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MEETING TIME:	Tuesdays and Thursdays, 1:55 PM - 3:50 PM (Period 7-8) at MAT 114
LOCATION:	Matherly Hall 114 (MAT 114)
OFFICE HOURS:	By appointment (link in webpage)
COURSE WEBPAGE:	University eLearning course webpage

COURSE OVERVIEW

This course provides a Ph.D.-level introduction to empirical industrial organization. It is designed to provide a broad introduction to topics and industries that current researchers are studying as well as to expose students to a wide variety of techniques. It will start the process of preparing economics Ph.D. students to conduct thesis research in the area. It may also be of interest to doctoral students in other fields. The two broad topics that I will discuss are econometric methods for demand estimation and for the analysis of auction data.

GRADING

Grading will consist on problem sets, topic presentations, class participation, and a research proposal.

PROBLEM SETS

There will be three problem sets. The problem sets will be primarily computational exercises that will require you to write code in Matlab or other programming language. Problem sets are due at the start of the class on the designated day. No problem sets will be accepted after class.

Cooperation in doing problem sets is encouraged. You may work in groups to discuss the problem sets. Each student, however, should hand in the problem sets individually. I encourage that every student participate actively answering every exercise. The empirical work can be done in Matlab or other programming languages. Taking someone else's work/ideas or codes/programs, and handing them in as your own, is plagiarism. Students who commit plagiarism will earn zero on the assignment and will be referred to the University authorities.

TOPIC PRESENTATION

Each student should present twice, a topic (see p. 4 for a list of the topics for each presentation) and the research proposal. The duration of each presentation should be approximately 40 minutes.

RESEARCH PROPOSAL

Your research proposal will be a clearly defined original research project that builds on the material discussed in class. Each student will schedule meetings with me to discuss their proposal. For these meetings, you should prepare a short outline of what you are planning to do. After your presentation, the final written proposal will be due at the end of the Fall semester. I will provide detailed instructions.

No take-home exam will be given.

I hope you enjoy the course. Good luck.

TENTATIVE SCHEDULE

(Last update: Aug 15)

Week #	Class Date	Class #	Topic	Assignments
Part I: Econometric Methods for Demand Estimation				
1	Aug-24(R)	1	Introduction	
2	Aug-29(T)	2	Static Models with Homogeneous Goods	
	Aug-31(R)	3	Dynamic Models with Homogeneous Goods	Problem set 1
3	Sep-05(T)	4	Some Basic Interactions and Examples	
	Sep-07(R)	5	Some Optimization Examples	
4	Sep-12(T)	6	Introduction to Demand Systems for Differentiated Products	
	Sep-14(R)	7	Estimation of Static Discrete Choice Models	
5	Sep-19(T)	8	Cost Systems, Pricing Equations, and Hedonic Regressions	Problem set 1 due Problem set 2
	Sep-21(R)	9	Research Proposal	
6	Sep-26(T)	10	Endogeneity, Instrumental Variables, and Applications	
	Sep-28(R)	11	Measurement of Consumer Welfare and Hedonic Prices	
7	Oct-03(T)	12	Micro Data I	
	Oct-05(R)	13	Micro Data II	Problem set 2 due
8	Oct-10(T)	14	Moment Inequalities I	
	Oct-12(R)	15	Moment Inequalities II	Problem set 3
9	Oct-17(T)	16	Dynamic Demand Estimation I	
	Oct-19(R)	17	Dynamic Demand Estimation II	
10	Oct-24(T)	18	Dynamic Demand Estimation III	

Part II: Econometric Methods for the Analysis of Auction Data				
	Oct-26(R)	19	The Structural Program: Introduction, SPSB, and FPSB	
11	Oct-31(T)	20	Research Proposal	
	Nov-02(R)	21	Identification and Multi-Unit Auctions	Problem set 3 due
12	Nov-07(T)	22	Structural Estimates of Auction Models Using Experimental Data	
	Nov-09(R)	23	Moment Inequalities and Auction Data	
Part III: Students' Presentations				
13	Nov-14(T)	24	Student Topic Presentations	
	Nov-16(R)	25	Student Topic Presentations	
14	Nov-21(T)	26	Research Proposal	
	Nov-23(R)		No Class (Thanksgiving Day)	
15	Nov-28(T)	27	Student Research Proposal Presentations	
	Nov-30(R)	28	Student Research Proposal Presentations	
16	Dec-05(T)	29	Concluding Remarks	

Topics Available for Student Presentations (dates and topics assigned on the basis of first come, first served):

Student Presentation 1 (vertical relationships and bargaining)

1. Villas-Boas (2007)
2. Mortimer (2008)
3. Bonnet and Dubois (2010)
4. Crawford and Yurukoglu (2012)
5. Grennan (2013)
6. Crawford, Lee, Whinston, and Yurukoglu (2018)
7. Luco and Marshall (2020)
8. Donna, Pereira, Pires, and Trindade (2022)
9. Donna, Pereira, Pu, Trindade, Yoshida (forthcoming)

Student Presentation 2 (additional IO topics)

1. Auctions: Test of the Theory and Testable Equilibrium Predictions. See guideline [here](#).
2. Auctions: Revenues and Auction Design. See guideline [here](#).
4. Auctions: Collusion. See guideline [here](#).
5. Bundling: Chu, C. S., P. Leslie, and A. Sorensen (2011)
6. Moment Inequalities Application I: Ciliberto and Tamer (2009)
7. Price Dispersion. See guideline [here](#).
8. Identification and Estimation in Matching Games: [Agarwal \(2015\)](#).
9. Any of the papers presented in the 2023 NBER Summer Institute Industrial Organization: [Here](#).

TEXTBOOKS

This course focus on the **theoretical principles** in:

- Tirole, J. *The Theory of Industrial Organization*, MIT, 1988.

For a broader coverage of **empirical and public policy** issues, you should also read:

- Viscusi, W. Kip, Joseph E. Harrington, and John M. Vernon. *Economics of Regulation and Antitrust* (Cambridge, MA: MIT Press, August 2005, 4th edition).
- Carlton, D. and Perloff, J., *Modern Industrial Organization*, 4th ed., Addison-Wesley, 2005.

You also might want to read several of the **surveys** in:

- Schmalensee, R. and Willig, R. eds., *Handbook of Industrial Organization*, Volumes 1 and 2, North-Holland, 1989. (*HIO1 and HIO2*).
- Armstrong, M. and Porter, R. eds., *Handbook of Industrial Organization*, Volume 3, North-Holland, 2007. (*HIO3*).

Recommended Matlab Book:

- Higham, Desmond J. and Higham, Nicholas J., *MATLAB Guide*, Second Edition. SIAM. ISBN: 978-0898715781

For **programming and numerical methods** you might want to read some chapters in:

- Train, Kenneth, *Discrete Choice Methods with Simulation*, second edition, Cambridge University Press, 2009. Available free online at <http://elsa.berkeley.edu/books/choice2.html>.

Check also some codes and resources I have on my webpage at:

<http://www.jdonna.org/resources>

Check the end of the syllabus for additional books and resources on programin and numerical methods.

The following abbreviations are used for journal titles:

AER	American Economic Review	JEP	Journal of Economic Perspectives
BJE	Bell Journal of Economics	JET	Journal of Economic Theory
EMA	Econometrica	JIE	Journal of Industrial Economics
EJ	Economic Journal	JLE	Journal of Law and Economics
IJIO	International Journal of Industrial Organization	JPE	Journal of Political Economy
JE	Journal of Econometrics	QJE	Quarterly Journal of Economics
JEH	Journal of Economic History	RJE	Rand Journal of Economics
JEL	Journal of Economic Literature	ReStat	Review of Economics and Statistics
JEMS	Journal of Economics & Management Strategy	ReStud	Review of Economic Studies

READING LIST

- ** Required Reading
- * Suggested Reading

I. Econometric Methods for Demand Estimation

1. Introduction

- Angrist, Joshua D., and Jörn-Steffen Pischke. 2010. "The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con Out of Econometrics." *Journal of Economics Perspectives*.
- * Nevo, Aviv and Michael Whinston, 2010, "Taking the Dogma Out of Econometrics: Structural Modeling and Credible Inference," *Journal of Economics Perspectives*.
- Einav Liran and Jon Levin, 2010, "Empirical Industrial Organization: A Progress Report," *Journal of Economics Perspectives*.
- * P. Reiss and F. Wolak, "Structural Econometric Modeling: Rationales and Examples from Industrial Organization," *Handbook of Econometrics*, Volume 6A, Chapter 64.

2. Static Models with Homogeneous Goods

- O. Ashenfelter and D. Sullivan, "Nonparametric Tests of Market Structure: An Application to the Cigarette Industry," *JIE*, June 1987, 483-98.
- J. Baker and T. Bresnahan, "Estimating the Residual Demand Curve Facing a Single Firm," *IJIO*, September 1988, 283-300.
- S. Borenstein, J. Bushnell and F. Wolak, "Measuring Market Inefficiencies in California's Restructured Wholesale Electricity Market," *AER*, December 2002, 1396-405.
- ** T. Bresnahan, "The Oligopoly Solution Concept is Identified," *Economics Letters*, 1982, 10, 87-92.
- T. Bresnahan, "Empirical Studies of Industries with Market Power," *HIO2*, Chapter 17.
- C. Holt, "Industrial Organization: A Survey of Laboratory Research," in J. Kagel and A. Roth, eds., *Handbook of Experimental Economics*, Princeton, 1995, 349-443.
- J. Panzar and J. Rosse, "Testing for 'Monopoly' Equilibrium," *JIE*, June 1987, 443-56.
- * M. Salinger, "The Concentration-Margin Relationship Reconsidered," *Brookings Papers on Economic Activity Micro*, 1990, 287-335.
- * R. Schmalensee, "Inter-industry Studies of Structure and Performance," in *HIO2*, Chapter 16.

3. Dynamic Models with Homogeneous Goods

V. Aguirregabiria, "The Dynamics of Markups and Inventories in Retail Firms," *ReStud*, April 1999, 275-308.

S. Borenstein and A. Shepard, "Dynamic Pricing in Retail Gasoline Markets," *RJE*, Autumn 1996, 429-51.

* K. Corts, "Conduct Parameters and the Measurement of Market Power," *JE*, November 1998, 227-50.

** G. Ellison, "Theories of Cartel Stability and the Joint Executive Committee," *RJE*, Spring 1994, 37-57.

Evans, W. and I. Kessides, "Living by the 'Golden Rule': Multimarket Contact in the U.S. Airline Industry," *QJE*, May 1994, 341-66.

* D. Genesove and W. Mullin, "Testing Static Oligopoly Models: Conduct and Cost in the Sugar Industry, 1890-1914," *RJE*, Summer 1998, 355-77.

* E. Green and R. Porter, "Noncooperative Collusion Under Imperfect Price Competition," *EMA*, 1984.

* L.F. Lee and R.H. Porter, "Switching Regression Models with Imperfect Sample Separation Information—With an Application on Cartel Stability," *EMA*, 1984.

** R. Porter, "A Study of Cartel Stability: The Joint Executive Committee, 1880-1886," *BJE*, Autumn 1983, 301-14.

* A. Rosen, "Confidence sets for partially identified parameters that satisfy a finite number of moment inequalities," *JE*, 107-117, 2008.

* C. Wolfram, "Measuring Duopoly Power in the British Electricity Spot Market," *AER*, September 1999, 805-26.

4. Demand Systems for Differentiated Products

- * S. Anderson, A. dePalma and J. Thisse. Discrete Choice Theory of Product Differentiation, 1992, MIT Press.
- * S. Berry and A. Pakes, "The Pure Characteristics Demand Model," IER, 2007.
- ** S. Berry, J. Levinsohn and A. Pakes, "Automobile Prices in Market Equilibrium," EMA, July 1995, 841-90.
- * S. Berry, J. Levinsohn and A. Pakes, "Voluntary Export Restraints on Automobiles: Evaluating a Strategic Trade Policy," AER, 89(3), 400-430, 1999.
- * S. Berry, O.B. Linton, A. Pakes, "Limit theorems for estimating the parameters of differentiated product demand systems," ReStud, 71 (3), 613-654, 2004.
- * T. Bresnahan, "Departures From Marginal Cost Pricing in the American Automobile Industry," JE, 17, 201-227, 1981.
- * A. Deaton and J. Muellbauer, "An Almost Ideal Demand System," AER, Vol. 70, No. 3., pp. 312-326, 1980.
- * J.J. Gabszewicz and J-F . Thisse, "Price Competition, Quality and Income Disparities", JET, 20, 340-59, 1979.
- * W. M. Gorman, "The Structure of Utility Functions," ReStud, Volume 35, Issue 4, 1968.
- K. Lancaster, "Consumer Demand: A New Approach," Columbia University Press, NY, 1971.
- * D. McFadden, F. Reid, A. Talvitie, M. Johnson, and Associates "Overview and Summary: Urban Travel Demand Forecasting Project," The Urban Travel Demand Forecastin Project, Final Report, Volume I, Institute of Transportation Studies, University of California, Berkeley, June 1979.
- * M. Mussa M. and S. Rosen, "Monopoly and Product Quality", JET, 18, 301-317, 1978.
- * A. Pakes, "Patents as Options: Some Estimates of the Value of Holding European Patent Stocks Ariel Pakes," EMA, pp. 755-784, 1986.
- * A. Pakes, "Common Sense And Simplicity In Empirical Industrial Organization," Review of Industrial Organization, 193-215, 2003.
- * A. Shaked and J. Sutton, "Relaxing price competition through product differentiation", ReStud, 49, 3-13, 1982.

5. Estimation of Static Discrete Choice Models

- ** S. Berry, 1994, "Estimating Discrete-Choice Models of Product Differentiation," RJE, Summer 1994, 242-62.
- * S. Berry and P. Haile, "Identification in Differentiated Products Markets Using Market Level Data," Working Paper, CFDP 1744R, January 2010, Revised March 2012.
- S. Berry and P. Haile, " Identification in a Class of Nonparametric Simultaneous Equations Models," Working Paper, CFDP 1787, March 2011.
- * S. Berry and P. Haile, "Nonparametric Identification of Multinomial Choice Demand Models with Heterogeneous Consumers," Working Paper, CFDP 1718, March 2010.
- S. Berry and P. Haile, "Identification of a Heterogeneous Generalized Regression Model with Group Effects," Working Paper, CFDP 1732, October 2009.
- ** J.-P. Dube, J. T. Fox and C.-L. Su, "Improving the Numerical Performance of BLP Static and Dynamic Discrete Choice Random Coefficients Demand Estimation", EMA, 2011.
- ** C-L Su and K. Judd, "Constrained Optimization Approaches to Estimation of Structural Models", EMA, 2011.
- * C. Knittel and Metaxoglou, "Estimation of Random Coefficient Demand Models: Challenges, Difficulties and Warnings," ReStat, forthcoming.
- * J. Lee, "A New Computational Algorithm for Random Coefficients Model with Aggregate-level Data," Working Paper, UCLA, 2011.
- ** A. Nevo, "A Practitioner's Guide to Estimation of Random Coefficients Logit Models of Demand," JEMS, Winter 2000, 513-48.
- K. Patel, Northwestern University, Ph.D. Dissertation, 2012.

6. Cost Systems, Pricing Equations, and Hedonic Regressions

P. Bajari and L. Benkard, "Demand Estimation With Heterogeneous Consumers and Unobserved Product Characteristics: A Hedonic Approach," JPE, December 2005, 1239-76.

* G. Chamberlain, "Asymptotic Efficiency in Estimation with Conditional Moment Restrictions", JE, 34, 305–334, 1987.

I. M. Cockburn, A. H. Anis, "Hedonic Analysis of Arthritis Drugs," NBER Working Paper No. 6574, Issued in May 1998.

Court, A. "Hedonic Price Indexes with Automotive Examples", in The dynamics of automobile demand, General Motors Corporation, pp. 99-117, 1939.

D. Epple, "Hedonic Prices and Implicit Markets: Estimating Demand and Supply Functions for Differentiated Products," JPE, January 1987, 59-80.

* T. Erickson and A. Pakes, "An Experimental Component Index for the CPI: From Annual Computer Data to Monthly Data on Other Goods." AER, 101(5): 1707-38, 2011.

R. Feenstra, "Exact Hedonic Price Indexes," ReStat, 1995, 634-53.

Z. Griliches, "Hedonic Price Indexes for Automobiles: An Econometric Analysis of Quality Change," In The Price Statistics of the Federal Government (General Series No. 73). New York: National Bureau of Economic Research, 1971.

P. Leslie and A. Sorensen "The Welfare Effects of Ticket Resale," Stanford GSB mimeo.

C. Nosko, "Competition and Quality Choice in the CPU Market," Working Paper, 2011.

A. Pakes, "A Reconsideration of Hedonic Price Indices with an Application to PC's," AER, December 2003, 1578-96.

** A. Pakes, "A Reconsideration of Hedonic Price Indices With An Application to PC's," AER, 2003.

* M. Reynaert and F. Verboven, "Improving the performance of random coefficients demand models: the role of optimal instruments," Working Paper, Katholieke Universiteit Leuven, 2012

S. Rosen, "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition," JPE, Jan./Feb. 1974, 34-55.

* M. Trajtenberg, "The Welfare Analysis of Product Innovations, with an Application to Computed Tomography Scanners," JPE, 1989, 444-479.

7. Endogeneity, Instrumental Variables, and Applications

Arellano, Manuel & Bond, Stephen, 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," *ReStud*, Wiley Blackwell, vol. 58(2), pages 277-97, April, 1991.

Blundell, R. and S. Bond, 1998, Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, *Journal of Econometrics* 87, 115-143, 1998.

J. Baker and T. Bresnahan, "Estimating the Residual Demand Curve Facing a Single Firm," *IJIO*, 1988, 283-300.

** T. Bresnahan, "Competition and Collusion in the American Automobile Market: The 1955 Price War," *JIE*, June 1982, 457-482.

F. Gasmi, J. Laffont and Q. Vuong, "Econometric Analysis of Collusive Behavior in a Soft-Drink Market," *JEMS*, Summer 1992, 277-311.

** P. Goldberg, "Product Differentiation and Oligopoly in International Markets: The Case of the U.S. Automobile Industry," *EMA*, July 1995, 891-951.

Hausman, J., 1996, "Valuation of New Goods under Perfect and Imperfect Competition," in T. Bresnahan and R. Gordon, eds., *The Economics of New Goods*, Studies in Income and Wealth, Vol. 58, Chicago: National Bureau of Economic Research.

J. Hausman, G. Leonard and J. Zona, "Competitive Analysis with Differentiated Products," *Annales D'Economie et de Statistique*, April/June 1994, 159-80.

** A. Nevo, "Measuring Market Power in the Ready-to-Eat Cereal Industry," *EMA*, March 2001, 307-42.

A. Nevo and A. Rosen, "Identification with Imperfect Instruments," *ReStat*, 2012, Vol 94(3), 659-671, 2012.

* S. Villas-Boas, "Vertical Relationships Between Manufacturers and Retailers: Inference With Limited Data," *ReStud*, Vol. 74, 2, pp. 625-652, 2007.

* A. Sweeting, "Dynamic Product Positioning in Differentiated Product Industries: The Effect of Fees for Musical Performance Rights on the Commercial Radio Industry", *EMA*, forthcoming.

D. McFadden, "Econometric Analysis of Qualitative Response Models," *Handbook of Econometrics*, Volume 2, 1984, Chapter 24.

8. Topics in Demand Estimation

8.1. Welfare

- D. Akerberg and M. Rysman, "Unobservable Product Differentiation in Discrete Choice Models: Estimating Price Elasticities and Welfare Effects," *RJE*, Winter 2005, 771-88.
- T. Bresnahan, S. Stern and M. Trajtenberg, "Market Segmentation and the Sources of Rents from Innovation," *RJE*, 1997, S17-S44.
- M. Gentzkow, "Valuing New Goods in a Model with Complementarity: Online Newspapers," *AER*, June 2007, 713-44.
- J. Hausman, "Valuation of New Goods Under Perfect and Imperfect Competition," in Bresnahan and Gordon (eds) *The Economics of New Goods*, Studies in Income and Wealth, 1996, Vol. 58, Chicago: NBER. Including comment by Bresnahan (in the same volume) and reply to comment (and reply to reply).
- J. Hausman, "Cellular Telephone, New Products and the CPI," *Journal of Business and Economic Statistics*, 1999, 188-94.
- A. Nevo, "New Products, Quality Changes and Welfare Measures Computed from Estimated Demand Systems," *ReStat*, 2003, 266-75.
- A. Petrin, "Quantifying the Benefits of New Products: The Case of the Minivan," *JPE*, August 2002, 705-29.
- M. Trajtenberg, "The Welfare Analysis of Product Innovations, with an Application to Computed Tomography Scanners," *JPE*, April 1989, 444-79.

8.2. Combining Micro and Macro Data

- ** S. Berry, J. Levinsohn and A. Pakes, "Differentiated Products Demand Systems from a Combination of Micro and Macro Data: The New Car Market," *JPE*, February 2004, 68-105.
- U. Doraszelski and A. Pakes, "A Framework for Applied Dynamic Analysis in IO," Ch. 30 in *HIO*, 2007.
- * G. Imbens, G. And T. Lancaster, "Combining Micro and Macro Data in Microeconomic Models," *ReStud*, 1994.
- ** A. Petrin, "Quantifying the Benefits of New Products: The Case of the Minivan," *JPE*, 2002.

8.3. Price Dispersion, Search, and Loss leaders

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

G. Ellison and S. Ellison, "Search, Obfuscation, and Price Elasticities on the Internet," MIT mimeo. Forthcoming *EMA*

H. Hong and M. Shum, "Using Price Distributions to Estimate Search Costs", *RJE*, 2006, 37(2), 257-275.

Hortacsu and C. Syverson, "Product Differentiation, Search Costs and Competition in the Mutual Fund Industry", *QJE*, 2004, 119(2), 403-456

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

A. Sorensen., "Equilibrium Price Dispersion in Retail Markets for Prescription Drugs," *JPE*, 108 (August), 833-850.

M. Wildenbeest, "An Empirical Model of Search with Vertically Differentiated Products," *RJE*, 2011.

8.5. Relaxing the Discrete Choice Assumption

J. Dubin and D. McFadden, "An Econometric Analysis of Residential Electric Appliance Holdings and Consumption," *EMA*, 1984.

* I. Hendel, "Estimating Multiple Discrete Choice Models: An Application to Computerization Returns," *ReStud*, April 1999, 423-46.

9. Nonlinear Pricing and Static Price Discrimination

E. Blackstone, "Restrictive Practices in the Marketing of Electrofax Copying Machines: The SCM Corporation Case," *JIE*, March 1975, 189-202.

* Bonnet, C., P. Dubois, S. B. Villas-Boas, and D. Klapper (2013): "Empirical Evidence on the Role of Nonlinear Wholesale Pricing and Vertical Restraints on Cost Pass-Through," *The Review of Economics and Statistics*, 95(2), 500-515.

Borenstein, S. "Selling Costs and Switching Costs: Explaining Retail Gasoline Markets," *RJE*, Autumn 1991, 354-69.

Borenstein, S. and N. Rose, "Competition and Price Dispersion in the U.S. Airline Industry," *JPE*, August 1994, 653-83.

* Busse, M. and M. Rysman, "Competition and Price Discrimination in Yellow Pages Advertising," *RJE*, Summer 2005, 378-90.

* Chu, C. S., P. Leslie, and A. Sorensen (2011): "Bundle-Size Pricing as an Approximation to Mixed Bundling," *American Economic Review*, 101, 263-303.

* Cohen, A. (2008): "Package size and price discrimination in the paper towel market," *International Journal of Industrial Organization*, 26, 502-516.

- P. Goldberg, "Dealer Price Discrimination in New Car Purchases: Evidence from the Consumer Expenditure Survey," *JPE*, June 1996, 622-54.
- * Hendel, I., A. Lizzeri, and N. Roketskiy (2014): "Nonlinear Pricing of Storable Goods," *American Economic Journal: Micro*. Forthcoming.
- M. Ivaldi and D. Martimort, "Competition under Nonlinear Pricing," *Annales d'Economie et de Statistique*, 1994, 71-114.
- * P. Leslie, "Price Discrimination in Broadway Theater," *RJE*, Autumn 2004, 520-41.
- * B. McManus, "Nonlinear Pricing in an Oligopoly Market: The Case of Specialty Coffee," *RJE*, Summer 2007, 512-32.
- J. Mortimer, "Price Discrimination, Copyright Law and Technological Innovation: Evidence from the Introduction of DVDs," *QJE*, August 2007, 1307-50.
- * Nevo, A., J. L. Turner, and J. W. Williams (2013): "Usage-Based Pricing and Demand for Residential Broadband," Mimeo.
- Nevo, A. and C. Wolfram, "Why Do Manufacturers Issue Coupons? An Empirical Analysis of Breakfast Cereals," *RJE*, Summer 2002, 319-39.
- * Perrigne, I., and Q. Vuong (2011): "Nonlinear Pricing in Yellow Pages," Mimeo.
- * Seim, K., and V. B. Viard (2011): "The Effect of Market Structure on Cellular Technology Adoption and Pricing," *American Economic Journal: Microeconomics*, 3, 221-251.
- Shepard, A. "Price Discrimination and Retail Configuration," *JPE*, February 1991, 30-53.
- Stole, L. "Price Discrimination and Competition," *HIO3*, Chapter 34.
- Varian, H. "Price Discrimination," *HIO1*, Chapter 10.
- * Villas-Boas, S. (2009): "An empirical Investigation of the Welfare Effects of Banning Wholesale Price Discrimination," *RAND Journal of Economics*, 40(1), 20-46.
- Wilson, R. (1997): *Nonlinear Pricing*. Oxford University Press.
- Yang, H., and L. Ye (2008): "Nonlinear Pricing, Market Coverage, and Competition," *Theoretical Economics*, 3, 123-153.

10. Moment Inequality Estimators

10.1. Estimation

- * Chernozhukov, V., H. Hong, and E. Tamer (2007): "Estimation and Confidence Regions for Parameter Sets in Econometric Models," *Econometrica*, 75(5), 1243–1284.
- * Dickstein, M. J., and E. Morales (2013): "Accounting for Expectational and Structural Error in Binary Choice Problems: A Moment Inequality Approach," Mimeo.
- Pakes, A., and J. Porter (2014): "Moment Inequalities for Multinomial Choice with Fixed Effects," Mimeo.
- ** Pakes, A., J. Porter, K. Ho, and J. Ishii (2014): "Moment Inequalities and Their Application," *Econometrica*, forthcoming.
- Tamer, E. (2003): "Incomplete Simultaneous Discrete Response Model with Multiple Equilibria," *Review of Economic Studies*, 70, 147–165.

10.2. Inference

- Andrews, D. W., and P. Guggenberger (2009): "Validity of Subsampling and "Plug-In Asymptotic" Inference for Parameters Defined By Moment Inequalities," *Econometric Theory*, 25, 669–709.
- * Andrews, D. W., and G. Soares (2010): "Inference for Parameters Defined by Moment Inequalities Using Generalized Moment Selection," *Econometrica*, 78(1), 119–157.
- Chernozhukov, V., C. Hansen, and M. Jansson (2009): "Finite Sample Inference for Quantile Regression Models," *Journal of Econometrics*, 152, 93–103.
- Imbens, G. W., and C. F. Manski (2004): "Confidence Intervals for Partially Identified Parameters," *Econometrica*, 72(6), 1845–1857.

10.3. Applications

- Blundell, R., M. Browning, and I. Crawford (2008): "Best Nonparametric Bounds on Demand Responses," *Econometrica*, 76(6), 1227–1262.
- * Ciliberto, F., and E. Tamer (2009): "Market Structure and Multiple Equilibria in Airline Markets," *Econometrica*, 77(6), 1791–1828.
- Haile, P. A., and E. Tamer (2003): "Inference with an Incomplete Model of English Auctions," *Journal of Political Economy*, 111(1), 1–51.
- * Ho, K., and A. Pakes (2014): "Hospital Choices, Hospital Prices and Financial Incentives to Physicians," *American Economic Review*. forthcoming.
- Ishii (2007): "Compatibility, Competition, and Investment in Network Industries: ATM Networks in the Banking Industry," Mimeo.
- Katz, M. (2007): "Estimating Supermarket Choice Using Moment Inequalities," Mimeo.
- ** Pakes, A. (2010): "Alternative Models for Moment Inequalities," *Econometrica*, 78(6), 1783–1822.

11. Dynamic Demand Estimation

- V. Aguirregabiria and P. Mira, "Sequential Estimation of Dynamic Discrete Games," EMA, 2007.
- * P. Arcidiacono and R. Miller, "Conditional Choice Probability Estimation of Dynamic Discrete Choice Models with Unobserved Heterogeneity," EMA, Vol. 7, No. 6, 2011.
- Blattberg, R. and S. Neslin, "Sales Promotions," Prentice Hall, 1990.
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Additional Matlab Resources

- Attaway, Stormy, *Matlab: A Practical Introduction to Programming and Problem Solving*. ISBN: 978-0750687621
- Matlab FAQ (very good): <http://matlab.wikia.com/wiki/FAQ>
- Matlab array manipulation tips and tricks: <http://home.online.no/~pjacklam/matlab/doc/mtt/doc/mtt.pdf>
- Recommended books for learning Matlab: <http://www.walkingrandomly.com/?p=2866>
- Matlab Guide, Second Edition (Higham) <http://www.maths.manchester.ac.uk/~higham/mg/>

PLEASE TAKE CARE OF YOURSELF (Mental Health Statement)

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student’s ability to participate in daily activities. The University of Florida offers services to assist you with addressing these and other concerns you may be experiencing.

If you are or someone you know is suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the **UF Crisis & Emergency Resource Center**. Please visit the links below for details.

UF Mental Health Services:

<https://wellness.med.ufl.edu/resources/in-person-mental-health-services/>

UF Counseling & Wellness Center: 352-392-1575

<https://counseling.ufl.edu/about/location-hours-contact/>

UF Suicide Prevention Resources

<https://counseling.ufl.edu/resources/suicide/>

SUICIDE CAN BE PREVENTED

If you are thinking of harming yourself or need a safe, non-judgmental place to talk, or if you are worried about someone else and need advice about what to do, 24-hour emergency help is also available through the Phone Numbers Below or at:

www.suicidepreventionlifeline.org

Phone Numbers

Unless noted, these phone numbers are available 24/7.

- **UF Counseling & Wellness Center:** 352-392-1575
- **National Suicide Prevention Lifeline:**
 - English: 1-800-273-8255
 - Spanish: 1-888-628-9454
 - Deaf/hard of hearing: 1-800-799-4889
- **Veterans Crisis Line:** 1-800-273-8255
- **LGBTQ Youth Crisis Hotline (Trevor Project):** 1-866-488-7386
- **TransLifeline (Available everyday, 11am–5am):** 877-565-8860

Text & Chat

Don’t want to talk? You can also get support through text and chat, available 24/7.

- **Suicide Prevention Lifeline Chat** – Available 24/7
<https://suicidepreventionlifeline.org/chat/>
- **Veterans Live Chat** – Available 24/7
<https://www.veteranscrisisline.net/ChatTermsOfService.aspx?account=Veterans%20Chat>
- **LGBTQ Youth Crisis Chat/Text (TrevorChat/TrevorText)** – Follow link for chat or text START to 678-678
<https://www.thetrevorproject.org/get-help-now/>

DISABILITY SERVICES

Students with disabilities requesting classroom accommodation must first register with the Disability Resource Center (DRC). Once registered, the DRC will provide documentation to the student. Then the student must provide this documentation to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester. Please visit the DRC website for details:

<https://disability.ufl.edu>

Note that the DRC will **remain operational during the COVID-19 pandemic**. The DRC may hold Zoom and phone appointments with students.

COVID-19 FAQ AND UNIVERSITY POLICIES

Please see the University recommendations below:

<https://coronavirus.ufhealth.org/screen-test-protect-2/frequently-asked-questions/>

CHANGES TO SYLLABUS

The syllabus and schedule are **subject to change/revision**.