Course Introduction

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ECON 8210: Grad IO

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Agenda

This slide deck:

- Introductions.
- What is IO?
- History of the field.
- 'Structural' v 'reduced form'
- Course details.

A Little Bit about Me

- 6th year at UGA.
- Education/work:
  - Undergrad: Colby College
  - RA: Federal Trade Commission
  - Grad: Wisconsin
  - First Job: Penn State
- My research:
  - Online markets: competition, information.
  - Franchising: regulation, antitrust.
  - Economics of retail: pricing, location.

IO Defined

Industrial organization is concerned with the workings of markets and industries, in particular the way firms compete with each other.

-Introduction to Industrial Organization, Cabral.

High-level questions:

1. What is the level of competition? Is there market power?
2. What level of competition is "optimal"? What are the implications of market power?
3. What is the role of government policy to encourage optimal markets?

SCP Paradigm

1. Early work by Bain introduced the Structure-Conduct-Performance (Harvard) paradigm (1940-1960):

$$\textit{Structure} \rightarrow \textit{Conduct} \rightarrow \textit{Performance}$$

- Structure (i.e., number of sellers, buyers, entry barriers $\rightarrow$ concentration) determines conduct (i.e., how firms behave).
- Conduct determines performance (i.e., prices, markups, efficiency).
- So can "identify" conduct by the relationship between performance and structure.

Example: in the Cournot model, there is a direct relationship between mark-ups (performance) and concentration (structure).

$$\mu \equiv \frac{p-c}{p} = \frac{HHI}{\underbrace{\eta}_{\text{demand elasticity}}}$$

Question: does relationship in *data* look like 4-firm Cournot?

Empirical Work

Attempt to verify this model, or 'measure' conduct, with a cross-industry OLS regression:

$$\ln(\mu_j) = \alpha_0 + \alpha_1 HHI_j + \varepsilon_j$$

or

$$\ln(\mu_j) = \alpha_0 + \alpha_1 \ln(HHI_j) + \alpha_2 \ln(\eta_j) + \varepsilon_j$$

$\alpha_1 > 0$: argued that high concentration caused high prices which led to anti-trust legislation.

Problems:

- Data: how to find price-cost margins?
- Simultaneity - What causes variation in structure across industries?
  - Assumes structure is exogenous (correlation = causation).
  - Assumes away important differences between industries.
- Interpretation - What does a high α_1 really means in terms of a model? How high is too high?

New (as of 1980) Empirical IO

Move away from cross-industry studies to model specific industries:

- Data: do not assume you can observe price cost margins, instead estimate them from observed data (prices and quantities).
- Simultaneity: Study a specific industry, use cross-section or time series variation from (hopefully) plausibly exogenous sources.
- Interpretation: Conduct is an explicit parameter (or object) to be estimated.

Back to Cournot example:

- Can derive the relationship between concentration (HHI) and mark-ups directly from the estimates of demand elasticities and costs.
- Allows us to answer the other questions of interest:
  - What are the implications of market power?
  - What is the role of government intervention?

What can we do with IO?

Jobs for an IO economist:

- Academia (b-school, econ, marketing, etc.)
- Government (DOJ, FTC, etc.)
- Industry (consulting, tech, etc.)

Antitrust in Practice

Sherman Act (1890):

- Outlaws "every monopolization, attempted monopolization, or conspiracy or combination to monopolize." (e.g., Google case)
- Outlaws "contract, combination, or conspiracy in restraint of trade." (e.g., NCAA case)
- Supreme Court decided that it does not prohibit every restraint of trade, only those that are unreasonable (ie, have big effects).

Clayton Act (1914):

- Amends Sherman Act to address specific practices.
- Prohibits mergers and acquisitions where the effect "may be substantially to lessen competition, or to tend to create a monopoly."
- Bans certain discriminatory prices, services, and allowances in dealings between merchants (Robinson-Patman, 1936).
- Firms required to notify gov't of large mergers or acquisitions (Hart-Scott-Rodino, 1976).

Antitrust in Practice

Federal Trade Commission Act (1914):

- Established the Federal Trade Commission (FTC) – a government entity to regulate questionable business practices.
- The FTC is empowered to
  - prevent unfair methods of competition, and unfair or deceptive acts or practices in or affecting commerce;
  - seek monetary redress and other relief for conduct injurious to consumers;
  - prescribe trade regulation rules defining with specificity acts or practices that are unfair or deceptive, and establishing requirements designed to prevent such acts or practices;
  - conduct investigations relating to the organization, business, practices, and management of entities engaged in commerce; and
  - make reports and legislative recommendations to Congress.

Regimes of Antitrust Enforcement

Harvard School (Structure-Conduct-Performance era) (1950-1960s):

- Interventionist approach.
- Viewed market power skeptically, no matter how it was obtained (e.g., natural monopoly).

Chicago School (1960-1980s):

- Markets work (self-correct).
- Monopoly is more often alleged than confirmed; when it exists, it is often transitory due to entry or threat of entry.
- "Efficiency" (e.g., scale) important: intervention usually interferes.
- More laissez-faire approach: big not necessarily bad.
- $\rightarrow$ focused on more explicit actions that impact prices (price-fixing)
- Consumer welfare standard (high prices bad, all else equal).

Regimes of Antitrust Enforcement

'New' IO (1980-2010s):

- Efficiency/prices still the focus.
- Concerns about acquisitions and market power more important.
- Use of game theory/modeling to understand effects of market power.

New Brandeisian (2010-2020s):

- Big is bad.
- Consider effects on labor market, inequality, etc.
- New legislation: go after tech companies.

IO is a 'structural' field(?)

Maybe heard at the water cooler:

- Empirical IO is a 'structural field' and labor is a 'reduced form' field.

What people usually mean:

- IO economists estimate an overly-complicated theoretical model that takes months to run, in order to run counterfactuals.
- Labor economists run regressions in order to determine the relationship between X and Y.

Structural estimation is more about 'what' we are trying to estimate rather than 'how' we estimate it.

IO is a 'structural' field(?)

In structural estimation, we are trying to estimate an object or parameter that is derived from a model

- That doesn't mean we actually have to write down the model: 'reduced form' analysis may or may not come from a model in the background.
- A lot of times, what some people call 'reduced-form' estimation, is actually estimation of a structural object.
  - I can run a 2SLS IV regression of Q on P (with cost instruments for price) in order to estimate the own-price elasticity of demand.
    - A model of demand/supply says that we can use supply shocks (instruments) in order to map out the demand curve.
  - I can also start from utility/profit maximization to derive demand/supply equations that lead to a mapping between market shares and price.
  - The difference lies in what we want to do with the estimates.
    - The first would allow us to see how much demand would change with a 1% increase in price, all else equal.
    - The second would allow us to analyze the welfare effects of a merger.

IO is a 'structural' field(?)

So the terms 'reduced-form' and 'structural' are being abused, IMO.

- Reduced form estimates are parameters/objects that don't have a structural interpretation.
- Structure-conduct-performance paradigm is a (poorly done) example of this.
  - A model says that concentration and mark-ups should be related.
  - But α_1 (the estimated relationship), has no meaning.

Another dichotomy: descriptive v model-based

- Descriptive is looking purely at relationships or covariation in the data.
- Model-based: see discussion above.

See notes by Haile on eLC for a better discussion of Structural v Reduced form and the recent paper by Mahoney (2022) for a discussion of descriptive v model based.

IO is a 'structural' field(?)

Point:

- IO (as a field) is 'structural', in that the goal is to estimate structural parameters in order to do counterfactuals.
- Many questions are answered by starting with a model, and estimating the primitives of that model via non-linear estimation.
- Though, not all questions require writing down and solving a (linear or non-linear) model.
- Also, descriptive analysis is important input into structural estimation:
    - What is the variation in the data that you are using to identify the structural model?

This Class

Two part class:

- This semester: yours truly.
- Spring: professor Thurk.

Schedule this fall:

- Static demand (6 weeks)
- Production functions (2 weeks)
- Extensions of static demand(5 weeks)

Nest semester: more static demand, dynamic demand, entry, machine learning.

Materials

No textbook for the course. Good resources:

- Tirole's "Theory of Industrial Organization" for all things IO theory.
- Einav and Levin (2010): "Empirical Industrial Organization: A Progress Report" for a general overview of the field.
- Lectures will be based on papers that you are expected to read before class.
  - If it becomes apparent that you aren't reading the papers ahead of time, we will start randomly having people summarize the paper at the begging of class.

Grading

Grading (equally weighted)

- Participation
  - Instructor will let you know ahead of time what paper(s) we are discussing that day. You are expected to have read those papers and ready to discuss them
- 3-4 empirical problem sets.
  - Can use whatever programming language you want.
  - You can work together but each person is expected to hand in their own code/results.
- 1 Presentation.
  - Indicate your preferences for topics and I will select a paper for you to present sometime during the semester.
  - If you have even more specific preferences, let us know.

Ins and Outs

Office Hours

- Newberry: Thursdays 10am-11am, or by appointment.

Schedule notes:

- NO CLASS: Oct 15.

To Do list

Review concepts

- Game theory (e.g., best response, equilibrium, strategies).
- Producer theory (profit max, cost min, production function)

Get up to speed with your favorite coding language.