

## **ECON 601b Graduate Industrial Organization II**

Tues, Thur 1pm–2:20pm, *via Zoom* Spring 2021

### **Contact Information**

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### **Course Description**

This course is a continuation of Econ 600a, which is a prerequisite. In this term, we transition from the study of “classes of models” about markets in equilibrium to the actual study of individual markets and of specific economic policies that are applied to individual markets.

We view this course as a bridge toward doing independent empirical research. Our goals are to provide you with an overview of recent work on questions ranging from the evaluation of market power, antitrust, and collusion, entry and product positioning, search and platform markets to highlight the application of theory and econometrics to substantive questions in industrial organization and antitrust policy. This will prepare you for research not only in industrial organization but also in related fields where the tools of industrial organization have proved fruitful, including Labor, Health, Trade, and Public economics.

### **Class Meetings**

We will meet via zoom. The meeting links and passwords are on the Canvas web page for the course. We strongly prefer that you have your camera on during the meeting; feel free to speak up as we go along should you have questions.

### **Requirements**

There are two main requirements for the class. First, we would like the lectures to have active discussion, and we rely on your participation in assessing the recent working papers and published research that we discuss in class. We have chosen one paper for each lecture (denoted with an asterisk in the list of readings for each class below; readings will be updated throughout the term as necessary) and ask you to prepare a short reaction to the paper before the class meeting (see below).

Second, we would like you to get practice at developing a research project and ask you to prepare a proposal for a potential research project that builds on the substantive questions and techniques we discussed in class and present your idea during one of the final class meetings.

In summary, the requirements of the course are:

1. Readings: we expect you to have read the papers assigned for each class meeting. You will not get much out of the class without familiarity with the assigned articles.
2. Paper reactions: prior to each class, submit via Canvas a short (max one page) assessment of the chosen paper. This should include two to three bullets on the key ideas, the strengths, and the contributions the paper makes, together with one to two bullet points on weaknesses, interesting extensions, or possible next steps.
3. Research proposal and referee report. See detailed description below, together with a set of guidelines for helping you prepare a referee report at the end of the syllabus.

We will assign grades based on the quality of the work for the course. We will not give credit for late assignments, but we will allow you to skip two paper evaluations during the semester.

The preliminary course schedule and reading list follow on the next pages.

## Schedule

Class	Date	Day	Topic	Instructor
1	2/2/2021	Tuesday	Introduction; Conduct & Collusion I	Katja
2	2/4/2021	Thursday	Conduct & Collusion II	Katja
3	2/9/2021	Tuesday	Entry and product positioning I	Katja
4	2/11/2021	Thursday	Entry and product positioning II	Katja
5	2/16/2021	Tuesday	Retail networks and pricing I	Katja
6	2/18/2021	Thursday	Retail networks and pricing II	Katja
7	2/23/2021	Tuesday	Health care I	Katja
8	2/25/2021	Thursday	Health care II	Katja
9	3/2/2021	Tuesday	Platform markets I	Katja
10	3/4/2021	Thursday	Platform markets II	Katja
	3/9/2021	Tuesday	Break - no class	
11	3/11/2021	Thursday	Environmental and Energy I	Charles
12	3/16/2021	Tuesday	Environmental and Energy II	Charles
13	3/18/2021	Thursday	Search & Information I	Charles
14	3/23/2021	Tuesday	Search & Information II	Charles
15	3/25/2021	Thursday	Mechanism Design I	Charles
16	3/30/2021	Tuesday	Mechanism Design II	Charles
17	4/1/2021	Thursday	Antitrust / Common Ownership I	Charles
18	4/6/2021	Tuesday	Antitrust / Common Ownership II	Charles
	4/8/2021	Thursday	Break - no class	
19	4/13/2021	Tuesday	Markups	Charles
20	4/15/2021	Thursday	Monopsony	Charles
21	4/20/2021	Tuesday	Innovation	Michi
			*note different time: 6pm-7:20pm	
22	4/22/2021	Thursday	Proposal presentations	
23	4/27/2021	Tuesday	Proposal presentations	
24	4/29/2021	Thursday	Proposal presentations	
25	5/4/2021	Tuesday	Proposal presentations	
26	5/6/2021	Thursday	Proposal presentations	

## Reading List

1. 2/2/2021. Introduction; Conduct & collusion I
  - Bresnahan, Tim. "The oligopoly solution concept is identified." *Economics Letters*, 1982.
  - Byrne, David and Nicolas de Roos. "Learning to Coordinate: A Study in Retail Gasoline." *AER*, 2019.
  - Clark, Rob and J.-F. Houde. "Collusion between asymmetric retailers: Evidence from a gasoline price-fixing case." *AEJ Micro*, 2013.
  - Genesove, David and W. P. Mullin. "Testing static oligopoly models: Conduct and cost in the sugar industry, 1890-1914." *RAND* 1998.
  - Porter, Rob. "A study of cartel stability: The joint executive committee." *Bell Journal*, 1983.
2. 2/4/2021. Conduct & collusion II: Auction markets
  - Asker, John, "A Study of the Internal Organization of a Bidding Cartel", *AER*, 2010.
  - Chassang, Sylvain, Kei Kawai, Jun Nakabayashi, and Juan Ortner. "Data Driven Regulation: Theory and Application to Missing Bids." Working paper.
  - [\*] Porter, Rob and Douglas Zona, "Detection of Bid Rigging in Procurement Auctions", *JPE*, 1993.
3. 2/9/2021. Entry and product positioning I: Optimal product variety
  - Berry, Steven and Joel Waldfogel "Free Entry and Social Inefficiency in Radio Broadcasting," *RAND*, 1999.
  - [\*] Eizenberg, Alon. "Upstream innovation and product variety in the US home pc market." *ReStud*, 2014.
  - Seim, Katja, and Joel Waldfogel. "Public Monopoly and Economic Efficiency: Evidence from the Pennsylvania Liquor Control Board's Entry Decisions." *AER*, 2013.

*Methods*

  - Ciliberto, Federico and Elie Tamer, "Market Structure and Multiple Equilibria in Airline Markets." *Econometrica*, 2009.
4. 2/11/2021. Entry and product positioning II: Product variety & policy
  - Ciliberto, Federico, Charles Murry, and Elie T. Tamer. "Market structure and competition in airline markets." Working Paper.
  - [\*] Wollmann, Thomas G. "Trucks without bailouts: Equilibrium product characteristics for commercial vehicles." *AER*, 2018.

*Methods*

  - Pakes A, Porter J, Ho K, Ishii J. "Moment Inequalities and Their Application." *Econometrica*, 2015.
5. 2/16/2021. Retail I: networks
  - Jia, Panle. "What happens when Wal-Mart comes to town: An empirical analysis of the discount retailing industry." *Econometrica*, 2008.
  - [\*] Holmes, Thomas. "The Diffusion of Wal-Mart and Economies of Density." *Econometrica*, 2011.
  - Houde, Jean-Francois, Newberry, Peter, and Seim, Katja. "Economies of density in e-commerce:

A study of Amazon's fulfillment center network." NBER Working Paper.

6. 2/18/2021. Retail II: pricing and price discrimination
  - Adams, Brian, and Kevin R. Williams. "Zone Pricing in Retail Oligopoly." AEJ: Micro, 2019.
  - DellaVigna, Stefano and Matthew Gentzkow. "Uniform Pricing in U.S. Retail Chains." QJE, 2019.
  - [\*] Hendel, Igal, and Aviv Nevo. "Measuring the Implications of Sales and Consumer Inventory Behavior," Econometrica, 2006.
7. 2/23/2021. Health care I: consolidation in health care markets
  - Capps, Cory, David Dranove, and Mark Satterthwaite. "Competition and Market Power in Option Demand Markets." RAND, 2003.
  - [\*] Dafny, Leemore, Kate Ho, and Robin Lee. "The price effects of cross-market mergers: theory and evidence from the hospital industry." RAND, 2019.
  - Gowrisankaran, Gautam, Aviv Nevo, and Robert Town. "Mergers When Prices Are Negotiated: Evidence from the Hospital Industry." AER, 2015.
8. 2/25/2021. Health care II: insurer demand and hospital network choice
  - [\*] Ho, Kate and Robin Lee. "Insurer Competition in Health Care Markets", Econometrica, 2017.
  - Ho, Kate and Robin Lee. "Equilibrium Provider Networks: Bargaining and Exclusion in Health Care Markets." AER, 2019.
9. 3/2/2021. Platform markets I: indirect network effects
  - Lee, Robin. "Vertical Integration and Exclusivity in Platform and Two-Sided Markets" AER, 2013
  - [\*] Rysnam, Marc. "Competition between Networks: A Study of the Market for Yellow Pages," REStud, 2004.

*Methods*

  - Gowrisankaran, Gautam and Marc Rysman. "Dynamics of Consumer Demand for New Durable Goods." JPE, 2012.
10. 3/4/2021. Platform markets II: indirect network effects, cont'd
  - Buchholz, Nick. "Search Frictions and Dynamic Efficiency in the Taxi Industry." Working paper.
  - [\*] Fréchette, Guillaume, Alessandro Lizzeri, and Tobias Salz. "Frictions in a Competitive, Regulated Market: Evidence from Taxis." AER, 2019.
  - Li, Jing. "Compatibility and Investment in the U.S. Electric Vehicle Market." Working paper, MIT Sloan.
11. 3/11/2021 – Environmental and Energy I: Regulation of Motor Vehicle and Electricity Markets
  - [\*] Reynaert, Matthias (2021). "Abatement Strategies and the Cost of Environmental Regulation: Emission Standards on the European Car Market." Review of Economic Studies.
  - Ito, Koichiro and James M. Sallee. (2018) "The Economics of Attribute-Based Regulation: Theory and Evidence from Fuel Economy Standards." The Review of Economics and Statistics.
  - Farba, Natalia, and Mar Reguant. (2014) "Pass-Through of Emissions Costs in Electricity Markets." American Economic Review.
  - Abito, Jose Miguel. (2019) "Measuring the Welfare Gains from Optimal Incentive Regulation." The Review of Economic Studies.

12. 3/16/2021 – Environmental and Energy II: Dynamics of Environmental Regulation and Investment
  - [\*] Fowlie, Meredith, Mar Reguant, and Stephen P. Ryan. (2016) "Market-based emissions regulation and industry dynamics." *Journal of Political Economy*.
  - Blundell, Wesley, Gautam Gowrisankaran, and Ashley Langer. (2020) "Escalation of Scrutiny: The Gains from Dynamic Enforcement of Environmental Regulations." *American Economic Review*.
  - Ryan, Stephen. (2012) "The Costs of Environmental Regulation in a Concentrated Industry." *Econometrica*.
13. 3/18/2021 – Search and Learning I: Recent Applications of Consumer Search and Learning Models
  - [\*] Brown, Zach and Jihye Jeon (2020) "Endogenous Information and Simplifying Insurance Choice." Working Paper.
  - Dickstein, Michael. (2018) "Efficient Provision of Experience Goods: Evidence from Antidepressant Choice." Working Paper.
  - Grubb, Michael, and Matthew Osborne. (2015) "Cellular Service Demand: Biased Beliefs, Learning, and Bill Shock." *American Economic Review*.
  - Newberry, Peter. (2016). "An Empirical Study of Observational Learning." *RAND Journal of Economics*.
  - Hodgson, Charles, and Greg Lewis. (2020) "You Can Lead a Horse to Water: Spatial Learning and Path Dependence in Consumer Search" Working Paper.
14. 3/23/2021 – Search and Learning II: Firm Learning
  - [\*] Doraszelski, Ulrich, Greg Lewis, and Ariel Pakes. (2018) "Just Starting Out: Learning and Equilibrium in a New Market." *American Economic Review*.
  - Benkard, Lanier. (2000) "Learning and Forgetting: The Dynamics of Aircraft Production." *American Economic Review*.
  - Kellogg, Ryan. (2011) "Learning by Drilling: Inter-Firm Learning and Relationship Persistence in the Texas Oilpatch." *Quarterly Journal of Economics*.
  - Covert, Thomas. (2015). "Experiential and Social Learning in Firms: The Case of Hydraulic Fracturing in the Bakken Shale." Working Paper.
  - Hodgson, Charles. (2019) "Information Externalities, Free Riding, and Optimal Exploration in the UK Oil Industry." Working Paper.
15. 3/25/2021 – Mechanism Design I: School Choice
  - [\*] Kapor, Adam, Christopher Neilson, and Seth Zimmerman. (2020) "Heterogeneous Beliefs and School Choice Mechanisms." *American Economic Review*.
  - Agarwal, Nikhil, and Paulo Somaini. (2018). "Demand Analysis Using Strategic Reports: An Application to a School Choice Mechanism." *Econometrica*.
  - Abdulkadiroglu, Atila, and Tayfun Sonmez. (2003). "School Choice: A Mechanism Design Approach." *American Economic Review*.
16. 3/30/2021 – Mechanism Design II: Organ and Housing Allocation
  - [\*] Agarwal, Nikhil, Itai Ashlagi, Michael Rees, Paulo Somaini, and Daniel Waldinger. (2021) "Equilibrium Allocations Under Alternative Waitlist Designs: Evidence From Deceased Donor

Kidneys.” *Econometrica*.

- Waldinger, Daniel. (2021) “Targeting In-Kind Transfers Through Market Design: A Revealed Preference Analysis of Public Housing Allocation.” Working Paper.
- Agarwal, Nikhil, Charles Hodgson, and Paulo Somaini. (2021) “Choices and Outcomes in Assignment Mechanisms: The Allocation of Deceased Donor Kidneys.” Working Paper.

#### 17. 4/1/2021 – Antitrust

- [\*] Miller, Nathan, and Matthew Weinberg. (2017) “Understanding the Price Effects of the MillerCoors Joint Venture.” *Econometrica*.
- Miller, Nathan, Marc Remer, Conor Ryan, and Gloria Sheu. (2017) “Upward Pricing Pressure as a Predictor of Merger Price Effects.” *International Journal of Industrial Organization*.
- Ashenfelter, Orely, and Daniel Hosken. (2010) “The Effect of Mergers on Consumer Prices: Evidence from Five Mergers on the Enforcement Margin.” *The Journal of Law and Economics*.
- Ashenfelter, Orely, Daniel Hosken, and Matthew Weinberg. (2015) “Efficiencies brewed: pricing and consolidation in the US beer industry.” *The RAND Journal of Economics*.

#### 18. 4/13/2021 – Markups

- [\*] De Loecker, Jan, and Jan Eeckhout. (2020) “The Rise of Market Power and the Macroeconomic Implications”. *Quarterly Journal of Economics*.
- Berry, Steven, Martin Gaynor, and Fiona Scott Morton. (2019) “Do Increasing Markups Matter? Lessons from Empirical Industrial Organization.” *Journal of Economic Perspectives*.
- Benkard, Lanier, Ali Yurukoglu, and Anthony Zhang. (2021) “Concentration in Product Markets.” Working Paper.
- Ganapati, Sharat. (2021) “The Modern Wholesaler: Global Sourcing, Domestic Distribution, and Scale Economies.” Working Paper.
- Aghion, Philippe, Nick Bloom, Richard Blundell, Rachel Griffith, and Peter Howitt. (2005) “Competition and Innovation: An Inverted-U Relationship.” *Quarterly Journal of Economics*.
- Autor, David, David Dorn, Lawrence Katz, Christina Patterson, and John Van Reenen. (2020) “The Fall of the Labor Share and the Rise of Superstar Firms.” *Quarterly Journal of Economics*.

#### 19. 4/6 –Common Ownership [Guest Lecturer: Mike Sinkinson]

- [\*] Backus, Matthew, Christopher Conlon, and Michael Sinkinson. (2021) “Common Ownership in the Ready-to-Eat Cereal Industry.” Working Paper.
- Backus, Matthew, Christopher Conlon, and Michael Sinkinson. (2021) “Empirical Studies of the Effects of Common Ownership.” Working Paper.
- Azar, José, Martin Schmalz, and Isabel Tecu. (2018) “Anticompetitive Effects of Common Ownership.” *Journal of Finance*.
- Posner, Eric, Fiona Scott Morton, and Glen Weyl. (2017) “a Proposal to Limit the Anticompetitive Power of Institutional Investors.” *Antitrust Law Journal*.

#### 20. 4/15 – Monopsony

- [\*] Azar, José, Steven Berry, and , Ioana Marinescu. (2019) “Estimating Labor Market Power.” Working Paper.
- Prager, Elena, and Matt Schmitt. (2020) “Employer Consolidation and Wages: Evidence from Hospitals.” Working Paper.

- Card, David, Ana Rute Cardoso, Joerg Heining, and Patrick Kline. (2018) "Firms and Labor Market Inequality: Evidence and Some Theory." *Journal of Labor Economics*.
- Azar, José, Ioana Marinescu, and Marshall Steinbaum. (2020) "Labor market concentration." *Journal of Human Resources*.



## Research Proposal & Presentation

An important component of the class is the development of a proposal for a potential research project that builds on the substantive questions and techniques we discussed in class. During the final class meetings, students will present these research proposals in class. Written research proposals should be relatively short (6-8 pages in length) but of high quality. Please include four main sections:

1. **Research Question:** Define the research question and explain why it is important.
2. **Data:** Describe the data you will use. You can describe a hypothetical “dream” dataset, but even better would be to describe an actual dataset or data structure that you have some chance of obtaining.
3. **Model:** Sketch a simple model that informs your approach. This could be a purely theoretical model, perhaps simplified to an example, that informs your question and motivates reduced form analysis. Alternatively, this could be a simplified version of a model that might be estimated with data that can help illustrate the role of key parameters.
4. **Methods:** Describe the methods you will use to answer the research question using the data and discuss how key parameters of interest can be identified.

Research proposal presentations should convey the same information; please budget approximately 30 minutes of presentation and 15 minutes of class discussion/suggestions.

To help you place your question in the literature, we ask that you prepare a referee report on a recent, related working paper (paper choice subject to our approval). Please prepare a three- to four-page long referee report on the paper, and a cover letter with your recommendation to the editor. At the end of this handout, we have included a set of guidelines to help you prepare your report. Please let us know if you would like us to recommend a paper.

You may not submit the same research proposal being used for another class in the spring semester. You may submit a research proposal for an ongoing project previously submitted for a class proposal in the prior semester if you demonstrate a semester's worth of progress. (Please submit last semester's submission for comparison.)

### Timeline and deliverables

- March 5: Topic proposal due. Please submit a brief description (at most one page) of your idea for our approval; note that we are looking for an IO topic, broadly. Also include a paper related to your proposed idea for which you wish to prepare a referee report.
- April 22-May 6: Proposal presentations (date assignment TBD).
- May 19: Final research proposal and referee report due. Please submit your write-up together with your presentation materials.

## **Guidelines for Referee Reports**

**(Adapted from Lanjouw, Sadoulet, deJanvry, ARE 251)**

The purpose of a referee report is to recommend to an editor whether a paper is suitable for publication or not, potentially after revision. Hence, whether the paper is good or not, and you think it deserves publication or not, your job is to document for the editor reasons for accepting, rejecting, or requesting revisions. Usually, the referee includes include a good summary of the paper, the development of 3 or 4 main points (positive or negative), and potentially 4 or 5 smaller points that request clarification or addition.

First, you should read the paper carefully, checking all the arguments, whether mathematical or not, for correctness. Point out any problems that you find, and feel free to comment more generally on the paper. You should not be mean, but you should be critical; pointing out errors and suggesting improvements is your job. At the same time, you can't ask an author to write a paper that is different from what he intended to write, and hence there is no point in suggesting extensions that go beyond strictly improving the paper in its own purpose. Make sure to cast a balance between being too lenient and asking the author to write a different paper altogether. Your report will be evaluated on its thoughtfulness, clarity, and helpfulness.

### **1. Summary**

Write a short summary of the paper using your own words. What is the question asked by the author? What is the modeling strategy? What data is used? How is the hypothesis formulated and tested? What are the results? The purpose of this section is to summarize for the editor the paper in a way that let him understand the essence of the paper and its contribution, without having to read it.

### **2. Major issues**

You then take 3 or 4 major positive or negative points that you have on the paper, one at a time. To do this, check the question carefully, the theory/model, the link to the empirical analysis, the presentation of the data, the econometric analysis, and the results. Below is a checklist of the kinds of questions you should ask yourself to help you raise these points. For a positive point, you want to argue why the question is particularly important, or the approach particularly novel, or the techniques new, or the identification strategy innovative, the data very unusual, etc.

For a negative point, you are often looking for lack of correspondence between the idea and the model, the model and the empiricism, the empirical strategy, and the conclusion. Another argument for rejecting a paper is when the paper has nothing wrong but is boring and not new in any way. If this is one of your points, then you need to refer to other works to show why this is all well-known and has already been done.

### **3. Other issues**

Usually, if you have some major criticisms about a paper, that lead you to recommend rejection, you do not even need to do a section on less important issues. However, hopefully the papers that you will be reading this time are not so bad, and you may have some less important though useful suggestions to improve the paper.

### Checklist:

- **The Question.**
  - Is the topic clearly explained? Could the question be made more precise?
  - Does the author do a good job of motivating the question in the introduction?
  - Is the answer to the question obvious in advance?
  - Is the question original? What is the contribution of the paper? Does the author pose a question of reasonable scope (i.e., can she reasonably hope to answer the question in a short empirical paper)?
- **The Model.** The model need not be a formal structural model of optimizing behavior, but if it is a reduced form model, there should at least be a clear verbal description of the economic theory that is behind its specification.
  - Does the model formalize the argument given by the author in the question?
  - Does the model incorporate those aspects of reality that the author seems to think are important?
  - Is it possible to answer the question posed by the author within the context of the model?
  - Is the model elegant? Is it simple? If it is not simple, is it unnecessarily complex? Could the author attack the problem with a simpler model?
  - Is the notation clean and intuitive?
  - Is the model internally consistent?
- **Link to Empirical Analysis.**
  - Is the estimating equation clearly related to (or preferably derived from) the model?
  - Does the disturbance term have an interpretation within the model, or is it just tacked on?
- **The Data.**
  - Does the author present a clear description of the data?
  - Does the author's choice of a dataset seem well suited to answering the question he poses?
  - If you had to replicate the author's study five years from now, is there sufficient information in the paper about the source of the data and sample used in estimation that you could do it?
  - Does the author discuss issues that may affect her estimation strategy: Is the data from a random sample? What are known sources of measurement error? If a panel, is there reason to believe that there may be cross-sectional dependence?
  - Does the author present summary statistics, and make good use of them to motivate the question or some specific aspects of her analysis
- **The Econometric Analysis.**
  - Are the econometric techniques well suited to the problem at hand?

- What are the properties of the estimators employed by the author? Are the issues regarding these properties adequately addressed in the paper?
  - Is the econometric analysis carefully done and reported?
  - Have alternative specifications been tried and compared, when necessary?
  - Is the issue of robustness of the results addressed?
  - What test statistics does the author employ? Do they answer the question?
- **Results and Conclusion**
    - Are the results clearly stated and presented?
    - Are they used in some interesting way (beyond quoting the value of the parameters and their standard errors)?
    - Are the results related back to the question?
    - Are appropriate caveats mentioned?
    - Do the conclusions concisely summarize the main points of the paper?
    - Are the conclusions reached by the author well supported by the evidence?
    - Are you convinced? What did you learn from this paper?