

# **Economics 696P – Industrial Organization and Regulation I**

Professor Stan Reynolds  
University of Arizona – Spring 2011

## **Class Meetings:**

401KK McClelland Hall  
12:30 – 3 p.m. Wednesdays

## **Contact Information:**

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## **Course Description:**

This is the first course in a two semester sequence in Industrial Organization (IO) and Regulation. This course is intended to provide an introduction to IO and Regulation and to familiarize students with research at the frontiers of the field. The focus will be on theoretical and conceptual material. The second course in the sequence, Economics 696Q, focuses on empirical research in Industrial Organization and Regulation. The volume of published research in Industrial Organization has mushroomed during the last 30 years, so the coverage in the course is, by necessity, somewhat selective. Students interested in this field are strongly encouraged to take courses in advanced microeconomic theory, game theory, behavioral economics and econometrics.

The material is organized into a first introductory section (week one) followed by seven sections containing the main topic areas, with about 2 class meetings per topic area. For each section I list required readings (marked by a \* ) as well as suggested readings for students interested in further exploration. Class time will consist of lectures, discussions of the readings, and student presentations of papers. The discussions will cover a variety of issues, including research methods, open research questions in the area, public policy issues, and assigned problem sets. I will let students know which required readings should be completed prior to our class meetings, and will expect students to be familiar with the material during our class meetings.

## **Course Web Page:**

Problem sets, solutions, selected readings and other materials will be posted on Blackboard.

## Requirements:

There are several requirements which will affect your final grade.

1. completion of several assigned problem sets	80
2. class participation, and presentation of paper	30
3. completion of a research paper	<u>90</u>
Total points	200

As stated above, students are expected to have completed the required readings **prior** to our class meetings. This reading is vital preparation for the class discussions. Several problem sets will be assigned during the semester. These problem sets provide a way for you to work through analyses that are closely related to the research papers we will cover. Each student will present one of the papers listed on the syllabus to the class during the semester. Consult with me about which paper to present. The research paper must be on an IO-related topic but it need not be on a topic covered in my course. You should send me a single page description of a proposed paper topic by the third week, then write a 4-5 page progress report by roughly the seventh week of the semester.

## Readings:

The readings for the course are listed in the course outline section. The readings are from journal articles and Industrial Organization texts. There are no required texts, but if you plan to pursue IO as a field then I recommend that you purchase, *Theory of Industrial Organization* (1988), by Jean Tirole. Selected readings from the following texts will be posted on Blackboard:

- S. **Anderson**, A. de Palma, and J. Thisse, *Discrete Choice Theory of Product Differentiation*. London: MIT Press, 1992
- M. Armstrong and R. Porter (eds.), *Handbook of Industrial Organization*, vol. 3, 2007
- R. Schmalensee and R. Willig (eds.), *Handbook of Industrial Organization*, vol. 1& 2, 1989
- J. **Tirole**, *The Theory of Industrial Organization*. London: MIT Press, 1988.
- D. **Spulber**, *Market Microstructure: Intermediaries and the Theory of the Firm*. Cambridge Univ. Press, 1999.

## Course Outline

### Introduction – Theory of the Firm

Structure-Conduct-Performance paradigm; Market power and public policy;  
Transaction costs and boundaries of the firm; Contracting & specific investments

Reading:

\* **Tirole**, The Theory of the Firm (pp. 15-34)

\* Hermalin, B. and Katz, M., “Information and the Hold-Up Problem”, *RAND Jour of Economics*, 40 (Autumn 2009)

**Spulber**, ch. 9 “Transactions costs and the contractual theory of the firm”

Schmalensee, R., “Do Markets Differ Much?” *AER* 75 (June 1985); available via JSTOR.

Milgrom, P. and Roberts, J., *Economics, Organization & Management*, 1992, ch. 2, pp. 25-39

Kaufmann, P., and Lafontaine, F., “Costs of Control: The Source of Economic Rents for McDonald’s Franchisees” *Jour of Law & Economics* (October 1994); available via JSTOR.

### One: Market Power, Dominant Firms & Regulation

Economies of scale and scope; Welfare analysis; Ramsey pricing; Peak-load pricing; Contestable markets; Entry barriers

Reading:

\* **Tirole**, Introduction (pp. 6-13)

\* Armstrong, M. and D. Sappington, “Recent Developments in the Theory of Regulation”, ch. 27 (pp. 1560-1700 – this corresponds to pp. 3-43 for the pdf copy on Blackboard), vol. 3, **Handbook**.

Aghion, P. and Bolton, P., "Contracts as Entry Barriers" *AER* 77 (June 1987); available via JSTOR.

Bergstrom, T. and J. MacKie-Mason, “Some Simple Analytics of Peak-Load Pricing” *RAND Jour of Econ* 22 (1991)

Rasmusen, Ramseyer and Wiley, "Naked Exclusion" *AER* (Dec. 1991); available via JSTOR.

Innes, R. and Sexton, R. "Strategic Buyers and Exclusionary Contracts" *AER* 84 (June 1994); available via JSTOR.

Coursey, D., Isaac, R.M., Luke, M. and Smith, V.L., "Market Contestability in the Presence of Sunk (Entry) Costs," *RAND Jour of Economics*, 15 (Spring 1984)

## **Two: Pricing Strategies**

Price discrimination; Two-part tariffs; Non-linear pricing; Selling vs. leasing; Secondary markets

Reading:

\* **Tirole**, ch. 3 (pp. 133-152); ch. 1 (Supplementary Section pp. 79-87)

\* Stole, L., "Price Discrimination and Competition", ch. 34 (pp. 2221-2292), vol. 3, **Handbook**.

\* Hendel, I., and Lizzeri, A., "Interfering with Secondary Markets" *RAND Jour of Economics* 30 (Spring 1999); available via JSTOR.

Corts, K., "Third-Degree Price Discrimination in Oligopoly: All-Out Competition and Strategic Commitment" *RAND Jour of Economics*, 29 (Summer 1998); available via JSTOR.

Waldman, M., "Durable Goods Theory for Real World Markets", *J. Econ. Perspectives*, 17 (Winter 2003)

Wilson, R., *Non-Linear Pricing*, ch. 3 (46-57) & ch. 4

Dana, J., "Equilibrium price dispersion under demand uncertainty" *RAND Jour of Economics*, 30 (Winter 1999); available via JSTOR.

McAfee, R.P., McMillan, J., and Whinston, M., "Multiproduct Monopoly, Commodity Bundling, and Correlation of Values", *QJE* 104 (May 1989); available via JSTOR.

Armstrong, M., "Price Discrimination by a Many-Product Firm" *Rev of Econ Studies* 66 (1999); available via JSTOR.

Coase, R., "Durability and Monopoly" *Jour of Law & Economics* 15 (1972); available via JSTOR.

Reynolds, S., "Durable Goods Monopoly: Laboratory Market and Bargaining Experiments," *RAND Jour of Economics*. (Summer 2000); available via JSTOR.

### **Three: Oligopoly Markets**

Standard models: Cournot, Bertrand, Edgeworth; Collusion; Noncooperative game theory; Product differentiation

#### Readings:

\*Amir, R., "Cournot Oligopoly and the Theory of Supermodular Games", *Games and Economic Behavior*, 15 (1996)

\***Anderson**, ch. 7 (pp. 219-257)

\* Earle, R., Schmedders, K., and Tatur, T., "On price caps under uncertainty", *Review of Economic Studies*, 74 (2007), 93-111.

\* Athey, S. and Bagwell, K., "Optimal Collusion with Private Information," *RAND Journal of Economics*, Autumn 2001, 32 (3): 428-465; available via JSTOR.

Mankiw, N.G. and Whiston, M., "Free Entry and Social Inefficiency", *RAND Journal of Economics*, 17 (1986); available via JSTOR.

Reynolds, S. and Wilson, B., "Bertrand-Edgeworth Competition, Demand Uncertainty, and Asymmetric Outcomes" *Jour. of Economic Theory* (2000) available as PDF file at, <http://u.arizona.edu/~sreynold/>

**Tirole**, ch. 5 (pp. 218-221) & ch. 6 (pp. 239-253)

Bulow, J., J. Geanakoplos, and P. Klemperer, "Multimarket Oligopoly: Strategic Substitutes and Complements", *JPE* (1985), 488-511; available via JSTOR.

Nevo, A., "Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry", *RAND Jour of Economics* 31 (Autumn 2000); available via JSTOR.

Ackerberg, D. and Rysman, M., "Unobserved Product Differentiation in Discrete-Choice Models: Estimating Price Elasticities and Welfare Effects", *RAND Journal of Economics*, 36 Winter (2005).

Dufwenberg, M. and U. Gneezy, "Price Competition & Market Concentration: An Experimental Study", *International Journal of Industrial Organization* 18 (2000), 7-22.

Klemperer, P., "Competition when Consumers have Switching Costs..." *Rev of Econ Studies* 62 (1995); available via JSTOR.

Ellison, G., "Theories of Cartel Stability and the Joint Executive Committee" *RAND Jour of Economics*, 25 (Spring 94); available via JSTOR.

Davis, D. and Holt, C., "Market Power and Mergers in Laboratory Markets with Posted Prices" *RAND Jour of Economics* 25 (Autumn 94); available via JSTOR.

Kruse, J., Rassenti, S., Reynolds, S., and Smith, V.L., "Bertrand Edgeworth Competition in Experimental Markets," *Econometrica* (March 1994); available via JSTOR.

Rassenti, S., Reynolds, S., Smith, V.L., and Szidarovszky, F., "Adaptation and Convergence of Behavior in Repeated Experimental Cournot Games", *J. of Economic Behavior and Organization* (February 2000) Available as PDF file at, <http://u.arizona.edu/~sreynold/>

#### **Four: Vertical Integration and Contracts**

Vertical contracts; vertical integration; mergers

Readings:

\* **Tirole**, ch. 4 (pp. 169-186)

\* O'Brien, D. and Shaffer, G., "Bargaining, Bundling, and Clout: The Portfolio Effects of Horizontal Mergers", *RAND Jour of Economics* 36 (Autumn 2005).

\* Whinston, M., "Tying, Foreclosure, and Exclusion" *AER* 80 (September 1990); available via JSTOR.

Chen, Y. and Riordan, M., "Vertical Integration, Exclusive Dealing, and Ex Post Cartelization", *RAND Jour of Economics* 38 (Spring 2007).

Whinston, M., and I. Segal, "Robust Predictions for Bilateral Contracting with Externalities", *Econometrica* 71 (2003): 757-91; available via JSTOR.

Rey, P. and Tirole, J., "The Logic of Vertical Restraints" *AER* 76 (1986), available via JSTOR

Barron, J. and Umbeck, J., "The Effects of Different Contractual Arrangements: The Case of Retail Gasoline Markets" *Jour of Law and Economics* (Oct. 1984); available via JSTOR.

## **Five: Middle Men and Platforms**

Intermediation, market-makers, two-sided markets

Readings:

\* **Spulber**, ch. 1; ch. 2 pp. 27-40, 48-51

\* Rochet, J.C. and Tirole, J., “Two-Sided Markets: A Progress Report” *RAND Jour of Economics* 37 (Autumn 2006)

\* Baye, M., and J. Morgan, “Information Gatekeepers on the Internet and the Competitiveness of Homogeneous Product Markets”, *AER*, 91 (2001), 454-474; available via JSTOR.

Rust, J. and Hall, G., “Middlemen versus Market Makers: A Theory of Competitive Exchange” *JPE* 111 (April 2003)

Laffont, J.J., Rey, P., and Tirole, J., “Network Competition: I. Overview and Nondiscriminatory Pricing” *RAND Jour of Economics* 29 (Spring 1998); available via JSTOR.

Lizzeri, A., “Information Revelation and Certification Intermediaries” *RAND Jour of Economics* 30 (Summer 1999); available via JSTOR.

## **Six: Innovation and Industrial Dynamics**

R&D productivity and incentives; Network externalities; Switching costs; Industry dynamics

Readings:

\* **Tirole**, ch. 10, pp. 389-409.

\* Amir, R. and N. Lazzati, “Network Effects, Market Structure and Industry Performance”, working paper, University of Arizona, 2010.

\* Doraszelski, U. and A. Pakes, “A Framework for Applied Dynamic Analysis in IO”, Mark Armstrong and Robert Porter (eds.), *Handbook of Industrial Organization*, Volume 3, 2007, North-Holland, Amsterdam, pp. 1887-1966.

\* Doraszelski, U. and S. Markovich, “Advertising Dynamics and Competitive Advantage” working paper, Harvard U., 2005; available at <http://www.economics.harvard.edu/faculty/doraszelski/papers/advertising.pdf>

Pakes, A. and Ericson, R., "Empirical Implications of Alternative Models of Firm Dynamics", *Journal of Economic Theory*, Volume 79, Issue 1, March 1998, Pages 1-45.

Doraszelski, U. and M. Satterthwaite, "Computable Markov-Perfect Industry Dynamics: Existence, Purification, and Multiplicity", working paper, Kellogg School of Management, Northwestern University, September 26, 2007  
<http://www.economics.harvard.edu/faculty/doraszelski/files/existence.pdf>

Ericson, R. and Ariel Pakes, "Markov Perfect Industry Dynamics: A Framework for Empirical Work," *Review of Economic Studies*, vol. 62, no. 1, (1995) pp. 53-82; available via JSTOR.

Besanko, D. and U. Doraszelski, "Capacity Dynamics and Endogenous Asymmetries in Firm Size" *RAND Jour of Economics*, 35 (Spring 2004).

Pakes, A. and McGuire, P., "Computing Markov-Perfect Nash Equilibria ...", *RAND Jour of Economics* (1994); available via JSTOR.

Gowrisankaran, G. and Rysman, M., "Dynamics of Consumer Demand for New Durable Goods", working paper, University of Arizona, 2009.

Katz, M., and Shapiro, C., "Network Externalities, Competition, and Compatibility" *AER* 75 (June 1985); available via JSTOR.

Reynolds, S., and Isaac, R.M., "Stochastic Innovation and Product Market Organization", *Economic Theory*, 2 (1992), 525-545.

David, P., "Clio and the Economics of QWERTY" *AER* 75 (May 1985); available via JSTOR.

Leibowitz, S., and Margolis, S., "The Fable of the Keys" *Jour of Law & Economics*, 33 (1990); available via JSTOR.

Reynolds, S., "Capacity Investment, Preemption and Commitment in an Infinite Horizon Model" *International Economic Review*, 28 (1987), 69-88; available via JSTOR.

Pakes, A., "Patents as Options: Some Estimates of the Value of Holding European Patent Stocks" *Econometrica* 54 (July 86); available via JSTOR.

Scotchmer, S., "On the Optimality of the Patent Renewal System" *RAND Jour of Economics* 30 (Summer 1999); available via JSTOR.



Isaac, R.M. and Reynolds, S., “Appropriability and Market Structure in a Stochastic Invention Model” *Quarterly Jour of Economics* 103 (November 88); available via JSTOR.

### **Seven: Regulation and Competition in the Energy Industry**

This section will focus on regulation and restructuring issues in the electricity sector.

#### Readings:

\* Borenstein, S. and S. Holland, “On the Efficiency of Competitive Electricity Markets with Time-Invariant Retail Prices”, *RAND Jour of Econ* 36 (Autumn 2005)

\* Newbery, D. (1998), “Competition, contracts, and entry in the electricity spot market”, *RAND Journal of Economics*, 29, 4, 726-749.

Klemperer, P. and M. Meyer (1989), “Supply Function Equilibria in Oligopoly under Uncertainty”, *Econometrica*, 57, 6, 1243-1277.

Genc, T. and S. Reynolds, “Supply Function Equilibria with Capacity Constraints and Pivotal Suppliers”, to appear in *International Journal of Industrial Organization*.

Borenstein, S., J. Bushnell, and F. Wolak,, “Measuring Inefficiencies in California’s Restructured Electricity Market”, *AER* 92 (2002), pp. 1376-1405.

Borenstein, S., “The Market Value and Cost of Solar Photovoltaic Electricity Production”, CSEM Working Paper 176, University of California, Berkeley, 2008 (available at, <http://www.ucei.berkeley.edu/PDF/csemwp176.pdf>)

Cullen, J., “Dynamic Response to Environmental Regulation in Electricity Markets”, Working Paper, Harvard University, 2010 (available at, <http://www.u.arizona.edu/~jcullen/Documents/dynamic%20response.pdf>)

Fabra, N., von der Fehr, N.H., Harbord, D., “Designing electricity auctions”, *RAND Journal of Economics* 37, (2006) 23-46.