets and the behavior of firms in these markets. In this course the focus is on two primary questions: (i) How do we explain observed behavior, prices or contractual practices by firms operating in markets that are not perfectly competitive? (ii) What is the role of government intervention in affecting market structure, the behavior of firms, and the efficient operation of markets? Recent developments in IO are both theoretical and empirical. This IO course stresses a basic understanding of the theory, including extensions and modern developments and applications of the theory; selected empirical applications will be presented in ECO 2404F and ECO 2901S.
- Text:** The Theory of Industrial Organization, by Jean Tirole, MIT Press, 1988 (**Tirole**) is the required text for the course. Additional readings are suggested.

Supplementary Texts:

- Armstrong, M. and R.H. Porter (eds) Handbook in Industrial Organization Volume 3, North Holland, 2007 (**Handbook 3**).
- Cabral, Luis, Introduction to Industrial Organization, The MIT Press, 2002 (**LC**)
- Cabral, Luis (ed), Readings in Industrial Organization, Blackwell Publishers, 2000 (**LCR**)
- Carleton, D. and J. Perloff, Modern Industrial Organization, Scott-Foresman-Little-Brown, 4th Edition, 2005 (**CP**).
- Church, J. and R. Ware, Industrial Organization: a Strategic Approach, Richard D. Irwin, 1998 (**CW**).
- Motta, Massimo, Competition Policy: Theory and Practice, Cambridge University Press, 2004 (**MM**)
- Salanié, Bernard, Microeconomics of Market Failure, MIT Press, 2000 (**SA**)
- Scherer, F.M. and D. Ross, Industrial Market Structure and Economic Performance, 3rd Edition, Houghton-Mifflin Co., Boston, 1990 (**SR**).
- Schmalensee, R. and R. Willig (eds.) Handbook in Industrial Organization Volumes 1 and 2, North Holland, 1989 (**Handbook 1-2**).
- Stigler, G. The Organization of Industry, U. Chicago Press, 1968 (**S**)

Journal Abbreviations:

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| AER | - American Economic Review |
| AEJ:M | - American Economic Journal: Microeconomics |
| ALJ | - Antitrust Law Journal |
| BJE | - Bell Journal of Economics |
| CJE | - Canadian Journal of Economics |
| Ec | - Economica |
| EER | - European Economic Review |
| EI | - Economic Inquiry |
| EJ | - Economic Journal |
| EM | - Econometrica |
| IJIO | - International Journal of Industrial Organization |
| JB | - Journal of Business |
| JEMS | - Journal of Economics and Management Strategy |
| JEP | - Journal of Economic Perspectives |
| JET | - Journal of Economic Theory |
| JIE | - Journal of Industrial Economics |
| JLaE | - Journal of Labor Economics |
| JLE | - Journal of Law and Economics |
| JLEO | - Journal of Law, Economics and Organization |
| JPE | - Journal of Political Economy |
| J Pub E | - Journal of Public Economics |
| NBER | - National Bureau of Economic Research |
| QJE | - Quarterly Journal of Economics |
| RES | - Review of Economic Studies |
| RIO | - Review of Industrial Organization |
| RJE | - Rand Journal of Economics. |

I. INTRODUCTION TO INDUSTRIAL ORGANIZATION: THE QUESTIONS

Tirole: pp.1-15.

SR: Chapter 1.

II THEORY OF THE FIRM

Tirole: 15-60.

Arrow, K. The Limits of Organization, N.Y., Norton., 1974.

Bonatti, A. and J. Hörner “Collaborating,” AER April 2011, 101(2):632 – 663.

Grossman, S. and O. Hart “The Costs and Benefits of Ownership: A Theory of Lateral and Vertical Integration,” JPE 1986, 94: 691 – 719.

Hart, O. “Incomplete Contracts and the Theory of the Firm,” JLEO 1988, 4:119 - 139.

Hermalin, B.E. and M.L. Katz “Information and the Hold-up Problem,” RJE Autumn 2009, 40(3): 405 – 423.

Horstmann, I., F. Mathewson and N. Quigley “Sales Contracts with Long-Term Customer Relationships,” JLaE July 2005, 23(3): 589 – 608.

Alchian, A. and H. Demsetz “Production, Information Costs, and Economic Organization,” AER 1972, 62: 777 - 795.

Holmstrom, B. and P. Milgrom “Multi-Task Principal-Agent Analyses: Incentive Contracts, Asset Ownership and Job Design,” JLEO 1991, 7: 24 - 51.

Lazear, E. P. and S. Rosen “Rank-Order Tournaments as Optimum Labor Contracts,” JPE 1981, 89(5): 841 – 864.

Kotowitz, Y. and F. Mathewson “The Economics of the Union-controlled Firm,” Ec 1982, 49 No. 196: 421 – 433.

Lazear, E. P. *Personnel Economics*, Ch 3 “Relative Compensation,” MIT Press: Cambridge, 1995.

Lazear, E.P. and K.L. Shaw “Personnel Economics: The Economist’s View of Human Resources,” JEP 2007, 21(4): 115 – 134.

- Kvaløy, O. and T.E. Olsen, “The Rise of Individual Performance Pay,” JMES 2012, 21(2): 493 – 518.
- Milgrom, P. and J. Roberts Economics, Organization and Management, chs. 2 and 7.
- Rajan, R. and L. Zingales “The Firm as a Dedicated Hierarchy: A Theory of the Origins and Growth of Firms,” QJE August 2001, 116 (3): 805 – 852.
- Levin, J. “Relational Incentive Contracts,” AER June 2003, 93(3): 835 – 857.
- Levin, J. and S. Tadelis “Profit Sharing and the Role of Professional Partnerships,” QJE February 2005, 120(1): 131 – 172.
- Corts, K. “Teams Versus Individual Accountability: solving Multitask Problems Through Job Design,” RJE Summer 2007, 38(2): 467 – 479.
- Bar-Isaac, H “Something to Prove: Reputation in Teams,” RJE Summer 2007 38(2): 495 – 511.
- Kosfeld, M. and F von Siemens “Competition, Cooperation and Corporate Culture,” RJE Spring 2011, 42(1): 23 – 43.
- Mukherjee, A. and L Vasconcelos “Optima; Job Design in the Presence of Implicit Contracts,” RJE, Spring 2011, 41(1): 44 – 69.
- Aghion, P. and R. Holden, “Incomplete Contracts and the Theory of the Firm: What Have We Learned Over the Past 25 Years,” JEP, Spring 2011, 25(2): 181 – 197.
- Tirole, J. “Cognition and Incomplete Contracts,” AER March 2009, 99(1): 265 – 294.
- Coase, R. “The Nature of the Firm,” Ec 1937, 4(16): 386 – 405.
- Stigler, G. “The Division of Labor is Limited by the Extent of the Market,” in (S).
- Klein, B., R. Crawford, and A. Alchian “Vertical Integration, Appropriable Rents, and the Competitive Contracting Process,” JLE 1978, 21: 297 – 326.
- Hart, O. and J. Moore “Contracts as Reference Points,” QJE 2008, 73(1): 1 – 48.
- Hart, O. “Hold-up, Asset Ownership and Reference Points,” QJE 2009, 74(1): 267 – 300.
- Hermalin, B. and M Katz “Information and the Hold-Up Problem,” RJE 2009 40(3): 405 – 423.
- Hur, J. and Y Riyanto, “Organizational Structure and Product Market Competition,” JMES 2012, 21(3): 707 – 744.

Masten, S. and E. Snyder “United States versus United Shoe Machinery Corporation: On the Merits,” JLE April 1993, 36(1) Part 1: 33 – 70.

Stole, L. and J. Zweibel “Organizational Design and Technology Choice Under Intrafirm Bargaining,” AER March 1996, 86(1): 195 – 222.

Whinston, M. “On the Transaction Cost Determinants of Vertical Integration,” JLEO April 2003, 19(1): 1 – 23.

Applications

Joskow, P. “Contract Duration and Relationship-Specific Investments,” AER, 1987, 77: 168 – 185.

Mathewson, F. and R. Winter “Territorial Restrictions in Franchise Contracts,” EI, April 1994, 32(2): 181 – 192.

Jensen, M. and K. Murphy “Performance Pay and Top-Management Incentives,” JPE, 1990, 98: 225 – 264.

Crocker, K. and S. Masten “Mitigating Contractual Hazards: Unilateral Options and Contract and Contract Length,” RJE, 19, Autumn 1984: 327 – 343.

III. THE THEORY OF MONOPOLY

Tirole: Ch. 1, pp. 65 – 72; 73 – 78.

Maskin, E. and J. Riley “Monopoly with Incomplete Information,” RJE, 15, Summer 1984:171 – 196.

A. Durable Goods Monopoly

Tirole: Ch. 1: 72 – 73, 79 – 87.

Coase, R. “Durability and Monopoly,” JLE, 15, 1972:143 – 149.

Pesendorfer, W. “Design Innovation and Fashion Cycles,” AER September 1995 85(4): 771 – 792.

Bulow, J. “Durable Goods Monopolists,” JPE, 1982, 90(2): 314 – 332.

Karp, L. and J. Perloff “The Optimal Suppression of a Low-Cost Technology by a Durable-Good Monopoly,” RJE Summer 1996 27(2): 346 – 364.

Fudenberg, D. and J. Tirole “Upgrades, Tradeins, and Buybacks,” RJE Summer 1998 29(2): 235-258.

Deneckere, R. and A. de Palma “The Diffusion of Consumer Durables in a Vertically Differentiated Oligopoly,” RJE, Winter 1998, 29 (4): 750 – 771.

Hendel, I. and A. Lizzeeri “Interfering with Secondary Markets,” RJE, 30 (1), Spring 1999: 1 – 21.

Denerkere, R. and M.-Y. Liang “Imperfect Durability and the Coase Conjecture,” RJE Spring 2008 39(1): 1 – 19.

House, C.L. and E. Ozdenoren “Durable Goods and Conformity,” RJE Summer 2008 39(2): 452 – 468.

B. Production Selection, Quality and Advertising

Tirole: Ch. 2

Akerlof, G. “The Market for Lemons: Quality Uncertainty and the Market Mechanism,” QJE, 1970, 84: 488-500.

Levin, J. “Information and the Market for Lemons,” RJE 32(4), Winter 2001: 657-666.

Spence, M. “Monopoly, Quality, and Regulation,” BJE, 1975, 6: 417-429.

Becker, G. and K. Murphy “A Simple Theory of Advertising as a Good or Bad,” QJE 108, November 1991: 941-964.

Shapiro, C. “Premiums for High Quality Products as Returns to Reputations,” QJE 98, November 1983: 659-679.

Mussa, M. and S. Rosen “Monopoly and Product Quality,” JET 18, August 1978: 301 - 317.

Emons, W. “Credence Goods and Fraudulent Experts,” RJE Spring 1997 28 (1): 107-119.

Schlee, E. “The Value of Information About Product Quality,” RJE Winter 1996, 27(4): 803 - 815.

Johnson, J. and M. Waldman, “Leasing, Lemons and Buybacks,” RJE Summer 2003 34(2): 247 – 266.

Shavell, S. “Acquisition and Disclosure of Information Prior to Sale,” RJE Spring 1994
25(1): 20 – 36.

Bagwell, K. “The Economic Analysis of Advertising,” Ch. 28, **Handbook 3**.

C. **Price Discrimination**

Tirole: Ch. 3: 133 -165.

SR: Ch. 12, 13

Varian, H. “Price Discrimination,” Ch.10, **Handbook 1-2**.

Shepard, A. “Price Discrimination and Retail Configuration,” JPE, 99, Feb. 1991: 30 -
53.

Borenstein, S. and N. Rose “Competition and Price Dispersion in the U.S. Airline
Industry,” JPE, Aug. 1994.

Corts, K.S. “Third-Degree Price Discrimination in Oligopoly: All-Out Competition and
Strategic Commitment,” RJE Summer 1998 29(2): 306 - 323.

Rosen, S. and A. M. Rosenfield “Ticket Pricing,” JLE October 1997, 40 (2): 351-376.

Kühn, Kai-Uwe “Nonlinear Pricing in Vertically Related Duopolies,” RJE Spring 1997,
28 (1): 37-62.

Courty, Pascal and Hao Li “Sequential Screening,” RES October 2000, 67(4): 697 – 717.

Armstrong, M. and J. Vickers “Competitive Price Discrimination,” RJE Winter 2001,
32(4): 579 – 605.

Holmes, T.J. “The Effects of Third-Degree Price Discrimination in Oligopoly,” AER
1989 79(1): 244 – 250.

Stole, L “Price Discrimination and Competition,” Ch. 34, **Handbook 3**.

D. **Vertical Integration and Foreclosure**

Tirole: Ch. 4.

SR: Ch. 1

Katz, M. “Vertical Contractual Relationships,” Ch. 11, **Handbook 1-2**.

Perry, M. “Vertical Integration: Determinants and Effects,” Ch.4, **Handbook 1-2**.

Riordan, M. “What is Vertical Integration?” in M. Aoki, B. Gufstafson, and O. Williamson (eds.) The Firm as a Nexus of Treaties, London: Sage, 1990.

Riordan, M. “Anticompetitive Vertical Integration by a Dominant Firm,” AER 1998, 88(5): 1232 – 1248.

Ordover, J., G. Saloner, and S. Salop “Equilibrium Vertical Foreclosure,” AER March 1990 , 80(1):127 - 142.

Rey, P. and J. Tirole “A Primer on Foreclosure,” Ch.33, **Handbook 3**.

Rey, P. and J. Stiglitz “The Role of Exclusive Territories in Producers' Competition,” RJE Autumn 1995, 26 (3): 431 - 451.

Weiss, A. “Vertical Mergers and Firm-Specific Physical Capital: Three Case Studies and Some Evidence on Timing,” JIE, 42, 1994: 395 – 418.

Kaufman, P. and F. Lafontaine “Costs of Control: The Source of Economic Rents for McDonald’s Franchisees” JLE 1994 37(2): 417 – 454.

Kühn, K.-U. and X. Vives “Excess Entry, Vertical Integration and Welfare,” RJE Winter 1999, 30(4): 575 – 603.

Shy, O. and Z Wang “Why Do Payment Card Networks Charge Proportional Fees,” AER June 2011, 101(4): 1575 – 1590.

Arya, A. and B. Mittendorf “Disclosure Standards for Vertical Contracts,” RJE Fall, 2011, 42(3): 595 – 617.

Moresi, S. and S. Salop “vGUPPI: Scoring Unilateral Pricing Incentives in Vertical Mergers,” available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2085999

E. Exclusive Dealing Contracts and Foreclosure

Marvel, H. “Exclusive Dealing,” JLE, April, 1982, 25: 1 – 25.

Mathewson, F. and R. Winter “Is Exclusive Dealing Anti-Competitive? A Comment,” AER, Dec. 1987, 77: 1057 – 1062.

Aghion, P. and P. Bolton “Entry Prevention through Contracts with Customers,” AER, 1987, 77: 388 – 401.

Rasmusen, E.B. et al “Naked Exclusion,” AER 1991, 81(5): 1137 – 45.

Segal, I.R. and M.D. Whinston “Naked Exclusion: Comment,” AER 2000 90(1): 296 – 309.

Borenstein, S. et al “Antitrust Policy in Aftermarkets,” ALJ Winter 1995, v 63(2): 455 - 482.

Shapiro, C. “Aftermarkets and Consumer Welfare: Making Sense of *Kodak*,” ALJ, v 63(2): 483 - 512.

Stefanadis, C. “Selective Contracts, Foreclosure, and the Chicago School View,” JLE, October 1998, v.41 (2)(pt.1): 429 - 450.

Segal, I.R. and M.D. Whinston “Exclusive Contracts and Protection of Investments,” RJE Winter 2000, 31(4): 603 – 633.

F. Other Vertical Contracts

(I) *Resale Price Maintenance and Exclusive Territories*

Telser, L. “Why Should Manufacturers Want Fair Trade?” JLE, Oct. 1960, 3: 86 - 105.

Mathewson, F., and R. Winter “The Law and Economics of Resale Price Maintenance,” RIQ 13 (Nos 1-2), April 1998: 57 - 84.

Gallini, N. and R. Winter “On Vertical Control in Monopolistic Competition,” IJIO 1, 1983, 1: 275 - 86.

Rey, P. and J. Tirole “The Logic of Vertical Restraints,” AER, Dec. 1986, 66: 921 - 939.

Mathewson, F. and R. Winter “An Economic Theory of Vertical Restraints,” RJE, Spring 1984, 15: 27 - 38.

Ippolito, P. “Resale Price Maintenance: Empirical Evidence from Litigation,” JLE 31, 1991: 263 - 294.

Ippolito, P. and T. Overstreet “Resale Price Maintenance: an Economic Assessment of the Federal Trade Commission's Case against the Corning Glass Works,” JLE 1996, 39: 285 - 328.

Winter, R. “Vertical Control and Price vs. Non-Price Competition,” QJE, 1993 108 (1): 61 - 76.

Rey, P. and J. Stiglitz “The Role of Exclusive Territories in Producers’ Competition,” RJE Autumn, 1995 26(3).

Slade, M. “Strategic Motives for Vertical Separation: An Empirical Exploration,” JLEO April 1998, 14 (1): 84 - 113.

Innes, R and S.F. Hamilton “Vertical Restraints and Horizontal Control,” RJE Spring 2009 40(1): 120 – 143.

Bonnet, C. and P Dubois “Inference on Vertical Contracts between Manufacturers and Retailers Allowing for Nonlinear Pricing and Resale Price Maintenance,” RJE Spring 2010 41(1): 139 – 164.

Mortimer, J.H. “Vertical Contracts in the Video Rental Industry,” RES January 2008, 75(1). No, 262:165 – 200.

Ioannou, I., J. Mortimer and R. Mortimer “The Effects of Capacity on Sales under Alternative Vertical Contracts,” JIE March 2011, 59 (1): 117 – 154.

(II) Tying and Bundling

Stigler, G. “A Note on Block Booking,” in **S** 165, 1968.

Adams, M. and J. Yellen “Commodity Bundling and the Burden of Monopoly,” QJE, Aug. 1976, 90: 475 - 98.

Nalebuff, B. “Bundling as a Barrier to Entry,” QJE Feb. 2004, 69(1): 159 – 188.

Mathewson, F. and R. Winter “Tying as a Response to Demand Uncertainty,” RJE Autumn 1997, 28 (3): 566 - 583.

McAfee, P., J. McMillan, and M. Whinston “Multiproduct Monopoly, Commodity Bundling, and Correlation of Values,” QJE, 104, May 1989: 371 - 383.

Choi, J.O. and C. Stefanadis “Tying, Investment and the Dynamic Leverage Theory,” RJE Spring 2001, 32(1): 52 – 71.

Whinston, M.D. “Tying, Foreclosure, and Exclusion,” AER 1990, 80(4): 837 – 860.

Whinston, M.D. “Exclusivity and Tying in the US v. Microsoft:...” JEP 2001, 15: 63 – 80.

Joskow, P.L. “Transaction Cost Economics, Antitrust Rules and Remedies,” JLEO April 2002, 18(1): 95 – 116.

(III) Refusals to Supply

Chen, Z. and T. Ross “Refusals to Deal and Orders to Supply in Competitive Markets,” IJO, 17 (3), April 1999: 399 – 418.

(IV) Loyalty Programs

Caminal, R. “The Design and Efficiency of Loyalty Rewards,” JEMS Summer 2012, 21 (2): 339 – 372.

Basso, L., M. Clements “Moral Hazard and Customer Loyalty Programs,” AEJ:M 2009, 1(1): 101 – 123.

Chen, Y. “Dynamic Pricing: When to Entice Brand Switching and When to Reward Customer Loyalty,” RJE 2010, 41(4): 674 – 685.

Crémer, J. “On the Economics of Repeat Buying,” RJE 1984, 15(3): 396 – 403.

Fudenberg, D. and J. Tirole “Customer Poaching and Brand Switching,” RJE 2000, 31(4): 634 – 657.

Lederman, M. “Do enhancements to Loyalty Programs Affect Demand? The Impact of International Frequent Flyer Partnerships on Domestic Airline Demand,” RJE 2007, 38(4): 1134 – 1158.

Lederman, M. “Are frequent Flyer programs a Cause of the ‘Hub Premium’?” JEMS 2008, 17(1): 35 – 66.

(V) Other

Moorthy, S. and R. Winter “Price-Matching Guarantees,” RJE Summer 2006, 37(2): 449 – 465.

Chen, Y. and M.H. Riordan “Vertical Integration, Exclusive Dealing and *Ex-Post* Cartelization,” RJE, Spring 2007 38(1): 1 – 21.

IV. THEORIES OF OLIGOPOLISTIC MARKETS

A. Oligopoly

(I) Theory

Tirole: Review Ch. 11 (game theory). Also, pp. 205-208 and Ch. 5,6

Shapiro, C. “Theories in Oligopoly Behavior,” Ch. 6 in the **Handbook 1-2**.

Rocher, J.-C and J Tirole, “Two Sided Markets: A Progress Report,” RJE Autumn 2006 37(3): 645 – 667,

Armstrong, M, “Competition in Two-Sided Markets,” RJE Autumn 2006 37(3): 668 – 691.

(II) Collusion

Tirole: Ch. 6

Jacquemin, A. and M. Slade “Cartels, Collusion, and Horizontal Mergers,” Ch 7 , in the **Handbook 1-2**.

Stigler, G. “A Theory of Oligopoly,” JPE, 1964, 72: 44-61 (reprinted in OI)

Salop, S. “Practices that Credibly Facilitate Oligopoly Coordination,” in New Developments in the Analysis of Market Structure, J. Stiglitz and F. Mathewson (eds), Cambridge: M.I.T. Press: 265-290.

Rotemberg, J.J. and G. Saloner “A Supergame-Theoretic Model of Price Wars During Booms,” AER 1986, 14: 301 - 314. Reprinted in (**LCR**)

Green, E. and R. Porter “Noncooperative Collusion under Imperfect Price Competition,” EM 52, January 1984: 87 - 100. Reprinted in (**LCR**)

Porter, R. “A Study of Cartel Stability: The Joint Executive Committee, 1880-1886,” BJE, 1983. Reprinted in (**LCR**)

Bernheim, D. and M. Whinston “Common Market Agency as a Device for Facilitating Collusion,” RJE, 1985, 16: 269 - 281.

Christie, W. and P. Schultz “Policy Watch: Did Nasdaq Market Makers Implicitly Collude?” JEP, 9, 1995:199 - 208.

Athey, S. and K. Bagwell “Optimal Collusion with Private Information,” RJE Autumn 2001, 32(3): 428 – 465.

Athey, S., K. Bagwell, and C. Sanchirico “Collusion and Price Rigidity,” RES April 2004, 71(2): 317 – 350.

Harrington, J. “Cartel Pricing Dynamics in the Presence of an Antitrust Authority,” RJE Winter 2004, 35(4): 651 – 673.

Bernheim, D. and M. Whinston, "Multimarket Contact and Collusive Behavior," RJE, 1990, 21(1): 1 – 26.

Thomas, C and R. Willig "The risk of Contagion from Multimarket Contact," IJIO, 2006, 24(6): 1157 – 1184,

Farrell, J. and P. Klemperer "Corridination and Lock-in: Competition with Switching costs and Network Effects," Ch. 31 in the **Handbook 3**.

Harrington, J. and A. Skrzypacz "Collusion Under Monitoring of Sales," RJE Summer 2007 38(2): 314 – 331.

(III) Empirical Studies of Collusive Behavior

Borenstein, S. and A. Shepard "Dynamic Pricing in Retail Gasoline Markets," RJE, 20, 1996: 429-451.

Lee, L and R. Porter "Switching Regression Models-with Applications to Cartel Stability," EM, 52, 1983: 391-418.

K. Crocker and T. Lyon "What do 'Facilitating Practices' Facilitate? An Empirical Investigation of Most-Favored Nation Clauses in Natural Gas Contract," JLE, 1994 37(2): 297 - 322.

Bresnahan, T. "Competition and Collusion in the American Automobile Industry: The 1955 Price War," JIE, 35, 1987: 457 - 482.

Porter, R. "A Study of Cartel Stability: The Joint Executive Committee, 1880-1886," BJE, 1983.

Ellison, G. "Theories of Cartel Stability and the Joint Executive Committee," RJE, 25, 1994; 37 - 57.

Christie, W. and P. Schultz "Policy Watch: Did Nasdaq Market Makers Implicitly Collude?" JEP, 9, 1995:199 - 208.

Doyle, M.P. and C.M. Snyder "Information Sharing and Competition in the Motor Vehicle Industry," JPE, 107, 1999: 1326-1364.

Mullin, G.L., J.C. Mullin and W. P. Mullin, "The Competitive Effects of Mergers: Stock Market Evidence from the U.S. Steel Dissolution Suit," RJE, 26, 1995: 514-30.

Asker, J. "A Study of the Internal Organization of a Bidding Cartel," AER June 2010 100(3): 724 – 762.

B. Product Differentiation

(I) **Theory**

Tirole: Chs. 2,7.

Eaton, C. and R. Lipsey “Product Differentiation,” Ch.12 in the **Handbook 1-2**.

Dixit, A. and J. Stiglitz “Monopolistic Competition and Optimum Product Diversity,” AER 1977, 67: 297 - 308. Reprinted in (**LCR**).

Schmalensee, R. “Product Differentiation Advantages of Pioneering Brands,” AER, 72(3),1982: 349 – 365.

Mathewson, F. and R. Winter “Buyer Groups,” IJIO 15, 1996: 137 - 164.

Klein, B. and K. Leffler “The Role of Market Forces in Assuring Contractual Performance,” JPE, 89(4), 1981: 615 - 641.

Borenstein, S. and J. Netz “Why do all the flights Leave at 8 am? Competition and Departure-time Differentiation in Airline Markets,” IJIO, 17(5), July 1999: 611 - 640.

Bester, H. “Quality Uncertainty Mitigates Product Differentiation,” RJE Winter 1998, 29(4): 828 – 844.

Hsieh, CT and E. Moretti “Can Free Entry Be Inefficient? Fixed Commissions and Social Waste in the Real Estate Industry,” JPE October 2003, 111:1076 – 1122.

(II) **Product Differentiation and Advertising**

Bain Barriers to New Competition (*excerpts*), Comanor and Wilson Advertising and Market Power (*excerpts*), Sutton Sunk Costs and Market Structure (*excerpts*)

Dixit, A. and V. Norman “Advertising and Welfare”, BJE, 1978.

Mathewson, F. and Y. Kotowitz “Informative Advertising and Welfare” AER 69(3), June 1979: 284-294.

Mathewson, F. and Y. Kotowitz “Advertising, Consumer Information and Product Quality” Bell Journal of Economics, 10(2), Fall 1979: 566-588.

Grossman, G. And C. Shapiro “Informative Advertising with Differentiated Products”, RES 51(1), No.164 January 1984: 63 – 94.

Milgrom, P. And J. Roberts “Price and Advertising Signals of Product Quality,” JPE 94(4), August 1986: 796 – 821.

(III) Empirical models of product differentiation

Rosen, S. “Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition,” JPE, 82: 34 - 55, 1972.

Trajtenberg, M. “The Welfare Effects of Product Innovations: the Case of CAT Scanners,” JPE, 97: 444 - 479, 1989.

Berry, S. “Estimating Discrete-Choice Models of Product Differentiation,” RJE, 25: 242 - 262, 1994.

Berry, S. and J. Levinsohn, and A. Pakes “Automobile Prices in Market Equilibrium,” EM, 63: 841 - 890, 1995. Reprinted in (**LCR**)

Hausman, J. “Valuation of New Goods under Perfect and Imperfect Competition,” in The Economics of New Goods, ed. Bresnahan and Gordon. Also comments by Bresnahan.

Hendel, I. “Estimating Multiple-discrete Choice Models: An Application to Computerization Returns,” RES, April 1999: 423 - 446.

Nevo, A. “Mergers with Differentiated Products: the Case of the Ready-to-eat Cereal Industry,” RJE, 31, 2000: 395 - 421.

Hausman, J., G. Leonard, and D. Zona, “Competitive Analysis with Differentiated Products,” Annales D’Economie et de Statistique, 34, 1994: 159 - 180.

Schmalensee, Richard, Alvin Silk and Robert Bojanek “The Impact of Scale and Media Mix on Advertising Agency costs,” JB, 56, 1983: 453 - 475.

C. Entry and Market Structure

(I) Theory

McAfee, P. et al “What is a Barrier to Entry?” AER 94(2), 2004: 461 – 465, including Technical Appendix available at <http://www.hss.caltech.edu/~mcafee/Papers/PDF/B2ETechnicalAppendix.pdf>

Carlton, Dennis, “Why Barriers to Entry are Barriers to Understanding,” AER 94(2), 2004: 466 – 470.

Schmalensee, R. “Sunk Costs and Antitrust Barriers to Entry,” AER 94(2): 467 – 471.

Stigler, G. “Barriers to Entry, Economies of Scale, and Firm Size” Reprinted in (S).

Demsetz, H. “Barriers to Entry,” AER, 72, 1982: 47 – 57.

Arbatskaya, M. “Can Low-price Guarantees Deter Entry?” IJIO, 19(9), November 2001: 1387 – 1406.

Vives, X. “Private Information, Strategic Behavior, and Efficiency in Cournot Markets,” RJE, 33(3), Autumn 2002: 361 – 376.

Berry, S. and P. Reiss “Empirical Models of Entry and Market Structure,” Ch. 29 in the Handbook 3.

(II) **Static Models: Equilibrium Market Structure (“free entry”)**

Mankiw, G. and M. Whinston “Free Entry and Social Inefficiency,” RJE, 1985.

Sutton, J. Sunk Costs and Market Structure, 1991 (Also read Bresnahan’s book review, RJE, 1991).

Sutton, J. “One Smart Agent,” RJE, 1997.

Sutton, J. “Market Structure: Theory and Evidence,” Ch 35 in the **Handbook 3**.

Snell, B. “Annual Style Change in the Automobile Industry as an Unfair Method of Competition,” Yale Law Journal, 80: 567ff., 1971.

Bresnahan, T. and P. Reiss “Entry in Concentrated Markets,” JPE, 1991.

Berry, S. and J. Waldfogel “Free entry and Social Inefficiency in Radio Broadcasting,” RJE 1999, 30: 397 - 420.

Berry, S. “Estimating a Model of Entry in the Airline Industry,” EM, 1992.

(III) **Multiperiod Models: Strategic Entry Deterrence and Predatory Pricing**

Tirole: Ch. 8,9

Gilbert, R. “Mobility Barriers and the Value of Incumbency,” Ch. 8. **Handbook 1-2**.

Ordover, J. and G. Saloner “Predation, Monopolization, and Antitrust,” **Handbook 1-2**.

- Wilson, R. "Strategic Models of Entry Deterrence," **Handbook of Game Theory with Economic Applications, Volume 1, ch.10** .
- Schmalensee, R. "Entry Deterrence in the Ready-to-Eat Breakfast Cereal Industry," BJE, 1978, 9: 305 - 327.
- Judd, K. "Credible Spatial Pre-emption", RJE, 1985
- Dixit, A. "The Role of Investment in Entry Deterrence," EJ 1980, 90: 95 - 106. Reprinted in (**LCR**).
- Somma, E. "The Effects of Incomplete Information About Future Technological Opportunities on Pre-emption," IJIO August 1999, 17(6): 765 – 800.
- Grossman, G. and C. Shapiro "Informative Advertising and Imperfect Information," RES January 1984, 51(1), No. 164: 63 – 82.
- Linnemer, L. "Entry Deterrence, Product Quality: Price and Advertising as Signals," JEMS, 7(4), Winter 1998: 615 – 646.
- Salop, S. and D. Scheffman "Raising Rivals' Costs," AER, 73, 1983: 267 - 271.
- Milgrom, P. and J. Roberts "Predation, Reputation, and Entry Deterrence," JET, 1982, 27: 280-312.
- McGee, J. "Predatory Price Cutting: The Standard Oil (N.J.) Case," JLE, Oct. 1958: 137 – 169.
- Burns, M. "Predatory Pricing and the Acquisition Cost of Competitors," JPE 1986 94(2): 266 - 296.
- Weiman, D. and R. Levin "Preying for Monopoly? The Case of Southern Bell Telephone Company, 1894-1912," JPE, 102, 1994:103 - 129.
- Maggi, G. "Endogenous Leadership in a New Market," RJE 1996 27(4): 641 - 659.
- Bagwell, K. and G. Ramey "Capacity, Entry, and Forward Induction," RJE 27(4), Winter 1996: 660 - 680.
- Doraszelski, U. and A. Pakes "A framework for Applied Dynamic Analysis in IO," Ch. 30, **Handbook 3**.
- Edlin, A, "Predatory Pricing," 2010 available at http://works.bepress.com/aaron_edlin/

(IV) **Predation and Finance**

Bolton, Patrick and David Sharfstein “A Theory of Predation Based on Agency Problems in Financial Contracting,” AER, 80, 1990, 93 - 106.

Chevalier, J. “Capital Structure and product Market Competition: Empirical Evidence From the Supermarket Industry,” AER, 85, 1995: 1095 - 1112.

Snyder, Christopher “Negotiation and Renegotiation of Optimal Financial Contracts Under the Threat of Predation,” JIE, 44, 1996, 325 - 343.

Hirshleifer, D. and A. Thakor “Corporate Control through Board Dismissals and Takeovers,” JEMS 7(4), 1998: 489 - 520.

Bulow, J., M. Huang, and P. Klemperer “Toeholds and Takeovers,” JPE 107(3), June 1999: 427 - 454.

D. R&D and the Adoption of New Technologies

Tirole, Ch. 10

John Sutton Technology and Market Structure, MIT Press, 1999

Arrow, K. “Economic Welfare and the Allocation of Resources for Inventions,” in The Rate and Direction of Inventive Activity, Ed. R. Nelson, Princeton, 1962.

Fudenberg, D., R. Gilbert, J. Stiglitz, and J. Tirole “Preemption, Leapfrogging, and Competition in Patent Races,” EER, 22, 1983: 3 - 31.

Gilbert, R. And D. Newberry “Preemptive Patenting and the Persistence of Monopoly,” AER, 72, 1982: 514 - 526.

Gallini, N. “Deterrence by Market Sharing: A Strategic Incentive for Licensing,” AER, 1984, 74: 831 - 941.

Katz, M. And C. Shapiro “Technology Adoption in the Presence of Network Externalities,” JPE, 94, 1986: 822 - 841.

“Syposium on the Patent System and Innovation,” RJE, Spring 2001 32(1).

Denicolò, V. “Two-Stage Patent Races and Patent Policy,” RJE Autumn 2000, 31(3): 488 - 501.

Franco, A. and D. Filson “Spin-Outs, Knowledge Diffusion Through Employee Mobility,” RJE Winter 2006, 37(4): 841 – 860.

Franco, A. and M. Mitchell “Covenants Not to compete, Labor Mobility, and Industry Dynamics,” JEMS Fall 2008, 17(3): 581 – 606.

VI. GOVERNMENT POLICY

A. Antitrust and merger policy

Kaplow, L. and C. Shapiro, “Antitrust,” NBER WP 12867 (2007).

Carlton, D. and R. Picker, “Antitrust and Regulation,” NBER 12902 (2007)

Motta, M. Competition Policy: Theory and Practice (2004), Cambridge: Cambridge University Press.

Buccirossi, P. Handbook of Antitrust Economics (2008), Cambridge: The MIT Press.

Areeda, P. Antitrust Analysis: Problems, Text, Cases, pp. 7 - 46.

Williamson, O. “Economies as an Antitrust Defense: The Welfare Tradeoffs,” 58 AER 1968: 18 - 36.

Farrell, J. and C. Shapiro “Horizontal Mergers: An Equilibrium Analysis,” AER 80(1), March 1990: 107 - 126.

Spector, D. “Horizontal Mergers, Entry, and Efficiency Defences,” IJIO 21(10), December 2003: 1591 – 1600.

Kim, E. And V. Singal “Mergers and Market Power: Evidence from the Airline Industry,” AER, 83, 1993: 549 - 569.

Shapiro, C. “Mergers with Differentiated Products,” Antitrust Spring 1996, 10(2): 23- 30.

Carlton, D.W. “Does Antitrust Need to be Modernized?” JEP Summer 2007, 21(3): 155 – 176.

Whinston, M.D. “Antitrust Policy Toward Horizontal Mergers,” Ch. 36, **Handbook 3**.

Whinston, M.D. Lectures on Antitrust Economics, Cambridge: MIT Press 2006.

B. Regulation

Joskow, P. And N. Rose “The Effects of Economic Regulation” Ch.25, **Handbook 1-2**.

- Noll, R. "Economic Perspectives on the Politics of Regulation," Ch 22, **Handbook 1-2**.
- Demsetz, H. "Why Regulate Utilities," JLE, 1968: 55 - 65.
- Baumol, W. and A. Klevorick "Input Choices and Rate of Return Regulation: An Overview of the Discussion," BJE 1(2), Autumn 1970: 162 – 190.
- Stigler, G. "The Theory of Economic Regulation," BJE, 2(1), Spring 1971: 3 – 21.
- Joskow, P. "Inflation and Environmental Concern: Structural Change in the Process of Public Utilities Regulation," JLE, 17(2) Oct. 1974: 291 – 328.
- Posner, R. "The Social Costs of Monopoly and Regulation," JPE, 83, 1975: 807 – 827.
- Baron, D. and R. Myerson "Regulating a Monopolist with Unknown Costs," Em, 1982.
- Wolak, F. "An Econometric Analysis of the Regulator-Utility Interaction", Annales d'Economie et de Statistique, 1994.
- Faure-Grimaud, A. and D. Martimort "Regulatory Inertia," RJE, 34(3), Autumn 2003: 413 – 437.
- Mulligan, C.B. and A. Shleifer, "The Extent of the Market and the Supply of Regulation," QJE November 2005 70(4): 1445 – 1474.
- Armstrong, M. and D.E.M. Sappington, "Recent Developments in the Theory of Regulation," Ch. 27, **Handbook 3**.