

**ECONOMICS 2908: INDUSTRIAL ORGANIZATION and
COMPETITION POLICY**

**(Fall Semester: Monday's 11:10 am to 1:00 pm:
RT 157; except Oct 16, RT 1065; Dec 4 and 7 TBD)**

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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, answer templates will be posted.

Other courses: **ECO 2900F** (Fall Semester; Tuesday 11 – 1): offered by Professor Yao Lao.
ECO 2901S (Winter Semester; Friday 9 – 11); offered by Professor Victor Aguirregabiria.
ECO 2404 (Winter Semester; Tuesday 9 – 11); offered by Professor Eduardo Souza Rodrigues.
RSM 3011 (Winter Semester; TBA); offered by Professor Heski Bar Isaac
Bus Econ/IO Workshop: students are encouraged to attend this workshop that typically meets at Rotman on Monday's from 4:10 to 5:30 pm. Check seminar schedule for dates, room location, speakers and papers.

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 2404S, ECO 2900 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**)

Whinston, M.D. Lectures on Antitrust Economics, MIT press, 2008 (**W**)

Journal Abbreviations:

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
IJO	- 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: pps 1 – 15 and Ch. 5, pps 209 – 212.

SR: Chapter 1.

Weyl, E. G. “Price Theory” forthcoming Journal of Economic Literature

II THEORY OF THE FIRM

Tirole: 15-60.

Mathewson, F., J Murdoch and G. Wall, “Music Tariffs: Options, Regulation and Bargaining,” ms. 2017

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. (One of the top 20 articles in the AER over 100 years of the publication of the AER. See Arrow, Kenneth J., B. Douglas Bernheim, Martin S. Feldstein, Daniel L. McFadden, James M. Poterba, and Robert M. Solow. 2011. "100 Years of the *American Economic Review*: The Top 20 Articles." *American Economic Review*, 101(1): 1-8.)

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.
- 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.
- Prendergast, C. “The Tenuous Trade-off between Risk and Incentives,” JPE October 2002, 110 (5): 1071 – 1102.
- Prendergast, C. “The Economics of Wild Goose Chases,” RJE Spring 2015, 46(1): 146 – 164.
- Bester, H. and D. Kraemer “The Optimal Allocation of Decision and Exit Rights in Organizations,” RJE Summer 2017, 48(2): 309 – 334.

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.

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

House, C.L. amd 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.

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

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

Tadelis, S. and F. Zettelmeyer, “Information Disclosure as a Matching Mechanism: Theory and Evidence from a Field Experiment,” AER February 2015 105(2): 860 – 905.

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 Li Hao “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**.

Bergeman, D., B. Brooks, and Stephen Morris “The Limits of Price Discrimination,” AER March 2015, 105 (3): 921 – 957.

Choné, P. and L. Linnemer “Nonlinear Pricing and Exclusion: 1. Buyer Opportunism,” RJE Summer 2015 46(2): 217 – 240.

D. Vertical Integration and Foreclosure

Tirole: Ch. 4.

SR: Ch. 1

W: Ch. 4

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 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.
- Asker, J. and H Bar-Isaac “Raising Retailers’ Profits: On Vertical Practices and the Exclusion of Rivals,” AER February 2014, 104(2): 626 – 686.

(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 and T. Ross “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.

Vives, X. Oligopoly Pricing: Old Ideas and New Tools 1999 The MIT Press.

(II) **Collusion**

Tirole: Ch. 6

W: Ch. 2

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.

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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.

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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.

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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.

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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

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.

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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.

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