
COURSE SYLLABUS

Overview

In this course we will discuss key articles in Industrial Organization, that cover topics such as static demand, production function estimation, dynamic models (single-agent and games), empirical auctions and collusion. The focus here will be on **empirical** methods and applications. However, on occasion, some review and discussion of the relevant theory will be needed because empirical analysis in Industrial Organization is typically heavily informed by economic models.

Evaluation

Evaluation will consist of three problem sets, a presentation and class participation.

- Problem sets (20% each). The three problem sets will focus on the application of some methods and techniques discussed in class. I believe solving those problem sets will deepen your understanding of the class material at a level hardily possible by just reading the assigned articles.
- Presentation in class (30%). I have scheduled one week for in-class **individual** presentations at the end of the term. Time allotment for each presentation will depend on the number of students taking the course.
- Participation in class (10%). You are expected to be following the assigned readings (*) and discussions in class. As always, everyone will learn more in an engaging and active environment.

Tentative program

Lecture	Date	Topic
1	Jan-11	Intro - Supply & Demand
2	Jan-13	Demand
3	Jan-18	Demand
4	Jan-25	Demand
5	Jan-27	Demand
6	Feb-1	Production function
7	Feb-3	Production function
8	Feb-8	Dynamic models
9	Feb-10	Dynamic models
10	Feb-22	Dynamic models
11	Feb-24	Dynamic models
12	Mar-8	Empirical Auctions
13	Mar-10	Empirical Auctions
14	Mar-15	Empirical Auctions
15	Mar-17	Collusion and cartels
16	Mar-22	Presentations
17	Mar-24	Presentations

Bibliography

There is one very good empirical IO graduate level textbook that is currently being written and for which there is a draft online:

Victor Aguirregabiria. *Empirical Industrial Organization: Models, Methods, and Applications*. University of Toronto, 2021

Bibliography by topic:

- Intro - Supply & Demand:
 - (*) Michael J Roberts and Wolfram Schlenker. Identifying supply and demand elasticities of agricultural commodities: Implications for the US ethanol mandate. *American Economic Review*, 103(6):2265–95, 2013
- Demand:

- Angus Deaton and John Muellbauer. An almost ideal demand system. *The American economic review*, 70(3):312–326, 1980
- (*) Jerry Hausman, Gregory Leonard, and J Douglas Zona. Competitive analysis with differentiated products. *Annales d'Economie et de Statistique*, pages 159–180, 1994
- Daniel McFadden. Modeling the choice of residential location. *Transportation Research Record*, (673), 1978
- Kenneth E Train. *Discrete choice methods with simulation*. Cambridge university press, 2009
- (*) Steven Berry. Estimating discrete-choice models of product differentiation. *The RAND Journal of Economics*, pages 242–262, 1994
- Pinelopi Koujianou Goldberg. Product differentiation and oligopoly in international markets: The case of the US automobile industry. *Econometrica: Journal of the Econometric Society*, pages 891–951, 1995
- Pinelopi Koujianou Goldberg and Frank Verboven. The evolution of price dispersion in the European car market. *The Review of Economic Studies*, 68(4):811–848, 2001
- (*) Steven Berry, James Levinsohn, and Ariel Pakes. Automobile prices in market equilibrium. *Econometrica: Journal of the Econometric Society*, pages 841–890, 1995
- (*) Aviv Nevo. Measuring market power in the ready-to-eat cereal industry. *Econometrica*, 69(2):307–342, 2001
- Steven Berry, James Levinsohn, and Ariel Pakes. Differentiated products demand systems from a combination of micro and macro data: The new car market. *Journal of political Economy*, 112(1):68–105, 2004
- Cory Capps, David Dranove, and Mark Satterthwaite. Competition and market power in option demand markets. *RAND Journal of Economics*, pages 737–763, 2003
- Christopher Conlon and Jeff Gortmaker. Best practices for differentiated products demand estimation with PyBLP. *The RAND Journal of Economics*, 2020
- (*) Nathan H Miller and Matthew C Weinberg. Understanding the price effects of the MillerCoors joint venture. *Econometrica*, 85(6):1763–1791, 2017

- Production Function:
 - (*) G. Steven Olley and Ariel Pakes. The dynamics of productivity in the telecommunications equipment industry. *Econometrica*, 64(6):1263–1297, 1996
 - (*) James Levinsohn and Amil Petrin. Estimating Production Functions Using Inputs to Control for Unobservables. *The Review of Economic Studies*, 70(2):317–341, 2003
 - Daniel A Akerberg, Kevin Caves, and Garth Frazer. Identification properties of recent production function estimators. *Econometrica*, 83(6):2411–2451, 2015
 - (*) C Lanier Benkard. Learning and forgetting: The dynamics of aircraft production. *American Economic Review*, 90(4):1034–1054, 2000
- Dynamic Models:
 - Ariel Pakes and Paul McGuire. Computing markov-perfect nash equilibria: Numerical implications of a dynamic differentiated product model. *The RAND Journal of Economics*, 25(4):555–589, 1994. ISSN 07416261. URL <http://www.jstor.org/stable/2555975>
 - Ulrich Doraszelski and Mark Satterthwaite. Computable markov-perfect industry dynamics. *The RAND Journal of Economics*, 41(2):215–243, 2010
 - (*) C Lanier Benkard. A dynamic analysis of the market for wide-bodied commercial aircraft. *The Review of Economic Studies*, 71(3):581–611, 2004
 - Victor Aguirregabiria and Pedro Mira. Dynamic discrete choice structural models: A survey. *Journal of Econometrics*, 156(1):38–67, 2010
 - (*) John Rust. Optimal replacement of GMC bus engines: An empirical model of Harold Zurcher. *Econometrica: Journal of the Econometric Society*, pages 999–1033, 1987
 - V Joseph Hotz and Robert A Miller. Conditional choice probabilities and the estimation of dynamic models. *The Review of Economic Studies*, 60(3):497–529, 1993
 - Victor Aguirregabiria and Pedro Mira. Swapping the nested fixed point algorithm: A class of estimators for discrete markov decision models. *Econometrica*, 70(4):1519–1543, 2002

- (*) Victor Aguirregabiria and Chun-Yu Ho. A dynamic oligopoly game of the us airline industry: Estimation and policy experiments. *Journal of Econometrics*, 168(1):156–173, 2012
- (*) Patrick Bajari, C Lanier Benkard, and Jonathan Levin. Estimating dynamic models of imperfect competition. *Econometrica*, 75(5):1331–1370, 2007
- (*) Stephen P Ryan. The costs of environmental regulation in a concentrated industry. *Econometrica*, 80(3):1019–1061, 2012
- Empirical Auctions:
 - (*) Kenneth Hendricks and Robert H Porter. An empirical study of an auction with asymmetric information. *The American Economic Review*, pages 865–883, 1988
 - Susan Athey and Philip A. Haile. Identification of standard auction models. *Econometrica*, 70(6):2107–2140, 2002
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 - (*) Tong Li, Isabelle Perrigne, and Quang Vuong. Structural estimation of the affiliated private value auction model. *RAND Journal of Economics*, pages 171–193, 2002
 - (*) Philip A Haile and Elie Tamer. Inference with an incomplete model of english auctions. *Journal of Political Economy*, 111(1):1–51, 2003
 - Mar Reguant. Complementary bidding mechanisms and startup costs in electricity markets. *The Review of Economic Studies*, 81(4):1708–1742, 2014
- Collusion and cartels:
 - Peter Davis and Eliana Garces. *Quantitative techniques for competition and antitrust analysis*. Princeton University Press, Princeton, NJ, 2010
 - Robert C Marshall and Leslie M Marx. *The economics of collusion: Cartels and bidding rings*. Mit Press, 2014

- David Genesove and Wallace Mullin. Testing static oligopoly models: conduct and cost in the sugar industry, 1890-1914. *The RAND Journal of Economics*, pages 355–377, 1998
- Robert Porter. A study of cartel stability: the Joint Executive Committee, 1880-1886. *The Bell Journal of Economics*, pages 301–314, 1983
- John Asker. A study of the internal organization of a bidding cartel. *The American Economic Review*, 100(3):724–762, 2010
- Robert Porter and Douglas Zona. Ohio school milk markets: An analysis of bidding. *The RAND Journal of Economics*, 30(2):263–288, 1999

List of papers for in-class presentations:

- Mitsuru Igami and Nathan Yang. Unobserved heterogeneity in dynamic games: Cannibalization and preemptive entry of hamburger chains in canada. *Quantitative Economics*, 7(2):483–521, 2016. doi: <https://doi.org/10.3982/QE478>. URL <https://onlinelibrary.wiley.com/doi/abs/10.3982/QE478>
- Aviv Nevo, John L. Turner, and Jonathan W. Williams. Usage-based pricing and demand for residential broadband. *Econometrica*, 84(2):411–443, 2016. doi: <https://doi.org/10.3982/ECTA11927>. URL <https://onlinelibrary.wiley.com/doi/abs/10.3982/ECTA11927>
- Charles Hodgson. Information externalities, free riding, and optimal exploration in the uk oil industry. Working paper, Yale University, 2021
- Matthew Backus, Christopher Conlon, and Michael Sinkinson. Common ownership and competition in the ready-to-eat cereal industry. Working Paper 28350, National Bureau of Economic Research, January 2021. URL <http://www.nber.org/papers/w28350>
- Nicolás de Roux, Marcela Eslava, Santiago Franco, and Eric Verhoogen. Estimating production functions in differentiated-product industries with quantity information and external instruments. Working Paper 28323, National Bureau of Economic Research, January 2021. URL <http://www.nber.org/papers/w28323>
- Steven T Berry and Giovanni Compiani. An instrumental variable approach to dynamic models. Working Paper 27756, National Bureau of Economic Research, August 2020. URL <http://www.nber.org/papers/w27756>

- Kory Kroft, Yao Luo, Magne Mogstad, and Bradley Setzler. Imperfect competition and rents in labor and product markets: The case of the construction industry. Working Paper 27325, National Bureau of Economic Research, June 2020. URL <http://www.nber.org/papers/w27325>
- Thomas G Wollmann. How to get away with merger: Stealth consolidation and its real effects on us healthcare. Working Paper 27274, National Bureau of Economic Research, May 2020. URL <http://www.nber.org/papers/w27274>
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- Myrto Kalouptsi, Yuichi Kitamura, Lucas Lima, and Eduardo A Souza-Rodrigues. Partial identification and inference for dynamic models and counterfactuals. Working Paper 26761, National Bureau of Economic Research, February 2020. URL <http://www.nber.org/papers/w26761>