

Bentley Doctoral Program

PBU 1121: Microeconomic Theory and Empirical Analysis SRPING 2007

SYLLABUS

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COURSE INFORMATION

MEETING DAYS/TIME: TBA
MEETING LOCATION: TBA

PREREQUISITES

It is assumed that you have knowledge of MBA-level microeconomics. If it has been several years since you have taken microeconomics, it is strongly suggested you refresh your knowledge by covering the main concepts of a Principles of Microeconomics or Intermediate Microeconomics textbook. It is also assumed that students have successfully completed PHD1102 and have a strong foundation in multiple regression analysis.

COURSE DESCRIPTION

In this course we will examine some of the most important tools used by economists to analyze firms and markets. These include marginal analysis of costs and benefits, game theory, and econometrics. We will begin with a brief (5 week) overview of a few key microeconomic concepts and methods. This will be followed by four modules that look at particular economic issues that relate to firm strategy, pricing, and regulation. The primary goal of each module is to study a particular industry and to show how economic theories are tested using different econometric techniques. The intended outcome is to provide student with a set of knowledge and skills that can used to read and interpret empirical economic research papers in microeconomics as well as undertake original empirical research.

The content of the course will be organized into modules to achieve our goals and state learning objectives. The first two modules will provide students with the tools needed to evaluate all types of market structure, from perfect competition to monopoly. In module 3 we will see how these models can help us to better understand the strategic interaction that occurs in imperfectly competitive

markets. The next module will focus on pricing issues, with particular attention paid to various forms of price discrimination. Module 5 looks at non-price competition, with a focus on the type of information conveyed in various forms of advertising. We will conclude with a module that examines regulation from both positive and normative perspectives. During the several last class periods students will present the findings of their own research project.

COURSE LEARNING OBJECTIVES

Knowledge

Explain the six major principles of management from an economist's viewpoint.

Conduct present and future value analysis and explain how it relates to the profit-maximization problem of the firm.

Implement marginal analysis to solve economic problems.

Apply the theory of demand and supply to different markets and implement an estimation technique to these types of markets.

Determine optimal input usage based on different production functions.

Derive cost functions from various production functions.

Explain estimation techniques that have been used to test for economies of scale.

Explain how different market structures impact managerial decisions.

Compute different measures of industry concentration and explain the linkage between industry market structures.

Compute optimal managerial decisions under different market structures.

Determine the efficiency associated with different market structures.

Skills

Read and interpret the empirical literature that examines microeconomic topics.

Use SAS or STATA to estimate relationships between dependent and independent variables.

Test and correct for the presence of heteroskedasticity and autocorrelation using SAS or STATA.

Test for the presence of simultaneity and endogenous relationships between variables.

Implement estimation techniques in the presence of simultaneous and endogenous relationships between variables.

Perspectives

Explain various economic issues that arise in different industries and the estimation technique implemented to measure the phenomenon.

READINGS AND LEARNING MATERIALS (SOFTWARE, ETC.)

Baye, Michael. *Managerial Economics and Business Strategy*, 5th Edition, McGraw-Hill, 2006.

SUPPLEMENTARY TEXTBOOKS:

Economics Supplements:

Pepall, Lynne, Daniel Richards, and George Norman. *Industrial Organization: Contemporary Theory and Practice*, 3rd Edition, Thomson-SouthWestern, 2005.

Varian, Hal. *Intermediate Microeconomics: A Modern Approach*, 6th Edition, Norton, W.W. & Company, 2003.

Gardner, Roy. *Games for Business and Economics*, 2nd Edition, Wiley, John and Sons, 2003.

Gibbons, Robert. *Game Theory for Applied Economists*, Princeton Press, 1992.

Econometrics Supplements:

Clayton, G.E. and M.G. Geisbrecht. *Guide to Everyday Economic Statistics*, 6th Edition, McGraw-Hill, 2003.

Gujarati, Damodar. *Basic Econometrics*, 4th Edition, McGraw-Hill, 2004.

Wooldridge, Jeffrey. *Introductory Econometrics: A Modern Approach*, 2nd Edition, SouthWestern, 2003.

Delwiche, Lora and Susan Slaughter. *The Little SAS Book: A Primer*, 3rd Edition, The SAS Institute, 2003.

SAS Manuals

STATA Manual

HOW THE COURSE WILL BE TAUGHT

The first couple modules of this course will be taught using traditional lecture with an emphasis on connecting economic theory to estimation implementation using

a either STATA or SAS. Modules 3 – 6 will be a combination of lectures and student led discussions about particular empirical papers discussion focusing on the approached used to test different theories. Each of the modules will highlight economic issues that selected industries face. The final module of the course will involve students presenting and discussing an original research paper that tests one of the economic theories introduced during the semester using different estimation techniques.

GRADING/PERFORMANCE EVALUATION

Class Participation: 25 percent

Class participation consists of in-class preparedness, which includes having read assigned materials prior to class and participating in class discussions. In addition, students will periodically complete summary papers of the research readings and present the results from an empirical research paper from one of Modules 4 – 6.

Project 1: 25 percent

You will be assigned an empirical paper that uses some of the econometric techniques that will be reviewed in Part 3 of Module 1. The goal of the project is twofold:

- 1) review the skills required to conduct empirical research by replicating the results of the assigned study;
- 2) survey the literature associated with the primary topic of the paper.

The paper should begin with a survey of the literature. This part of the paper will include relating the results you are reviewing to past research and a discussion of how the literature has subsequently progressed. The second part of the paper should identify and discuss the research questions addressed in this paper. Part three should replicate the summary statistics (tables and graphs) that motivate the econometric work. Part four should replicate the econometric work and discuss the results. Part five should discuss the strengths and weaknesses of the empirical methodology and discuss directions for future research.

Mid-Term Examination: 25 percent

The mid-term will cover the material in Modules 1 and 2. These Modules are the foundation for the remaining topics in the course.

Final Project: 25 percent

The final project will consist of an original research paper that addresses a relevant issue and results in a paper of the style of a published journal article. Papers will likely extend the empirical results of an existing paper. All paper topics must be approved by the instructor. The paper layout will be as follows: 1) Statement of the research question and literature review; 2) discussion of theoretical foundations; 3) presentation of the empirical results; and 4) discussion and conclusions. To ensure sufficient progress is made on the paper you will be required to meet certain milestones throughout the semester. You will present your research findings to the class in a 30 minute presentation at the end of the semester.

ACADEMIC HONESTY STATEMENT

In pursuit of the stated course goals and learning outcomes, I expect that all students abide by Bentley College's Honor Code. Violations of the Honor Code will be tolerated and dealt with as outlined in the Bentley College Student Handbook. The Honor Code is accessible online at <http://ecampus.bentley.edu/shandbook/pdf/SH51-53.pdf>. (To download and read this document online you must have [Adobe Reader](#)®.) If you have questions about the Honor Code, please contact me. Continued enrollment in this course constitutes a formal agreement to abide by the Bentley College Honor Code.

LIST OF TOPICS

Module 1: Economic Methodologies

WEEK 1:

- Cost-Benefit Analysis
- Marginal Analysis
- Present Value Analysis
- Approaches to Studying Markets and Industry

WEEK 2: Topics in Game Theory

- Dominant Strategies
- Secure Strategies
- Pure-Strategy Nash Equilibrium
- Mixed-Strategy Nash Equilibrium
- Sub-Game Perfect Equilibrium
- Finitely and Infinitely Repeated Games

WEEK 3: Topics in Econometrics

- Introduction to SAS
- Ordinary Least Squares Regression Analysis
- Correcting for Autocorrelation and Heteroscedasticity

- Model Specification and Diagnostic Testing
- Two-stage Least Squares (2SLS) Estimation

Module 2: Market Foundations

WEEK 4: Demand Analysis:

- Properties of Demand.
- Factors that Impact Demand.
- Demand Functional Forms.
- Welfare Issues.
- Interpreting and Computing Elasticities.

Estimating Demand and Elasticities

WEEK 5: Production and Costs

- The Algebra of Production Functions
- The Algebra of Cost Functions
 - Short-run Costs
 - Sunk Costs
 - Fixed Costs
 - Variables Costs
 - Long-run Costs
 - Scale Economies
 - Multi-product Costs and Scope Economies

Estimating Production and Costs

WEEK 6: **MIDTERM EXAM**

Module 3: Market Structure and Strategic Interaction

WEEK 7:

Measuring Market Concentration

Models of Different Market Structures

- Competitive Markets
- Monopoly
- Monopolistic Competition
- Oligopoly
 - Cournot
 - Bertrand
 - Stackelberg (and second-mover games)

WEEK 8:

Student-led discussions on Empirical Models of Market Structure (papers to be individually assigned to students).

Module 4: Pricing Strategies and Market Power

WEEK 9:

Non-Linear Pricing Strategies

- First-Degree Price Discrimination
- Third-Degree Price Discrimination
- Second-Degree Price Discrimination
- Two-Part Pricing
- Block Pricing
- Peak-Load Pricing
- Commodity Bundling
- Tie-In Sales

Network Economies

WEEK 10:

Student-led discussions on Empirical Models of Pricing Strategies (papers to be individually assigned to students).

Module 5: Firms' Strategies Under Imperfect Information

WEEK 11:

Branding and Spatial Competition

Moral Hazard

Advertising and Market Power

Adverse Selection

WEEK 12:

Student-led discussions on Empirical Models of Pricing Strategies (papers to be individually assigned to students).

Module 6: Antitrust, Regulation and Public Policy

WEEK 13:

Limit Pricing and Entry Deterrence

Predatory Pricing

Price Fixing: An Application of Repeated Games

Horizontal and Vertical Mergers

WEEK 14:

Student-led discussions on Empirical Models of Pricing Strategies (papers to be individually assigned to students).

WEEK 15: **FINAL PRESENTATION**

Selected Empirical Literatures

Methodologies

Gibbons, R. "An Introduction to Applicable Game Theory." *Journal of Economic Perspectives*, 11(1), 1997.

Schmalensee, R. "Industrial Economics: An Overview." *Economic Journal*, 98(392), 1988.

Fisher, F., T. Bresnahan, and J. Farrell. "Organizing Industrial Organization: Reflections on the Handbook of Industrial Organization." *Brookings Papers and Activity: Microeconomics*, 1991.

Klevorick, A., P. MacAvoy, and S. Peltzman. "Directions and Trends in Industrial Organization: A Review Essay on the Handbook of Industrial Organization." *Brookings Papers and Activity: Microeconomics*, 1991.

Morris, D.J., P.J.N. Sinclair, M.D.E. Slater, and J.S. Vickers. "Strategic Behavior and Industrial Competition: An Introduction." *Oxford Economic Papers*, 38, 1986.

Demand Estimation

Houthakker, H. "Some Calculations on Electricity Consumption in Great Britain." *Journal of the Royal Statistical Society*, 114(3), 1951.

Reinhardt, F.S. "Are cigarette bans really good economic policy?" *Applied Economics*, 33(11), 2001.

Koshal, R. K. and M. Koshal. "Demand and Supply of Educational Service: A Case of Liberal Arts Colleges." *Education Economics*, 7(2), 1999.

Field, M.K. and E. Pagoulatos. "The Cyclical Behavior of Price Elasticity of Demand." *Southern Economic Journal*, July 1997, pp. 118-129.

Goel, R.K. and M.J. Morey. "The Interdependence of Cigarette and Liquor Demand." *Southern Economic Journal*, October 1995, pp. 451-459.

Franke, G.R. "U.S. cigarette demand, 1961-1990: Econometric Issues, Evidence, and Implications." *Journal of Business Research*, 30(1), 1994.

Beierlein, J.G., J.W. Dunn, and J.C. McConnon, Jr. "The Demand for Electricity and Natural Gas in the Northeastern United States." *The Review of Economics and Statistics*, 63(3), 1981.

Dahl, C.A. "Do Gasoline Demand Elasticities Vary?" *Land Economics*, 58(3), 1982.

Halvorsen, R. "Residential Demand for Electric Energy." *The Review of Economics and Statistics*, 57(1), 1975.

Mendelsohn, R. and G. Peterson. "Welfare Measurements with Expenditure-Constrained Demand Models." *Review of Economics and Statistics*, 71(1), 1989.

Macdonald, D. and M.M. Veeman. "Valuing Housing Characteristics: A Case Study of Single Family Houses in Edmonton, Alberta." *The Canadian Journal of Economics*, 29(2), 1996.

Wolverton, M.L. "Hedonic estimates of regional constant quality house prices." *The Journal of Real Estate Research*, 19(3), 2000.

Murray, J. "Price-Quality Relations and Hedonic Price Indexes for Cars in the United Kingdom." *International Journal of the Economics of Business*, 6(1), February 1999.

Do, A.Q. and G. Grudnitski. "Golf Course and Residential House Prices: An Empirical Examination." *Journal of Real Estate Finance and Economics*, 10, 1995.

Nelson, R.A., T.L. Tanguay, and C.D. Patterson. "A Quality-Adjusted Price Index for Personal Computers." *Journal of Business & Economic Statistics*. 12(1), January 1994.

Bureau of Labor Statistics Research Papers: Found at <http://www.bls.gov/cpi/home.htm> and look under the heading Publications and Other Documentation.

"Hedonic Quality Adjustment Methods for College Textbooks In the U.S. CPI." Mike Reese, BLS draft paper.

"Developing a Hedonic Regression Model For VCRs In the U.S. CPI." William Thompson, BLS draft paper.

"Developing a Hedonic Regression Model For DVD Players In the U.S. CPI." Paul Liegey, BLS draft paper.

"Developing a Hedonic Regression Model For Camcorders In the U.S. CPI." Nicole Shepler, BLS draft paper.

Production and Costs

Kim, H.Y. "The Translog Production Function and Variable Returns to Scale." *Review of Economics and Statistics*, 74(3), 1992.

Jensen, G. and M. Morrisey. "The Role of Physicians in Hospital Production." *Review of Economics and Statistics*, 68(3), 1986.

Okunade, A. and S. Suraratdecha. "Cost Efficiency, Factor Interchange, and Technical Progress in U.S. Specialized Hospital Pharmacies." *Health Economics*, 7, 1998.

Sinay, U. and C. Campbell. "Scope and Scale Economies in Merging Hospitals Prior to Merger." *Journal of Economics and Finance*, 19:2, 1995

Cremieux, P. and P. Ouellette. "Omitted Variable Bias and Hospital Costs." *Journal of Health Economics*, 20, 2001.

Henderson, R. and I. Cockburn. "Scale, Scope and Spillovers: The Determinants of Research Productivity in Drug Discovery." *RAND Journal of Economics*, 27, 1996.

Market Structure

Fournier, G. and J. Mitchell. "Hospital Costs and Competition for Services: A Multiproduct Analysis." *Review of Economics and Statistics*, 74(4), 1992.

Baye, M.R., J. Morgan, and P. Scholten. "Price Dispersion in the Small and in the Large: Evidence from an Internet Price Comparison Site." *Journal of Industrial Economics*, forthcoming.

Grabowski, H. and J. Vernon. "Brand Loyalty, Entry, and Price Competition in Pharmaceuticals after the 1984 Drug Act." *Journal of Law and Economics*, 35, 1992.

Frank, R. and D. Salkever. "Generic Entry and Pricing of Pharmaceuticals." *Journal of Economics and Management Strategy*, 6, 1997.

Bhattacharya, J. and W. Bogt. "A Simple Model of Pharmaceutical Price Dynamics." *Journal of Law and Economics*, 46(2), 2003.

Ashley, T., Y. Liu, and S. Chang. "Estimating Net Lottery Revenues for States." *Atlantic Economic Journal*, 27(2), June 1999.

Waring, G.F. "Industry Differences in the Persistence of Firm-Specific Returns." *American Economic Review*, December 1996.

van Scyoc, L.J. "Effects of Airline Deregulation on Profitability." *Logistics and Transportation Review*, March 1989.

Pricing Strategies and Market Power

Tiffany, F.G. and J.A. Ankrom. "The Competitive Use of Price Discrimination by Colleges." *Eastern Economic Journal*, 24(1), Winter 1998.

Shmanske, S. "Price Discrimination at the Links." *Contemporary Economic Policy*, July 1998.

Borenstein, S. "Selling Costs and Switching Costs: Explaining Retail Gas Margins." *Rand Journal of Economics*, Autumn 1991.

Shepard, A. "Price Discrimination and Retail Configuration." *Journal of Political Economy*, Spring 1991.

Goldberg, P.K. "Dealer Price Discrimination in New Car Purchases: Evidence from the Consumer Expenditure Survey." *Journal of Political Economy* 104, June 1996.

Advertising

Sass, T.R. and D.S. Saurman. "Advertising Restriction and Concentration: The Case of Malt Beverages." *Review of Economics and Statistics*, 77(1), 1995.

Saffer H. & F. Chaloupka. "The Effect of Tobacco Advertising Bans on Tobacco Consumption," *Journal of Health Economics*, 19, 2000.

Morton, F. "Barriers to Entry, Brand Advertising, and Generic Entry in the U.S. Pharmaceutical Industry." *International Journal of Industrial Organization*, 18(7), 2000.

Matraves, C. "Market Structure, R&D and Advertising in the Pharmaceutical Industry." *Journal of Industrial Economics*, 42(2), 1999.

Rosenthal, M. et al. "Demand Effects of Recent Changes in Prescription Drug Promotion." *Frontiers in Health Policy Research*, Volume 6, (NBER: 2003).

Nelson, J. "Advertising Bans, Monopoly, and Alcohol Demand: Testing for Substitution Effects using State Panel Data." *Review of Industrial Organization*, 22(1), February 2003.

Greuner, M.R., D.R. Kamerschen, and P.G. Klein. "The Competitive Effects of Advertising in the US Automobile Industry, 1970-94." *International Journal of Economics and Business*, 7(3), 2000.

Sullivan, M.W. "How Brand Names Affect the Demand for Twin Automobiles." *Journal of Marketing Research*, 35, May 1998.

Hegji, C.E. "A Spreadsheet Application of Dorfman and Steiner's Rule for Optimal Advertising." *Managerial and Decision Economics*, 19, 1998.

Nichols, M. "Advertising and Quality in the U.S. Market for Automobiles." *Southern Economic Journal*, April 1998.

Moretti, E. and J. Perloff. "Efficiency Wages, Deferred Payments, and Direct Incentives in Agriculture." Forthcoming, *American Journal of Agricultural Economics*.

Ackerberg, D. "Empirically Distinguishing Informative and Prestige Effects of Advertising." *Rand Journal of Economics*, Summer 2001.

Ackerberg, D. "Advertising, Learning, and Consumer Choice in Experience Good Markets: A Structural Empirical Examination." Forthcoming, *International Economic Review*.

Genesove, D. "Adverse Selection in the Wholesale Used Car Market." *Journal of Political Economy*, August 1993.

Antitrust, Regulation and Public Policy

Golbe, D.L. and L.J. White. "Catch a Wave: The Time Series of Behavior of Mergers." *Review of Economics and Statistics*, 75(3), 1993.

Prager, R.A. and T.H. Hannan. "Do Substantial Horizontal Mergers Generate Significant Price Effects? Evidence from the Banking Industry." *Journal of Industrial Economics*, 46(4), 1998.

Stewart, J.F., R.S. Harris, and W.T. Carleton. "The Role of Market Structure in Merger Behavior." *Journal of Industrial Economics*, 32(2), 1984.

Hart, P.E. "The Effects of Mergers on Industrial Concentration." *Journal of Industrial Economics*, 29(3), 1981.

Baker, G. and T. Hubbard. "Make versus Buy in Trucking: Asset Ownership, Job Design and Information." *American Economic Review*, June 2003.

Selected Topical Survey Articles

Telecommunication Industry

Harris, R.G. and C.J. Kraft. "Meddling Through: Regulating Local Telephone Competition in the United States." *Journal of Economic Perspectives*, 11(4), 1997.

Spiller, P.T. and C.G. Cardilli. "The Frontier of Telecommunication Deregulation: Small Countries Leading the Pack." *Journal of Economic Perspectives*, 11(4), 1997.

Waverman, L. and E. Sirel. "European Telecommunications Markets on the Verge of Full Liberalization." *Journal of Economic Perspectives*, 11(4), 1997.

Health Industry

Phelps, C.E. "Diffusion of Information in Medical Care." *Journal of Economic Perspectives*, 6(3), 1992.

Newhouse, J.P. "Medical Care Costs: How Much Welfare Loss?" *Journal of Economic Perspectives*, 6(3), 1992.

Scanlon, W.J. "Possible Reforms for Financing Long-Term Care." *Journal of Economic Perspectives*, 6(3), 1992.

Information Technology and E-Commerce

Reilly, D. and D.F. Spulber. "Business-to-Business Electronic Commerce." *Journal of Economic Perspectives*, 15(1), 2001.

Borenstein, S. and G. Saloner. "Economics and Electronic Commerce." *Journal of Economic Perspectives*, 15(1), 2001.

Bakos, Y. "The Emerging Landscape for Retail E-Commerce." *Journal of Economic Perspectives*, 15(1), 2001.

Liebowitz, S.J. and S.E. Margolis. "Network Externalities: An Uncommon Tragedy." *Journal of Economic Perspectives*, 8(2), 1994.

Katz, M.L. and C. Shapiro. "Systems Competition and Network Effects." *Journal of Economic Perspectives*, 8(2), 1994.

Besen, S.M. and J. Farrell. "Choosing How to Compete: Strategies and Tactics in Standardization." *Journal of Economic Perspectives*, 8(2), 1994.

Klein, B. "The Microsoft Case: What Can a Dominant Firm Do to Defend Its Market Position?" *Journal of Economic Perspectives* 15(2), 2001.

Gilbert, R.J. and M.L. Katz. "An Economist's Guide to U.S. v. Microsoft." *Journal of Economic Perspectives*, 15(2), 2001.

Whinston, M.D. "Exclusivity and Tying in U.S. v. Microsoft: What We Know, and Don't Know." *Journal of Economic Perspectives*, 15(2), 2001.

Goolsbee, A. "The Implications of Electronic Commerce for Fiscal Policy (and Vice Versa)." *Journal of Economics Perspectives*, 15(1), 2001.

Barber, B.M. and T. Odean. "The Internet and the Investor." *Journal of Economic Perspectives*, 15(1), 2001.

Autor, D.H. "Wiring the Labor Market." *Journal of Economic Perspectives*, 15(1), 2001.

Merger Analysis and Antitrust Issues

Willig, R.D., S.C. Salop, and F.M. Scherer. "Merger Analysis, Industrial Organization Theory, and Merger Guidelines." *Brookings Papers and Activity: Microeconomics*, 1991.

Schmalensee, R. "Horizontal Merger Policy: Problems and Changes." *Journal of Economic Perspectives*, 1(2), 1987.

Salop, S.C. "Symposium on Mergers and Antitrust." *Journal of Economic Perspectives*, 1(2), 1987.

Fisher, F.M. "Horizontal Mergers: Triage and Treatment." *Journal of Economic Perspectives*, 1(2), 1987.

White, L.J. "Antitrust and Merger Policy: A Review and Critique." *Journal of Economic Perspectives*, 1(2), 1987.