

Professor Igal Hendel  
igal@northwestern.edu

Professor Aviv Nevo  
nevo@northwestern.edu

Econ 498-2  
**TOPICS IN INDUSTRIAL ORGANIZATION**

This course will cover advanced topics in industrial organization. It is primarily intended for advanced students interested in the field, however, students in other fields may find the topics interesting. Second year students are welcome. However, this course is not a substitute for 450-2. Solid econometrics background is useful.

The course will cover recent developments in the field including dynamics and price discrimination. We will also survey IO papers that were presented as job market papers in the last few years. We are open to other topics students might be interested in.

The course will be graded on the basis of problem sets and class presentation.

Course web page: <http://www.faculty.econ.northwestern.edu/faculty/nevo/teaching/498-2.html>

**1. Dynamic Models – Single Agent  
Methods**

Judd, Ken. 1998. *Numerical Methods in Economics*, MIT Press.

Rust, John. 1996. "Structural Estimation of Markov Decision Processes," *Handbook of Econometrics*, Volume 4, Chapter 51.

Rust, John. 1996. "Numerical Dynamic Programming in Economics," in H. Amman, D. Kendrick, and J. Rust (eds.), *Handbook of Computational Economics*, Volume 1, 619-729.

Rust, John. 1997 "Using Randomization to Break the Curse of Dimensionality," *Econometrica* 65(3), 487-516.

Keane, Michael and Ken Wolpin. 1994. "The Solution and Estimation of Discrete Choice Dynamic Programming Models by Simulation and Interpolation: Monte Carlo Evidence," *Review of Economics and Statistics*, 76(4), 648-72.

Eckstein, Zvi and Kenneth Wolpin. 1989. "The Specification and Estimation of Dynamic Stochastic Discrete Choice Models," *Journal of Human Resources*, 24, 562-98.

Hotz, Joe and Bob Miller. 1993. "Conditional Choice Probabilities and the Estimation of Dynamic Models," *Review of Economic Studies* 60, 497-529.

Aguirregabiria, Victor and Pedro Mira. 2002. "Swapping the Nested Fixed Point Algorithm: A Class of Estimators for Discrete Markov Decision Models," *Econometrica*, 70 (4), 1519-1543

## Applications

Rust, John. 1987. "[Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher](#)," *Econometrica*, 55(5), 999-1033.

Pakes, Ariel. 1986. "[Patents as Options: Some Estimates of the Value of Holding European Patent Stocks](#)," *Econometrica*, 54(4), 755-784.

Hitsch, Guenter. 2001. "Estimating a Bayesian Learning Model of Product Launch and Product Exit" University of Chicago GSB, mimeo.

Erdem, Tulin and Michael Keane. 1996. "Decision-Making Under Uncertainty: Capturing Dynamic Brand Choice Processes in Turbulent Consumer Goods Markets," *Marketing Science*, 15(1),1-20.

Ackerberg, Dan. 1997. "Advertising, Learning, and Consumer Choice in Experience Good Markets: An Empirical Examination," mimeo.

Hendel, Igal and Aviv Nevo. 2003. "[Measuring the Implications of Sales and Consumer Stockpiling](#)." Northwestern University. Mimeo.

## 2. Dynamic Models – Multi-Agent Models

Dunne, T., Mark Roberts and Larry Samuelson. 1988. "Patterns of Entry and Exit in U.S. Manufacturing," *Rand Journal of Economics* 19 (Winter): 495-515.

Ericson, Richard and Ariel Pakes. 1995. "Markov-Perfect Industry Dynamics: A Framework for Empirical Work," *Review of Economic Studies* 62 (January): 53-82.

Pakes, Ariel and Paul McGuire. 1994. "[Computing Markov-perfect Nash Equilibria: Numerical Implications of a Dynamic Differentiated Product Model](#)," *Rand Journal of Economics* 25 (Winter): 555-589.

Pakes, Ariel and Paul McGuire. 2000. "Stochastic Algorithms, Symmetric Markov Perfect Equilibria and the 'Curse' of Dimensionality," *Econometrica* 69(5): 1261-81.

Pakes, Ariel. 2000. "[A Framework for Applied Dynamic Analysis in I.O.](#)," NBER WP no. 8024.

Benkard, Lanier. 2004. "A Dynamic Analysis of the Market for Wide-Bodied Commercial Aircraft Market," *Review of Economics Studies*.

Pesendorfer, Martin and Philipp Schmit-Dengler. 2004. [Least Squares Estimators for Dynamic Games](#), LSE.

Aguirregabiria, Victor and Pedro Mira. 2002. [Sequential Estimation of Dynamic Discrete Games](#), BU.

Bajari, Pat, Lanier Benkard, and Jon Levin. 2004. [Estimating Dynamic Models of Imperfect Competition](#), Duke.

Berry, Steven, Ariel Pakes and Michael Ostrovsky. 2004. [Simple Estimators for the Parameters of Discrete Dynamic Games](#), Harvard.

### **3. Competition and Price Dispersion Competition and Price Discrimination**

Severin Borenstein. 1985., "Price Discrimination in Free-Entry Markets." *RAND Journal of Economics*, 16, 380-397.

Holmes, T.J. 1989. "The Effects of Third-Degree Price Discrimination in Oligopoly." *American Economic Review*, 79, 244-50.

Ken Cortis. 1998. "Third-Degree Price Discrimination in Oligopoly: All-Out Competition and Strategic Commitment." *RAND Journal of Economics*, 29, 306-323.

Borenstein, Severin and Nancy Rose. 1994. "Competition and Price Dispersion in the U.S. Airline Industry," *Journal of Political Economy* 102 (August): 653-83.

Meghan Busse and Marc Rysman. 2002. "[Competition and Price Discrimination in Yellow Pages Advertising](#)," UC Berkeley mimeo.

Miravete, Eugino and Lars-Hendrik Roller. 2003. "[Competitive Nonlinear Pricing in Duopoly Equilibrium: The Early Cellular Telephone Industry](#)." University of Pennsylvania. Mimeo.

### **Loss-leaders**

Rajiv Lal and Carmen Matutes. 1994. "Retail Pricing and Advertising Strategies." *Journal of Business*, 67, 345-370.

Glenn Ellison. 2003. "[A Model of Add-On Pricing](#)." NBER WP No. 9721.

James MacDonald. 2000. "Demand, Information, and Competition: Why Do Food Prices Fall at Seasonal Demand Peaks?" *Journal of Industrial Economics*, 48(1), 27-45.

Chevalier, Judy, Anil Kashyap and Peter Rossi. 2003. "Why Don't Prices Rise During Periods of Peak Demand? Evidence from Scanner Data," *American Economic Review*, 93(1), 15-37.

Glenn Ellison and Sara Ellison, "[Search, Obfuscation, and Price Elasticities on the Internet](#)," MIT mimeo.

## Search

Peter Diamond. 1971. "A Model of Price Adjustment," *Journal of Economic Theory*, 3, 156-168.

Hal Varian. 1980. "A Model of Sales," *American Economic Review*, 70, 651-658.

Dale Stahl. 1996. "[Oligopolistic Pricing with Heterogeneous Consumer Search](#)," *International Journal of Industrial Organization*, 14, 243-268.

Preston McAfee. 1995. "Multiproduct Equilibrium Price Dispersion," *Journal of Economic Theory*, 67(1), 83-105.

Alan Sorensen. 2000., "[Equilibrium Price Dispersion in Retail Markets for Prescription Drugs](#)," *Journal of Political Economy*, 108 (August), 833-850.

Matt Lewis, [Asymmetric Price Adjustment and Consumer Search: An Examination of the Retail Gasoline Market](#), Berkeley.

## 4. Recent Job market papers

05:

Stephen P. Ryan, [The Costs of Environmental Regulation in a Concentrated Industry](#), Duke U.

Schmidt-Dengler, Philipp, [The Timing of New Technology Adoption: The Case of MRI](#), Yale University.

Suil Lee, [Measuring the Effects of Uniform Settlement Rate Requirement in the International Telephone Industry](#)," UW-Madison.

Ho, Katherine, [Insurer-Provider Networks in the Medical Care Market](#), Harvard University.

Ishii, Joy, [Interconnection Pricing and Compatibility in Network Industries: ATM Networks in the Banking Industry](#), Harvard University.

Gavazza, Alessandro, [Leasing and Secondary Markets: Theory and Evidence from Commercial Aviation](#), NYU.

04:

Gentzkow, Matthew, [Valuing New Goods in a Model with Complementarities: Online Newspapers](#), GSB Chicago.

Asker, John, [Measuring Advantages from Exclusive Dealing](#), NYU.Stern.

Sweeting, Andrew, [Coordination Games, Multiple Equilibria and the Timing of Radio Commercials](#), NWU

03:

Watson, Randal, [Product variety and competition in the retail market for eyeglasses](#), Texas.

Hartmann, Wesley, [Intertemporal Effects of Consumption and Their Implications for Demand Elasticity Estimates](#), Stanford.

02:

Liran, Einav, [Gross Seasonality and Underlying Seasonality: Evidence from the U.S. Motion Picture Industry](#), Stanford.

Villas Boas, Sofia, [Vertical Contracts Between Manufacturers and Retailers: Inference With Limited Data](#), Berkeley.

01:

Mortimer, Julie, [Vertical Contracts in the Video Rental Industry](#), Harvard.

Hortacsu, Ali, [Mechanism Choice and Strategic Bidding in Divisible Good Auctions: An Empirical Analysis of the Turkish Treasury Auction Market](#), Chicago.

Hastings, Justine, [Vertical Relationships and Competition in Retail Gasoline Markets: Empirical Evidence from Contract Changes in Southern California](#), forthcoming AER.

Seim, Katja, [An Empirical Model of Firm Entry with Endogenous Product-Type Choices](#), Stanford.

Melnikov, Oleg, Markov-perfect Dynamics of a Differentiated Durable Products Oligopoly, Cornell.

Arie Beresteanu, [Nonparametric analysis of cost complementarities in the telecommunication industry](#), Duke.

McManus, [Nonlinear Pricing in an Oligopoly Market: the Case of Specialty Coffee](#), Washington University.

Syverson, Chad, [Market Structure and Productivity: A Concrete Example](#), forthcoming JPE.

00:

Manuszak, Mark, Firm Conduct in the Hawaiian Retail Gasoline Industry, Carnegie Mellon.

Jin, Ginger, [Competition and Disclosure Incentives: An Empirical Study of HMOs](#), forthcoming *RAND Journal of Economics*

99:

Rysman, Marc, [Competition Between Networks: A Study of the Market for Yellow Pages](#), RES.

Sorenson, Alan, Equilibrium Price Dispersion in Retail Markets for Prescription Drugs, JPE.