

**ECONOMICS 2900: INDUSTRIAL ORGANIZATION (IO)**

**(Fall Semester: Monday's 10:00 to 12:00 pm BL 728)**

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login (user name): eco2900; password: ipa2900
- Office Hours:** By Appointment
- Evaluation:** There will be a one-hour quiz (G1) on Monday, October 17. There will be an exam (G2) at the end of the first semester. The final grade will be determined according to  $\max \{.1 \cdot G1 + .9 \cdot G2, G2\}$ . Some problem sets will be distributed during the semester. While these will not be graded, answers will be discussed in class.
- Other courses:** **ECO 2404** (Winter Semester; Empirical Applications of Economic Theory) is offered by Professor Carlos Serrano  
**ECO 2901** (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 2404 and ECO 2901.
- 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, 4<sup>th</sup> 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;PP  | - American Economic Review; Papers and Proceedings |
| ALJ     | - Antitrust Law Journal                            |
| BJE     | - Bell Journal of Economics                        |
| CJE     | - Canadian Journal of Economics                    |
| CLR     | - Columbia Law Review                              |
| Ec      | - Economica  |
| EER     | - European Economic Review                         |
| EI      | - Economic Inquiry                                 |
| EJ      | - Economic Journal                                 |
| EM      | - Econometrica                                     |
| IJO     | - International Journal of Industrial Organization |
| JB      | - Journal of Business                              |
| 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.

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.

### **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. 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.

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 in the **Handbook 3**.

C. **Price Discrimination**

**Tirole:** Ch. 3: 133 -165.

**SR:** Ch. 12, 13

Varian, H. "Price Discrimination," Ch.10 in the **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 in the **Handbook 3**.

D. **Vertical Integration and Foreclosure**

**Tirole:** Ch. 4.

**SR:** Ch. 1

Katz, M. "Vertical Contractual Relationships," Ch. 11 in the **Handbook 1-2**.

Perry, M. "Vertical Integration: Determinants and Effects," Ch.4 in the **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,” Boston University Working Paper, March 1996.
- 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 in the **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.
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**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," IJO 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.

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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,” IJIO, 17 (3), April 1999: 399 – 418.

## **(IV) *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.1 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.

##### A.2 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**)

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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.
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- 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.

### **A.3 Empirical Studies of Collusive Behavior**

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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.
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## **B. Product Differentiation**

### **B.1 Theory**

**Tirole:** Chs. 2,7.

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### **B.3 Empirical models of product differentiation**

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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

### C.1 Theory

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

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### C.2 Static Models: Equilibrium Market Structure (“free entry”)

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