

ECON 8210 - INDUSTRIAL ORGANIZATION
University of Georgia
Fall 2025

Instructors:	Peter Newberry (Jeff Thurk in Spring)	
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Office Hours:	Newberry: Wednesdays, 2:30pm-3:30pm Thurk: by appointment.	

Class Meetings: Wednesdays, 9:35-12:25, Miller Learning Center 147

Course Description/Objective: This is the first course of the graduate industrial organization sequence where we will develop the foundations of research in theoretical and empirical industrial organization. This semester we will cover empirical models of production and consumer demand.

Disclaimer: The course syllabus is a general plan for the course; deviations announced to the class by the instructor(s) may be necessary.

Required Materials: Your brain, effort, and curiosity. We will post all papers and lecture notes on the course website. You should also have access to software such as Stata, Matlab, R, Python, or Julia as we will require computer programming to complete the problem sets.

Grading: There are three equally-weighted components to your grade:

1. *Class Participation.* We will evaluate in class participation of each student. Attendance is necessary but not sufficient for participation. Students are expected to read the starred papers on the reading list each week, and be prepared to discuss them. If it becomes clear that you aren't reading the papers, we will randomly draw names at the beginning of class for a student to summarize the paper.
2. *Problem Sets.* There will be 3-4 problem sets throughout the semester. Each will require you to work with data and develop your programming skills. You can use whatever programming language you prefer.

You may work together on the problem sets, but you must turn in your own work. It will also be beneficial for you to try it on your own before turning to your classmates.
3. *Presentation.* Students will present (i.e., 30-45 minutes) a recent published or working paper related to one of the topics we cover. We'll solicit student areas of

research interest prior to the semester and recommend a paper to present, but the student – with our approval – can choose to present something else.

Lecture Schedule and Reading List: Subject to change over the course of the semester. We'll cover papers with a star. It is our expectation you will come to class having reviewed these papers. The others are worthwhile for you to know.

One thing to note is that IO methods span many fields such as International Trade, Labor, Macroeconomics, and Marketing. This demonstrates that the tools you will learn during this semester are useful for answering a wide variety of important economic questions. If you're interested in these other fields and want some references, let us know!

1. Topic 1: Introduction: What is IO and Homogenous Good Models of Competition

We introduce the class and motivate the study of Industrial Organization, including its history. We also start reviewing homogenous models of competition

- Structure-conduct-performance
- “New IO”
- Review of models of competition

2. Topic 2: Homogeneous Goods Applications and Differentiation Goods Models of Competition

The roots of “New Empirical IO”, which is now pretty old. These papers illustrate the classic IO question—“how does concentration affect conduct?”—while avoiding complications of product differentiation. And we begin our study of differentiated products with reviewing the Hotelling model.

- Porter, R. H. (1983a). A study of cartel stability: The joint executive committee, 1880-1886. *The Bell Journal of Economics*, 14(2):301–314
- Corts, K. S. (1999). Conduct parameters and the measurement of market power. *Journal of Econometrics*, 88:227–250

3. Topic 3: Representative Agent Models and Almost Ideal Demand

While discrete choice demand analysis has become an “industry leader,” we first consider a few alternative approaches to the challenge of differentiated products demand estimation with imperfect competition.

- Bresnahan, T. F. (1987a). Competition and collusion in the american automobile industry: The 1955 price war. *The Journal of Industrial Economics*, 35(4):pp. 457–482

- Bresnahan, T. F. The apple-cinnamon cheerios war: Valuing new goods, identifying market power, and economic measurement. Manuscript
- Deaton, A. and Muellbauer, J. (1980). An almost ideal demand system. *American Economic Review*, 70(3):312–326
- Hausman, J., Leonard, G., and Zona, J. D. (1994). Competitive analysis with differentiated products. *Annales d'Économie et de Statistique*, (34):159–180
- Hausman, J. A. (1996). Valuation of New Goods under Perfect and Imperfect Competition. In *The Economics of New Goods*, NBER Chapters, pages 207–248. National Bureau of Economic Research, Inc
- Fajgelbaum, P. D. and Khandelwal, A. K. (2016). Measuring the Unequal Gains from Trade *. *The Quarterly Journal of Economics*, 131(3):1113–1180

4. Topic 4: Discrete Choice Models

The use of discrete choice models to flexibly and (mostly) tractably estimate differentiated products demand systems.

- Lancaster, K. J. (1966). A new approach to consumer theory. *Journal of Political Economy*, 74(2):132–157
- McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In Zarembka, P., editor, *Frontiers of Econometrics*. Academic Press, New York
- Caplin, A. and Nalebuff, B. (1991). Aggregation and imperfect competition: On the existence of equilibrium. *Econometrica*, 59(1):25–59
- Anderson, S. P., de Palma, A., and Thisse, J.-F. (1992). *Discrete choice theory of product differentiation*. The MIT Press, Cambridge, Massachusetts ;
- Berry, S. (1994). Estimating discrete-choice models of product differentiation. *RAND Journal of Economics*, 25(2):242–262
- Berry, S., Levinsohn, J., and Pakes, A. (1995). Automobile prices in market equilibrium. *Econometrica*, 63(4):841–890
- McFadden, D. and Train, K. (2000). Mixed mnl models for discrete response. *Journal of Applied Econometrics*, 15(5):447–470
- Nevo, A. (2000). A practitioner's guide to estimation of random coefficients logit models of demand. *Journal of Economics & Management Strategy*, 9(4):513–548

5. Topic 5: Discrete Choice: Applications

We see how the discrete-choice demand system can be used to analyze a wide-variety of economic questions across different research fields, including market power, trade constraints, and vertical relationships.

- Goldberg, P. (1995). Product differentiation and oligopoly in international markets: The case of the u.s. automobile industry. *Econometrica*, 63(4):891–951
- Berry, S., Levinsohn, J., and Pakes, A. (1999). Voluntary export restraints on automobiles: Evaluating a trade policy. *American Economic Review*, 89(3):400–430
- Nevo, A. (2001). Measuring market power in the ready-to-eat cereal industry. *Econometrica*, 69(2):307–342
- Villas-Boas, S. B. (2007). Vertical relationships between manufacturers and retailers: Inference with limited data. *The Review of Economic Studies*, 74(2):625–652
- Dubé, J.-P., Fox, J. T., and Su, C.-L. (2012). Improving the numerical performance of static and dynamic aggregate discrete choice random coefficients demand estimation. *Econometrica*, 80(5):2231–2267
- Miravete, E. J., Moral, M. J., and Thurk, J. (2018a). Fuel taxation, emissions policy, and competitive advantage in the diffusion of european diesel automobiles. *The RAND Journal of Economics*, 49(3):504–540
- Miravete, E. J., Seim, K., and Thurk, J. (2018b). Market power and the laffer curve. *Econometrica*, 86(5):1651–1687
- Gandhi, A. and Houde, J.-F. (2019). Measuring substitution patterns in differentiated-products industries. Working Paper 26375, National Bureau of Economic Research
- Conlon, C. and Gortmaker, J. (2020). Best practices for differentiated products demand estimation with pyblp. *The RAND Journal of Economics*, 51(4):1108–1161
- Miravete, E. J., Seim, K., and Thurk, J. (2022). Robust pass-through estimation in discrete choice models. Manuscript
- Grieco, P. L., Murry, C., and Yurukoglu, A. (2024). The evolution of market power in the us automobile industry. *The Quarterly Journal of Economics*, 139(2):1201–1253

6. Topic 6: Production Functions

We will introduce the classic approaches to production function estimation while highlighting the challenges of simultaneity and selection. Then we'll look at several examples of how production function estimation used to answer economic questions.

- Mundalk, Y. (1961). Empirical production function free of management bias. *Journal of Farm Economics*, 43:44–56
- Griliches, Z. and Mairesse, J. (1995). Production functions: The search for identification. NBER Working Paper 5067

- Klette, T. J. and Grillches, Z. (1996). The inconsistency of common scale estimators when output prices are unobserved and endogenous. *Journal of Applied Econometrics*, 11(4):343–361
- *Olley, G. S. and Pakes, A. (1996). The dynamics of productivity in the telecommunications equipment industry. *Econometrica*, 64(6):pp. 1263–1297
- Levinsohn, J. and Petrin, A. (2003). Estimating production functions using inputs to control for unobservables. *The review of economic studies*, 70(2):317–341
- Akerberg, D. A., Caves, K., and Frazer, G. (2015). Identification properties of recent production function estimators. *Econometrica*, 83(6):2411–2451
- *Gandhi, A., Navarro, S., and Rivers, D. A. (2020). On the identification of gross output production functions. *Journal of Political Economy*, 128(8):2973–3016
- Syverson, C. (2004). Market structure and productivity: A concrete example. *Journal of political Economy*, 112(6):1181–1222
- Hsieh, C.-T. and Klenow, P. J. (2009). Misallocation and Manufacturing TFP in China and India. *The Quarterly Journal of Economics*, 124(4):1403–1448
- De Loecker, J. (2011). Product differentiation, multi-product firms and estimating the impact of trade liberalization on productivity. *Econometrica*, 79(5):1407–1451.
- De Loecker, J. and Warzynski, F. (2012). Markups and firm-level export status. *American Economic Review*, 102(6):2437–71.
- Doraszelski, U. and Jaumandreu, J. (2013). R&d and productivity: Estimating endogenous productivity. *The Review of Economic Studies*, 80(4 (285)):1338–1383.
- *De Loecker, J. (2013). Detecting learning by exporting. *American Economic Journal: Microeconomics*, 5(3):1–21
- Loecker, J. D., Goldberg, P. K., Khandelwal, A. K., and Pavcnik, N. (2016). Prices, markups, and trade reform. *Econometrica*, 84(2):445–510.
- *Loecker, J., Eeckhout, J., and Unger, G. (2020). The rise of market power and the macroeconomic implications. *The Quarterly Journal of Economics*, 135:561–644.
- Chen, Y., Igami, M., Sawada, M., and Xiao, M. (2021). Privatization and productivity in china. *The RAND Journal of Economics*, 52(4):884–916
- Demirer, M. (2020). Production function estimation with factor-augmenting technology: An application to markups. *Job Market Paper*

7. Topic 7: Choice Sets and Search

We begin to move beyond the literature focusing on the demand-side and start to think about how firms compete. We begin with papers documenting and explaining the reasons for observed price dispersion.

- Hortaçsu, A. and Syverson, C. (2004). Product differentiation, search costs, and competition in the mutual fund industry: A case study of s&p 500 index funds. *The Quarterly journal of economics*, 119(2):403–456
- Hong, H. and Shum, M. (2006). Using price distributions to estimate search costs. *The RAND Journal of Economics*, 37(2):257–275
- Sorensen, A. T. (2000). Equilibrium price dispersion in retail markets for prescription drugs. *Journal of Political Economy*, 108(4):833–850
- De los Santos, B., Hortaçsu, A., and Wildenbeest, M. R. (2012). Testing models of consumer search using data on web browsing and purchasing behavior. *The American Economic Review*, 102(6):2955–2980
- Allen, J., Clark, R., and Houde, J.-F. (2014). The effect of mergers in search markets: Evidence from the canadian mortgage industry. *American Economic Review*, 104(10):3365–96
- Honka, E. (2014). Quantifying search and switching costs in the us auto insurance industry. *The RAND Journal of Economics*, 45(4):847–884
- Adams, B. and Williams, K. R. (2019). Zone pricing in retail oligopoly. *American Economic Journal: Microeconomics*, 11(1):124–56
- Allen, J., Clark, R., and Houde, J.-F. (2019). Search frictions and market power in negotiated-price markets. *Journal of Political Economy*, 127(4):1550–1598
- DellaVigna, S. and Gentzkow, M. (2019). Uniform pricing in us retail chains. *The Quarterly Journal of Economics*, 134(4):2011–2084
- Moraga-González, J. L., Sándor, Z., and Wildenbeest, M. R. (2021). Consumer search and prices in the automobile market
- Salz, T. (2022). Intermediation and competition in search markets: An empirical case study. *Journal of Political Economy*, 130(2)
- Goeree, M. S. (2008). Limited information and advertising in the us personal computer industry. *Econometrica*, 76(5):1017–1074
- Murry, C. and Zhou, Y. (2020). Consumer search and automobile dealer colocation. *Management Science*, 66(5):1909–1934

8. Topic 8: COLLUSION

We begin taking a deeper dive on the supply side by looking at pricing. Here we examine models of collusion and examine the empirical research looking at collusion.

- Asker, J. (2010). A study of the internal organization of a bidding cartel. *American Economic Review*, 100(3):724–62
- Bresnahan, T. F. (1987b). Competition and collusion in the american automobile industry: The 1955 price war. *The Journal of Industrial Economics*, pages 457–482
- Byrne, D. P. and De Roos, N. (2019). Learning to coordinate: A study in retail gasoline. *American Economic Review*, 109(2):591–619
- Calvano, E., Calzolari, G., Denicolo, V., and Pastorello, S. (2020). Artificial intelligence, algorithmic pricing, and collusion. *American Economic Review*, 110(10):3267–97
- Clark, R. and Houde, J.-F. (2013). Collusion with asymmetric retailers: Evidence from a gasoline price-fixing case. *American Economic Journal: Microeconomics*, 5(3):97–123
- Ellison, G. (1994). Theories of cartel stability and the joint executive committee. *The Rand journal of economics*, pages 37–57
- Fershtiman, C. and Pakes, A. (2000). A dynamic oligopoly with collusion and price wars. *The RAND Journal of Economics*, 31(2):207–236
- Genesove, D. and Mullin, W. P. (2001). Rules, communication, and collusion: Narrative evidence from the sugar institute case. *American Economic Review*, 91(3):379–398
- Green, E. J. and Porter, R. H. (1984). Noncooperative collusion under imperfect price information. *Econometrica: Journal of the Econometric Society*, pages 87–100
- Miklós-Thal, J. and Tucker, C. (2019). Collusion by algorithm: Does better demand prediction facilitate coordination between sellers? *Management Science*, 65(4):1552–1561
- Miller, N. H. (2009). Strategic leniency and cartel enforcement. *American Economic Review*, 99(3):750–68
- Porter, R. H. (1983b). A study of cartel stability: the joint executive committee, 1880–1886. *The Bell Journal of Economics*, pages 301–314
- Röller, L.-H. and Steen, F. (2006). On the workings of a cartel: Evidence from the norwegian cement industry. *American Economic Review*, 96(1):321–338
- Starc, A. and Wollmann, T. G. (2022). Does entry remedy collusion? evidence from the generic prescription drug cartel. Technical report, National Bureau of Economic Research

9. Topic 9: PRICE DISCRIMINATION

We continue our examination of pricing by looking at price discrimination. We will

cover the basic theory and then cover empirical studies of firms employing different forms of price discrimination.

- Varian, H. R. (1985). Price discrimination and social welfare. *The American Economic Review*, 75(4):870–875
- Shepard, A. (1991). Price discrimination and retail configuration. *Journal of Political Economy*, 99(1):30–53
- Stavins, J. (2001). Price discrimination in the airline market: The effect of market concentration. *Review of Economics and Statistics*, 83(1):200–202
- Leslie, P. (2004). Price discrimination in Broadway theater. *RAND Journal of Economics*, pages 520–541
- Khan, R. J. and Jain, D. C. (2005). An empirical analysis of price discrimination mechanisms and retailer profitability. *Journal of Marketing Research*, 42(4):516–524
- McManus, B. (2007). Nonlinear pricing in an oligopoly market: The case of specialty coffee. *The RAND Journal of Economics*, 38(2):512–532
- Crawford, G. S. (2008). The discriminatory incentives to bundle in the cable television industry. *Quantitative Marketing and Economics*, 6(1):41–78
- Houde, J.-F. (2012). Spatial differentiation and vertical mergers in retail markets for gasoline. *American Economic Review*, 102(5):2147–82
- Puller, S. L. and Taylor, L. M. (2012). Price discrimination by day-of-week of purchase: Evidence from the us airline industry. *Journal of Economic Behavior & Organization*, 84(3):801–812
- Sweeting, A. (2012). Dynamic pricing behavior in perishable goods markets: Evidence from secondary markets for major league baseball tickets. *Journal of Political Economy*, 120(6):1133–1172
- Lazarev, J. (2013). The welfare effects of intertemporal price discrimination: an empirical analysis of airline pricing in us monopoly markets. *New York University*
- Thomassen, Ø., Smith, H., Seiler, S., and Schiraldi, P. (2017). Multi-category competition and market power: a model of supermarket pricing. *American Economic Review*, 107(8):2308–51
- Dana, J. D. and Williams, K. (2018). Oligopoly price discrimination: The role of inventory controls
- Adams, B. and Williams, K. R. (2019). Zone pricing in retail oligopoly. *American Economic Journal: Microeconomics*, 11(1):124–56.
- DellaVigna, S. and Gentzkow, M. (2019). Uniform pricing in us retail chains. *The Quarterly Journal of Economics*, 134(4):2011–2084

- Ellickson, P. B., Grieco, P. L., and Khvastunov, O. (2020). Measuring competition in spatial retail. *The RAND Journal of Economics*, 51(1):189–232
- Williams, K. (2020). Dynamic airline pricing and seat availability
- Aryal, G., Murry, C., and Williams, J. W. (2021). Price discrimination in international airline markets. *arXiv preprint arXiv:2102.05751*
- Eizenberg, A., Lach, S., and Oren-Yiftach, M. (2021). Retail prices in a city. *American Economic Journal: Economic Policy*, 13(2):175–206

10. Topic 10: ENDOGENOUS PRODUCT CHARACTERISTICS

We extend our standard demand/supply model to allow for the firm to choose their product assortment.

- Fan, Y. (2013). Ownership consolidation and product characteristics: A study of the us daily newspaper market. *American Economic Review*, 103(5):1598–1628
- Eizenberg, A. (2014). Upstream innovation and product variety in the us home pc market. *Review of Economic Studies*, 81(3):1003–1045
- Gentzkow, M., Shapiro, J. M., and Sinkinson, M. (2014). Competition and ideological diversity: Historical evidence from us newspapers. *American Economic Review*, 104(10):3073–3114
- Wollmann, T. G. (2018). Trucks without bailouts: Equilibrium product characteristics for commercial vehicles. *American Economic Review*, 108(6):1364–1406

11. Topic 11: COMPLEMENTARY PRODUCTS

We extend our standard demand/supply model to allow for products to be complements.

- Dix, R. and Lensman, T. (2024). Combining complements: Theory and evidence from cancer treatment innovation
- Gentzkow, M. (2007). Valuing new goods in a model with complementarity: Online newspapers. *American Economic Review*, 97(3):713–744

AI Policy Unless explicitly stated, artificial intelligence-based technologies, such as ChatGPT, must not be used to generate responses for student assignments/exams. However, AI is a very valuable tool to learn, so we will encourage its use often. For instance, while we expect you to read papers, AI can serve as a useful tool to summarize the paper or asking any clarifying questions. Additionally, AI is quite valuable in coding. But when in doubt, ask the instructor whether it is okay to use.

Other University Policies and Information:

- *University Honor Code and Academic Honesty Policy:* As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty," and the Student Honor Code: "I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others." A Culture of Honesty, the University's policy and procedures for handling cases of suspected dishonesty, can be found at <https://honesty.uga.edu/>. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor.
- *Mental Health and Wellness Resources:* UGA Well-being Resources promote student success by cultivating a culture that supports a more active, healthy, and engaged student community.

Anyone needing assistance is encouraged to contact Student Care & Outreach (SCO) in the Division of Student Affairs at 706-542-8479 or visit sco.uga.edu. Student Care & Outreach helps students navigate difficult circumstances by connecting them with the most appropriate resources or services. They also administer the Embark@UGA program which supports students experiencing, or who have experienced, homelessness, foster care, or housing insecurity.

UGA provides both clinical and non-clinical options to support student well-being and mental health, any time, any place. Whether on campus, or studying from home or abroad, UGA Well-being Resources are here to help.

- Well-being Resources: well-being.uga.edu
- Student Care and Outreach: sco.uga.edu
- University Health Center: healthcenter.uga.edu
- Counseling and Psychiatric Services: caps.uga.edu or CAPS 24/7 crisis support at 706-542-2273
- Health Promotion/ Fontaine Center: healthpromotion.uga.edu
- Disability Resource Center and Testing Services: drc.uga.edu

Additional information, including free digital well-being resources, can be accessed through the UGA app or by visiting <https://well-being.uga.edu>.

- *Diversity Statement:* The Terry College is committed to promoting diversity, equity, inclusion, and belonging among its students, faculty, and staff. This class welcomes the open exchange of ideas and values freedom of thought and expression. This class provides a professional environment that recognizes the inherent worth of every person. It aims to foster dignity, understanding, and mutual respect among all individuals in the class.