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450-1: INDUSTRIAL ORGANIZATION AND PRICES I **Fall 2020**

This course sequence provides a graduate-level introduction to Industrial Organization (IO). 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 Ph.D. students to conduct thesis research in the area.

Lectures: Monday/Wednesday 2:20-4:00, via Zoom

Course Web Page: see Canvas

Grading will be based on several problem sets and a final exam. The final is scheduled for Tuesday, December 8 at 9am.

We will not discuss all of the papers on the reading list, but *I expect you to read all of the papers that we discuss in detail in class.*

Provisions for remote learning:

The plans for how the course will be run are described below. However, I may modify various aspects, depending on feedback I receive from you and my own evaluation. I always welcome feedback on how to improve the course, but your feedback is especially welcome this year.

All lectures and office hours will be conducted through Zoom. The Zoom passcode for these meetings is: econ450. Links to these events will be posted on Canvas. Lectures will be broadcast “live” over Zoom at the times scheduled by the registrar. These will be recorded and links to the recordings will also be posted on Canvas. I will remain in the Zoom session for 10 minutes after every lecture to answer additional questions. Office hours are by appointment. They will be held on Zoom and not recorded.

I will lecture by sharing the screen of an iPad that has slides that I can write on. You will be able to see my face in one of the smaller screens off to the side, along with the faces of your classmates attending the lecture. I will post copies of the slides used during lectures before the topics are covered in class. You may find it useful to print out hard copies of the lecture slides before attending lectures in order to review the material in advance and/or to take notes during the lecture. The slides contain material that will be covered in class, as well as supplemental material, some of which will be covered in class. As far as exams are concerned, you are only responsible for the material covered in class.

I encourage you to attend the live class, if possible. Students gain a lot from listening to others' questions and from asking clarification questions. Students attending live lectures will have their audio muted. Audio will be turned on when you ask a question or make a comment. (This helps reduce background noise.) I encourage you to keep your video on while attending live lectures, if you feel comfortable doing so. It will help me to stay engaged if I am able to see you. I hope that we will have a lot of class interaction and discussion. There will be many different ways to ask a question in class. One way to ask a question will be to use the chat function. I plan to stop frequently to ask if there are questions, and will answer the chat questions in these stopping points. You may also use the "raise your hand" feature during lectures.

The final will be administered synchronously. I will upload the exam at the scheduled starting time, and you will be responsible for uploading your answers in the allotted time. You will have 130 minutes to complete the final, which will be designed to take two hours. The additional 10 minutes are allocated so you can upload the exam. Further delays will be penalized. If you have any logistical issues while taking a test, please email me immediately and I'll help you sort them out without incurring this penalty. Students with ANU accommodations will receive the appropriate extensions (with the same 10 minutes to upload their exams).

You will be required to upload answers to homework and exams as pdf files. This will allow students to submit handwritten answers. If you have access to a scanner, you can use it to create a pdf of your answers once you have completed the homework or exam. If not, a number of apps exist for smart phones that will allow you to take a picture of each page of your answer and then convert the pictures into a single pdf. (On the exam, where there is some time pressure, I recommend that everyone plan to submit pdfs of hand written answers.) You will have had the chance to upload several problem sets before you take the final, so everyone should have experience with the uploading process before taking the exam.

Recordings of Synchronous Remote Class Sessions:

This class will be recorded by the instructor for educational purposes. These recordings will be shared only with students enrolled in the course and will be deleted at the end of Fall Quarter.

Unauthorized student recording of classroom or other academic activities (including advising sessions and office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy and state law. Students requesting the use of assistive technology or an accommodation should contact [AccessibleNU](#).

Unauthorized use of classroom recordings –including distributing or posting them – is also prohibited. Under the University's Copyright Policy, faculty own the copyright to instructional materials – including those resources created specifically for the purposes of instruction, such as syllabi, lectures and lecture notes, and presentations. Students cannot copy, reproduce, display or distribute these materials. Students who engage in unauthorized recording, unauthorized use of a

recording or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.

The following abbreviations are used for journal titles:

AER	American Economic Review
AEJ: Micro	American Economic Journal: Microeconomics
BJE	Bell Journal of Economics
EMA	Econometrica
IER	International Economic Review
IJIO	International Journal of Industrial Organization
JE	Journal of Econometrics
JEH	Journal of Economic History
JEL	Journal of Economic Literature
JEMS	Journal of Economics & Management Strategy
JEP	Journal of Economic Perspectives
JET	Journal of Economic Theory
JIE	Journal of Industrial Economics
JLE	Journal of Law and Economics
JPE	Journal of Political Economy
QJE	Quarterly Journal of Economics
QME	Quantitative Marketing and Economics
ReStat	Review of Economics and Statistics
ReStud	Review of Economic Studies
RIO	Review of Industrial Organization
RJE	RAND Journal of Economics

I. General References

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- V. Aguirregabiria, “Empirical Industrial Organization: Models, Methods and Applications,” 2019. http://aguirregabiria.net/wpapers/book_dynamic_io.pdf
- M. Armstrong and R. Porter, eds., *Handbook of Industrial Organization*, Volume 3, Elsevier, 2007. (HIO3)
- P. Davis and E. Garces, *Quantitative Techniques for Competition and Antitrust Analysis*, Princeton, 2010.
- P. Reiss and F. Wolak, “Structural Econometric Modeling: Rationales and Examples from Industrial Organization,” *Handbook of Econometrics*, Volume 6A, Elsevier, 2007, Chapter 64.
- R. Schmalensee, “On a Level with Dentists? Reflections on the Evolution of Industrial Organization,” RIO, November 2012, 157-79.
- J. Tirole, *The Theory of Industrial Organization*, MIT, 1988.

II. Static Models of Oligopoly Price/Quantity Competition

- Tirole, chap. 5, Section 2.1 (pp. 96–100); Sections 7.1, 7.2, 7.5 (pp. 279–88, 296–300).
- A. Mas-Colell, M. Whinston and J. Green, *Microeconomic Theory*, Oxford, 1995, Section 12.C.
- C. Shapiro, “Theories of Oligopoly Behavior,” *HIOI*, Chapter 6.
- X. Vives, *Oligopoly Pricing: Old Ideas and New Tools*, MIT, 1999.

1. The Cournot Model

- C. Davidson and R. Deneckere, “Long-run Competition in Capacity, Short-run Competition in Price, and the Cournot Model, RJE, Autumn 1986, 404-15.
- P. Klemperer and M. Meyer, “Supply Function Equilibria in Oligopoly under Uncertainty,” EMA, November 1989, 1243-78.
- D. Kreps and J. Scheinkman, “Quantity Precommitment and Bertrand Competition Yield Cournot Outcomes,” BJE, Autumn 1983, 326–37.

2. Price Competition with Product Differentiation

S. Salop, “Monopolistic Competition with Outside Goods,” BJE, Spring 1979, 141–56.

A. Shaked and J. Sutton, “Relaxing Price Competition through Product Differentiation,” ReStud, January 1982, 3–14.

3. Introduction to the Antitrust Laws and Horizontal Merger Policy

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M. Motta, *Competition Policy: Theory and Practice*, Cambridge, 2004.

V. Nocke and M. Whinston, “Dynamic Merger Review,” JPE, December 2010, 1200-51.

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M. Whinston, *Lectures on Antitrust Economics*, MIT, 2006, Chapters 1 and 3.

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European Union *Horizontal Merger Guidelines*, 2004.

III. Entry

A. Dixit and J. Stiglitz, “Monopolistic Competition and Optimal Product Diversity,” AER, June 1977, 297–308.

G. Mankiw and M. Whinston, “Free Entry and Social Inefficiency,” RJE, Spring 1986, 48–58.

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A. Shaked and J. Sutton, “Multiproduct Firms and Market Structure,” RJE, Spring 1990, 45-62.

J. Sutton, *Sunk Costs and Market Structure*, MIT, 1991, Chapters 2 and 3.

J. Sutton, “One Smart Agent,” RJE, Winter 1997, 605-628.

J. Sutton, “Market Structure: Theory and Evidence,” *HIO3*, Chapter 35.

IV. Dynamic Models

Tirole, Chapter 6.

A. Mas-Colell, M. Whinston and J. Green, *Microeconomic Theory*, Oxford, 1995, Section 12.D.

J. Harrington, *The Theory of Collusion and Competition Policy*, MIT, 2017.

1. Collusion with Observable Demand Variation

Bagwell, K. and R. Staiger, “Collusion Over the Business Cycle,” *RJE*, Spring 1997, 82-106.

J. Haltiwanger and J. Harrington, “The Impact of Cyclical Demand Movements on Collusive Behavior,” *RJE*, Spring 1991, 89–106.

J. Rotemberg and G. Saloner, “A Supergame-Theoretic Model of Price Wars During Booms,” *AER*, June 1986, 390–407.

2. Multimarket Contact

D. Bernheim and M. Whinston, “Multimarket Contact and Collusive Behavior,” *RJE*, Spring 1990, 1–26.

3. Collusion with Capacity Constraints

W. Brock and J. Scheinkman, “Price-Setting Supergames with Capacity Constraints,” *ReStud*, July 1985, 371–82.

O. Compte, F. Jenny and P. Rey, “Capacity Constraints, Mergers, and Collusion,” *European Economic Review*, 2002, 1-29.

H. Vasconcelos, “Tacit Collusion, Cost Asymmetries, and Mergers,” *RJE*, Spring 2005, 39-62.

4. Collusion with Unobservable Demand Variation (Imperfect Monitoring)

D. Abreu, D. Pearce and E. Stachetti, “Optimal Cartel Equilibria with Imperfect Monitoring,” *JET*, June 1986, 251-69.

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E. Green and R. Porter, “Non-cooperative Collusion under Imperfect Price Information,” *EMA*, January 1984, 87–100.

G. Stigler, “A Theory of Oligopoly,” *JPE*, February 1964, 44–61.

5. Collusion with Private Types

S. Athey, K. Bagwell and C. Sanchirico, “Collusion and Price Rigidity,” *ReStud*, April 2004, 317-49.

J. Harrington and A. Skrzypacz, “Private Monitoring and Communication in Cartels: Explaining Recent Cartel Practices,” *AER*, 2011, 2425-49.

P. McAfee and J. McMillan, “Bidding Rings,” *AER*, 1992, 579-99.

6. Staggered Price Setting

E. Maskin and J. Tirole, “A Theory of Dynamic Oligopoly II: Price Competition, Kinked Demand Curves, and Edgeworth Cycles,” *EMA*, May 1988, 571–99.

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J. Baker, “Private Enforcement and the Deterrent Effect of Antitrust Damage Remedies,” *Journal of Law, Economics, and Organization*, Fall 1988, 385-408.

L. Kaplow and C. Shapiro, “Antitrust,” in M. Polinsky and S. Shavell, eds., *Handbook of Law and Economics*, Vol. 2, Elsevier, 2007, Chapter 16.

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8. Switching Costs

A. Beggs and P. Klemperer, “Multi-period Competition with Switching Costs,” *EMA*, May 1992, 651–666.

J. Farrell and P. Klemperer, “Coordination and Lock-In: Competition with Switching Costs and Network Effects,” *HIO3*, Chapter 31, esp. Sec. 2.

V. Empirical Studies of Pricing

1. Tests of Market Power

- O. Ashenfelter and D. Sullivan, "Nonparametric Tests of Market Structure: An Application to the Cigarette Industry," *JIE*, June 1987, 483-98.
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R. Schmalensee, "Inter-Industry Studies of Structure and Performance," *HIO2*, Chapter 16.

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S. Albaek, P. Mollgaard and P. Overgaard, "Government Assisted Oligopoly Coordination? A Concrete Case," *JIE*, December 1997, 429-43.

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J.P. Dube, J. Fox and C. Su, "Improving the Numerical Performance of Static and Dynamic Aggregate Discrete Choice Random Coefficients Demand Estimation," EMA, September 2012, 2231-67.

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

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IX. Pass-Through

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X. Identification

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