HCMG 902
Industrial Organization of Health Care

Course Syllabus
Fall 2018

Meeting Days: Tuesdays
Meeting Time: 3:00-6:00 PM
Meeting Place: CPC Chestnut Room
Instructor: Professor Claudio Lucarelli
Office Address: 202 CPC
Office Phone: (215) 898-2837
E-mail: clucarel@wharton.upenn.edu
Office hours: By appointment

Course Description

This is an advanced Ph.D. seminar exploring the topics in the industrial organization of health care markets. The main purpose of the course is to introduce students to the main tools that have been developed in recent years in the field of industrial organization, and provide examples of their application in health care contexts. We will learn advanced econometric techniques to estimate demand and production function parameters, which are important components of an applied economist's toolkit. In general, we will first cover the technical papers to later study examples of their applications in health care markets. The topics covered include health insurance, adverse selection, moral hazard, hospital demand estimation, the analysis of hospital competition, insurer competition, quality competition and the welfare of new product introductions. The frontier methods studied in this course and the policy relevance of healthcare are a good combination to write a successful job market paper. In fact, in recent years, many successful job market candidates have written dissertation at the intersection of industrial organization and health care. We will read several of those papers.

To help you actively learn the material of this course, students will be required to present published papers in the field, complete empirical exercises and write an empirical research paper that will be presented at the end of the course. With permission of the instructor, the seminar is open to doctoral students from other departments across the University of Pennsylvania.

Course requirements:

1. Students should come prepared to class, having read the assigned papers. The key papers are denoted with a "*".
2. Problem Sets (2 of them)
3. Presentation of a published paper (45 min).
4. End of term original research paper and presentation. The paper is to be a draft of a potentially publishable paper on the topic of your choice. The paper should have a well-developed literature review, economic theory and methods section. Data analysis section can be excluded but it possible it would be nice to have some initial estimates.

Grading:

Original paper and presentation	50%
Presentation of published paper	15%
Problem sets	25%
Class participation	10%

September 4 -- Course Introduction

Dranove, D., and Satterthwiate, M. (2000) "The Industrial Organization of Health Care Markets," Handbook of Health Economics, Vol 1a., Culyer, A. and Newhouse, J. ed., Elsevier.

Gaynor, M., Ho, K., and Town, R. (2015) "The Industrial Organization of Health Care Markets," Journal of Economic Literature, 53(2): 235-284.

Tirole, J. (1989) The Theory of Industrial Organization, MIT Press.

Note: The above papers and book are references that you can consult throughout the course.

September 11 – Introduction to Demand Estimation

*Berry, S. (1994) "Estimating Discrete Choice Models of Product Differentiation," RAND Journal of Economics, 25: 242-262.

*Berry, S., Levinsohn, J. and A. Pakes (1995) "Automobile Prices in Equilibrium, Econometrica, 63(4):841-890.

*Nevo, A. (2000) "A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand," Journal of Economics and Management Strategy, 9(4): 513-548.

Deaton, A. and Muelbauer, J. (1980) "An Almost Ideal Demand System," American Economic Review, 70(3) 312-326.

Ellison, S., Cockburn, I, Grilliches, Z. and Hausman, J. (1997) "Characteristics of Demand for Pharmaceutical Products: An Examination of Four Cephalosporins," RAND Journal of Economics, 28(3): 426-446.

*Berry, S. and Pakes, A. (2007) "Pure Characteristics Demand Model," International Economic Review, 48(4): 1193-1225.

September 18 – Welfare of New Products

*Petrin, A. (2002) "Quantifying the Benefits of New Products: The Case of the Minivan," Journal of Political Economy, 110(4): 705-729.

*Trajtenberg, M., (1989) "The welfare analysis of product innovations, with an application to computer tomography scanners," Journal of Political Economy 97, 444–479.

*Lucarelli, C., Nicholson, S., and Tilipman, N. (2018) "A Quality-Adjusted Price index for Colorectal Cancer Drugs" mimeo.

Ackerberg, D. and Rysman, M. (2005) "Unobserved Product Differentiation in Discrete Choice Models," RAND Journal of Economics, 36(4): 771-788.

Bresnahan, T. (1998?) "The Apple-Cinnamon Cheerios War: Valuing New Goods, Identifying Market Power, and Economic Measurement," Mimeograph.

*Goolsbee, A. and A. Petrin (2004). "The Consumer Gains from Direct Broadcast Satellites and the Competition with Cable TV," Econometrica 72 (2), 351.

Bajari, P., Fox, J., Kim, K.I., Ryan, S. (2011) "A Simple Estimators for the Distribution of Random Coefficients," Quantitative Economics. 381-418.

*Ho, K. and Pakes, A. (2014) "Hospital Choices, Hospital Prices and Financial Incentives to Physicians," American Economic Review, 104(12): 3841-3884

Pakes, A. and Porter, J. (2014) "Moment Inequalities for Multinomial Choice with Fixed Effects," Mimeo: http://scholar.harvard.edu/files/pakes/files/rmc_2014_05_12.pdf

Rossi, P., Allenby, G. and R. McCulloch, (2006) Bayesian Statistics and Marketing, J. Wiley and Sons.

Berry, S. and Haile, P. (2014) "Identification in Differentiated Products Markets using Market Level Data," Econometrica, *82*(5), 1749-1797

Gandhi, A., Z. Lu and X. Shi (2013) "Estimating Demand for Differentiated Products with Error in Market Shares" http://www.ssc.wisc.edu/~agandhi/homepage/Amit_Gandhi.html.

Nevo, A. Turner, J. and Williams, J. (2014) "Usage-based Pricing and Demand for Residential Broadband," http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2330426.

Pakes, A. (2010) "Alternative Models of Moment Inequalities," Econometrica, 78(6): 1783–1822.

Bajari, P., Nekipelov, D., Ryan, S., and Yang, M. (2015) "Demand Estimation with Machine Learning and Model Combination," NBER Working Paper w20955.

September 25 – Student Presentations (3)

Cardon, J. and Hendel, I. (2001) "Asymmetric Information in Health Insurance: Evidence from the National Medical Expenditure Survey," RAND Journal of Economics, 32: 408- 427.

Lucarelli, C., Prince, J. and Simon, K. (2012), "The Welfare Impact of Reducing Choice in Medicare Part D: A Comparison of Two Regulation Strategies," International Economic Review,.

Finkelstein, A. and McGarry, K. (2006) "Multiple dimensions of private information: evidence for the long-term care insurance market," American Economic Review, 96(4) 938- 958.

Carlin C. and Town, R. (2010) "Adverse selection, welfare and the optimal pricing of employer-sponsored health plans," Mimeograph.

Bajari, P., Hong, H., Khwaja, A. and C. Marsh (2013) "Moral hazard, adverse selection and health expenditures: a semiparametric analysis," http://www.econ.umn.edu/~bajari/research/health.pdf.

Cutler, D. B. Lincoln, and R. Zeckhauser (2009) "Selection Stories: Understanding Movement Across Health Plans," NBER Working Paper 15174.

De Meza, D, and Webb. D C. 2001. "Advantageous Selection in Insurance Markets." RAND Journal of Economics, 32(2): 249–262.

Cutler, David M., and Sarah J. Reber. 1998. "Paying for Health Insurance: The Trade-Off between Competition and Adverse Selection." Quarterly Journal of Economics, 113(2): 433–66.

Bundorf, K., Levin, J. and Mahoney, N. (2012) "Pricing and Welfare in Health Plan Choice." American Economic Review, 102(7): 3214-48.

Handel, B. (2013) "Adverse Selection and Switching Costs in Health Insurance Markets: When Nudging Hurts," American Economic Review, 103(7): 2643-2682

Starc, A. (2014) "Insurer Pricing and Consumer Welfare: Evidence from Medigap." RAND Journal of Economics, 45(1): 198-220.

Lustig, J. (2011). Measuring Welfare Losses from Adverse Selection and Imperfect Competition in Privatized Medicare. unpublished manuscript, Boston University.

Finkelstein, A., Einav, L., Levin, J. (2010) "Beyond Testing: Empirical Models of Insurance Markets," Annual Review of Economics, 2(1): 311-336.

Ericson, K. and Starc, A. (2013) "How Product Standardization Affects Choice: Evidence from Massachusetts Health Insurance Exchange" Univ of Pennsylvania Working Paper.

Handel, B. and Kolstad, J. (2015) "Health Insurance for Humans: Information Frictions, Plan Choice, and. Consumer Welfare," American Economic Review, .

Einav, L., Finkelstein, A., Ryan, S. and Schrimpf, P. and Cullen, M. (2013) "Selection on Moral Hazard in Health Insurance," American Economic Review, 103(1).

Einav, L, Finkelstein, A. and Cullen, M. 2010. "Estimating Welfare in Insurance Markets using Variation in Prices." Quarterly Journal of Economics, 125(3): 877–921.

October 2 – Student Presentations (3)

Berry, S. and Jia, P. (2010) "Tracing the Woes: An Empirical Analysis of the Airline Industry, American Economic Journal: Microeconomics, 2(3), 1-43.

Miller, D. and Yeo, J. (2012) "The Consequences of a Public Health Insurance Option: Evidence from Medicare Part D Prescription Drug Markets," Mimeo.
http://people.clemson.edu/~dmille7/Publicoptionmay2012.pdf

DeCarolis, F. (2015) "Pricing and Incentives in Publicly Subsidized Health Care Markets: The Case of Medicare Part D," American Economic Review.

Berry, S., Levinsohn, J. and A. Pakes (1995) "Voluntary Export Restraints on Automobiles: Evaluating a Strategic Trade Policy , American Economic Review, 89(3):400-430.

Bokhan, F. and Fournier, G. (2011) "Entry in the ADHD Drugs Market: Welfare Impact of Generics and Me-Too's" Journal of Industrial Economics, 61(2) 339-392.

Polyakova, M. (2013) "Regulation of Insurance with Adverse Selection and Switching Costs: Evidence from Medicare Part D," Working paper: http://economics.mit.edu/files/9376.

Chernew, M., Gowrisankaran, G. and Scanlon, D. (2008) "Learning and the value of information: Evidence from health plan report cards," Journal of Econometrics, 144(1):156-174.

Mahoney, N., and Weyl, G. (2014) "Imperfect Competition in Selection Markets," NBER Working Paper # 20411.

Bresnahan, T. (1987) "Competition and Collusion in the American Automobile Industry: The 1955 Price War," Journal of Industrial Economics, 35(4) 457-482.

Decarolis, F., Polyakova, M. and Ryan, S. (2015) "The Welfare Effects of Supply-Side Regulations in Medicare Part D," NBER Working Paper #21298.

Curto, V., Einav, L., Finkelstien, A., Levin, J. and Bhattacharya, J. "Can Health Insurance Competitive Work: Evidence from Medicare Advantage," NBER Working Paper w20818.

October 9– Static Oligopoly & Merger Simulation

Tirole, J, (1988) Theory of Industrial Organization, MIT Press

Gaynor, M. and Town, R. (2012) "Provider Competition," in Handbook of Health Economics, Vol. 2.

*Nevo, A. (2000) "Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry," RAND Journal of Economics, 31(3): 395-421.

*Song, M., Nicholson, S., Lucarelli, C. (2017) "Mergers with Inter-firm Bundling: A Case of Pharmaceutical Cocktails" RAND Journal of Economics, 48(3):810-834,

*Berry, S., and A. Pakes (1995) "Some Applications and Limitations of Recent Advances in Empirical Industrial Organization: Merger Analysis, American Economic Review, 89(3):400-430.

*Town, R., and Vistnes, G. "Hospital Competition in HMO Networks," Journal of Health Economics, 20:5 (September 2001), pp. 733-753.

Gaynor, M. and Vogt, W. (2003) "Competition Among Hospitals," RAND Journal of Economics, 25:764-785.

*Capps, C., Dranove, D., and M. Satterthwaite (2003) "Competition and Market Power in Option Demand Markets," RAND Journal of Economics, 25: 737-763.

Miller, N., C. Ryan, M. Remer, and G. Shu (2012) "Approximating the Price Effects of Mergers: Numerical Evidence and Empirical Application," USDOJ, EAG Discussion Paper 12-8. Available at: http://www.justice.gov/atr/public/eag/288255.pdf.

Farrell, J. and C. Shapiro (2008) "Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition," http://escholarship.org/uc/item/8z51b1q8.

Peters, C. (2006) "Evaluating the Performance of Merger Simulation: Evidence from the US Airline Industry," Journal of Law and Economics, 49(2):627-649.

Bjornerstedt, J. and F. Verboven (2013) "Does Merger Simulation Work? Evidence from Swedish Analgesics Market," Working Paper.

Thomadsen, R. (2005) "The Effect of Ownership Structure on Prices in Geographically Differentiated Industries," RAND Journal of Economics, 36(4): 908-929.

Allen, J., R. Clark and J.F. Houde. (2014)"The Effect of Mergers in Search Markets: Evidence from Mortgage Markets", American Economic Review. 104(10),:3365-96.

Ocgtober 16 – Bargaining and Mergers & Mergers Impact on Quality

Lee, R. and Fong, K. (2012) "Markov-Perfect Network Formation: An Applied Framework for Bilateral Oligopoly and Bargaining in Buyer-Seller Networks," http://pages.stern.nyu.edu/~rslee/papers/MPNENetworkFormation.pdf.

Horn, H. and Wolinsky, A. (1988). Bilateral Monopolies and Incentives for Merger. RAND Journal of Economics, 19:408-419.

Kessler, Daniel and Mark McClellan (2000) "Is Hospital Competition Socially Wasteful? Quarterly Journal of Economics, 115:2 pp. 577-615.

Gowrisankaran, G., and Town, R. (2003) "Competition, Payers, and Hospital Quality," Health Services Research, December.

*Gowrisankaran, G., Nevo, A. and Town, R. (2015) "Mergers When Prices Are Negotiated: Evidence from the Hospital Industry" American Economic Review. http://www.u.arizona.edu/~gowrisan/pdf_papers/hospital_merger_negotiated_prices.pdf.

Matsa, D. (2011) "Competition and Product Quality in the Supermarket Industry," Quarterly Journal of Economics, 126(3): 1539-1591.

Lin, H. (2014) "Quality Choice and Market Structure: A Dynamic Analysis of Nursing Homes, International Review of Economics, forthcoming.

Berry, S. and Waldfogel, J. (2001) "Do Mergers Increase Product Variety? Evidence from Radio Broadcasting," Quarterly Journal of Economics, 116(3) 1990-1025.

Fan, Y. (2013) "Ownership Consolidation and Product Characteristics: A Study of the US Daily Newspaper Market," American Economic Review, 103(3):1598-1628.

Jeziorski, P. (2014) "Effects of Mergers in Two-Sided Markets: The US Radio Industry, American Economic Journal: Microeconomics, 6(4): 35-73.

*Grennan, M. (2013) "Price Discrimination and Bargaining: Empirical Evidence from Medical Devices," American Economic Review, 103(1):145-177.

Draganska, M. Mazzeo, K. Seim (2009), Beyond Plain Vanilla: Modeling Joint Product Assortment and Pricing Decisions, Quantitative Marketing and Economics, 7(2): 105- 146.

Ho, K. (2005) "The Welfare Effects of Restricted Hospital Choice in the US Medical Care Market," Journal of Applied Econometrics, 21(7): 1039-1079.

*Ho, K. (2009) "Insurer-Provider Networks in the Medical Care Market," American Economic Review, 99(1): 393-430.

Crawford, G. and Yurukoglu, A. (2012) "The Welfare Effects of Bundling in Multichannel Television Markets." The American Economic Review 102.2: 643-685

La Fontaine, N. and M. Slade (2007) "Vertical Integration and Firm Boundaries: The Evidence," Journal of Economic Literature, 45: 629-685.

Hortacsu, A. and Syverson, C. (2007) "Cementing Relationships: Vertical Integration, Foreclosure, Productivity, and Prices," Journal of Political Economy,115: 250-301

Ciliberto, F., Dranove, D., 2005. "The effect of physician–hospital affiliations on hospital prices in California," Journal of Health Economics. 25(1): 29-38.

Dafny, L. (2010) "Are Health Insurance Markets Competitive?" American Economic Review, 100(4): 1399-1431.

Dafny, L., Duggan, M., and Ramanarayanan, S. (2009) Paying a Premium on your Premium? Consolidation in the US Health Insurance Industry. NBER working paper.

Cuellar, A.E., Gertler, P.J., 2005. "Strategic integration of hospitals and physicians," Journal of Health Economics, 25(1):1-28.

Town, R. (2001) "The Welfare Impacts of HMO Mergers," Journal of Health Economics, 20(6) 967-990.

Cebul, R. Rebitzer, J. Taylor, L. and Votruba, M. (2011) "Unhealthy Insurance Markets: Search Frictions and the Cost and Quality of Health Insurance" American Economic Review, 101(5): 1842-1871.

Dunn, Abe (2011) "The Effect of Health Insurance Competition when Private Insurance Competes with a Public Option," Mimeo. http://www.bea.gov/papers/pdf/HealthInsuranceCompetition10_11.pdf.

Ho, K. and Lee, R. (2013) "Insurer Competition and Negotiated Hospital Prices," NBER Working Paper 19401.

Ho, K. and Lee, R. (2015) "Insurer Competition in Health Care Markets," mimeo.

October 23 -- Single Agent Dynamics

Ackerberg, D. A. (2009). "A New Use of Importance Sampling to Reduce Computational Buren in Simulation Estimation." *Quantitative Marketing and Economics* 7, 343-376.

Ackerberg, D. A. (2003). "Advertising, learning, and consumer choice in experience good markets: an empirical examination," *International Economic Review* 44(3). 1007-1040.

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

*Hotz, V. J. & Miller, R. A. (1993). "Conditional Choice Probabilities and the Estimation of Dynamic Models," *Review of Economic Studies* 60(3). 497-529.

Hotz, V. J.; Miller, R. A.; Sanders, S. & Smith, J. (1994). "A Simulation Estimator for Dynamic Models of Discrete Choice," *Review of Economic Studies* 61(2). 265-89.

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

October 30 -- Dynamic Oligopoly Models

Doraszelski, U. and M. Satterthwaite (2010). "Computable Markov-Perfect Industry Dynamics." *RAND Journal of Economics* 41, 215-243.

*Pakes, A. & McGuire, P. (1994). "Computing Markov-Perfect Nash Equilibria: Numerical Implications of a Dynamic Differentiated Product Model," *RAND Journal of Economics* 25(4). 555-589, Winter.

Pakes, A. & McGuire, P. (2001). "Stochastic Algorithms, Symmetric Markov Perfect Equilibrium, and the 'Curse' of Dimensionality," *Econometrica*, 69(5). 1261-81, September.

*Gowisankaran, G. and R. Town (1997). "Dynamic Equilibrium in the Hospital Industry." *Journal of Economics & Management Strategy* 6: 45-74.

November 5 -- Estimation of Dynamic Oligopoly Models

*Bajari, P. & Benkard, L. & Levin, J. (2007). "Estimating Dynamic Models of Imperfect Competition," *Econometrica* **75**, 1331-70.

*Pakes, A. & Ostrovsky, M. & Berry, S. (2007). "Simple Estimators for the Parameters of Discrete Dynamic Games (with Entry/Exit Examples)." *RAND Journal of Economics* 38: 373- 399.

*Aguirregabiria, V. & Mira, P. (2007). "Sequential Estimation of Dynamic Discrete Games," *Econometrica*, **75**(1). 1-53.

November 12 -- Dynamic Oligopoly Models: Applications

*Bean, A. (2018) "Inefficient Technology Investment: Competition, Mortality and Neonatal Intensive Care." mimeo.

*Gowrisankaran, G. & Lucarelli, C. & Schmidt-Dengler, P. & Town, R. (2010). "Government Policy and the Dynamics of Market Structure: Evidence from Critical Access Hospitals." Mimeo.

November 19 -- Individual Meetings on Papers

November 26 and December 3 — Student Presentations