

Introduction

PhD Industrial Organization

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Plan for today

1. What is industrial organization?
2. Discuss syllabus
3. Introduce yourself

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What is industrial organization (IO)?

- **IO is the study of firm and consumer behavior in markets between (and including) the polar opposites of perfect competition and monopoly.**
- Why is this useful? Some examples...
 1. Designing regulation and thinking about counterfactual policies:
 - Hinges on the details of how firms and consumer behave. E.g. merger policy
 2. Firm strategy
 - e.g. How to set prices? How to design online marketplaces?
 3. Getting a job (?)
 - Estimating a model in your research can be a good way to differentiate yourself from other candidates
 - Candidates with IO skills are in short supply and high demand in both academia and industry.
 - Emphasis: models in this course are a complement - not a substitute - to detailed micro-data and other approaches (like the causal inference toolbox)

What are the aims of this course?

- **Main aim:** Get you up to speed with the core **methods** from 'New' Empirical IO
 - This toolbox started to be developed in the late '80s. Development continues up to the present day.
 - Limitation of the course: will not go into great depth about 'traditional' IO applications of these methods
- **Second aim:** get you started on research and get you to understand where the frontier of knowledge lies.

History of IO

- **History:** in the 1980s IO was dominated by game theoretic methods to think about competition, oligopoly, firm decision making.
 - A key reason for developing the empirical methods discussed in this course is applying these theories to data, testing them, and using the models to do, for example, policy evaluation
- **Recent developments:** applying these methods outside 'traditional' IO topics
 - 'Traditional' IO topics: mergers, competition policy
 - Recent applications: health, education, energy, environmental, trade, urban economics, market design,...

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Main topics in this course

1. Demand estimation
2. Single agent dynamics
3. Dynamic games/oligopoly
4. Production function estimation and productivity
5. Auctions (if time permits)
6. Paper presentations (focusing on recent influential IO papers across many subfields including Education, Healthcare, Environmental, etc...)

Textbook and readings

- There is no textbook for this course. But, the lectures will focus on the first four chapters of the new volume of the *Handbook of Industrial Organization (Volume 4)*
- Key papers I will discuss are on the reading list in the syllabus (and the most important have a *)
- I encourage you to read the papers (particularly those with a *), and I expect you to read the papers for the student paper presentations before the lecture.

Assessment and grading

- Second year PhD course, so the priority is research and noone will ever look at your grades...
- ...but this is how your final grade will be determined:
 - 50% Two homework assignments
 - 40% Half-hour paper presentations
 - 10% Engagement in class discussion

ASU Sync

- Link is on the syllabus
- Email me if you intend to use it so I can make sure that ASU Sync is connected

Preliminaries/preparation (do these early in the semester)

- Computational resources: apply for access to the ASU Agave computer system and familiarize yourself in how to use it (you could do this by attending a regularly scheduled tutorial by the ASU computing people).
- Version control: learn how to use Git, and sign up for Github.
- Programming language: settle on a programming language to use in your work.
 - Important: I have put a .pdf on canvas about 'best practices' in programming that includes advice on unit testing, profiling, structuring your code

Background

- Theory You are well prepared for this course from your first year PhD coursework.
- For this course, I expect that you have some understanding of IO at the level of an undergraduate IO course.
 - e.g. Cabral "Introduction to Industrial Organization"
- Empirics We will pick up where Alvin Murphy's Econometrics II course left off (review lecture 11 about discrete choice models)
 - e.g. Train "Discrete Choice Methods with Simulation" is another good book to review

Other things to consider

- Applied micro hiring this year: come to job talks
- Attend applied micro seminar
- Start thinking about your third-year paper.
 - Important: as well as thinking about general topics and questions, focus on obtaining detailed micro-data.

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