

# 1.1 – Introduction to IO

ECON 326 • Industrial Organization • Spring 2023

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 [ryansafner/iOS23](https://github.com/ryansafner/iOS23)

 [iOS23.classes.ryansafner.com](https://ios23.classes.ryansafner.com)



# Outline

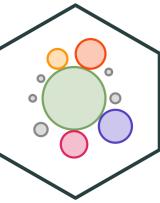


What is Industrial Organization About?

Motivations for this Semester

About This Course

# About Me



Edinburgh, 2019

- Ph.D (Economics) – George Mason University, 2015
- B.A. (Economics) – University of Connecticut, 2011
- 7th year teaching at Hood
- Specializations:
  - Law and Economics
  - Austrian Economics
- Research interests
  - modeling innovation & economic growth
  - political economy & economic history of intellectual property
  - Substack: [Increasing Returns](#)

# What's Keeping Me Busy





# What is Industrial Organization About?

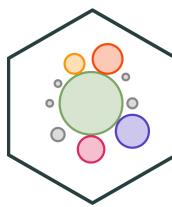
# Industrial Organization



- How are industries organized, and why do they operate the way they do?
- How do we properly regulate industry?
- How does, and should, *actual* competition between firms work?



# IO is Applied Microeconomics



George Stigler

1911-1991

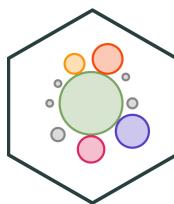
Economics Nobel 1982

“Let us start this...on a higher plane of candor than [we] will always maintain, **there is no such subject as industrial organization\***,” (p.1).

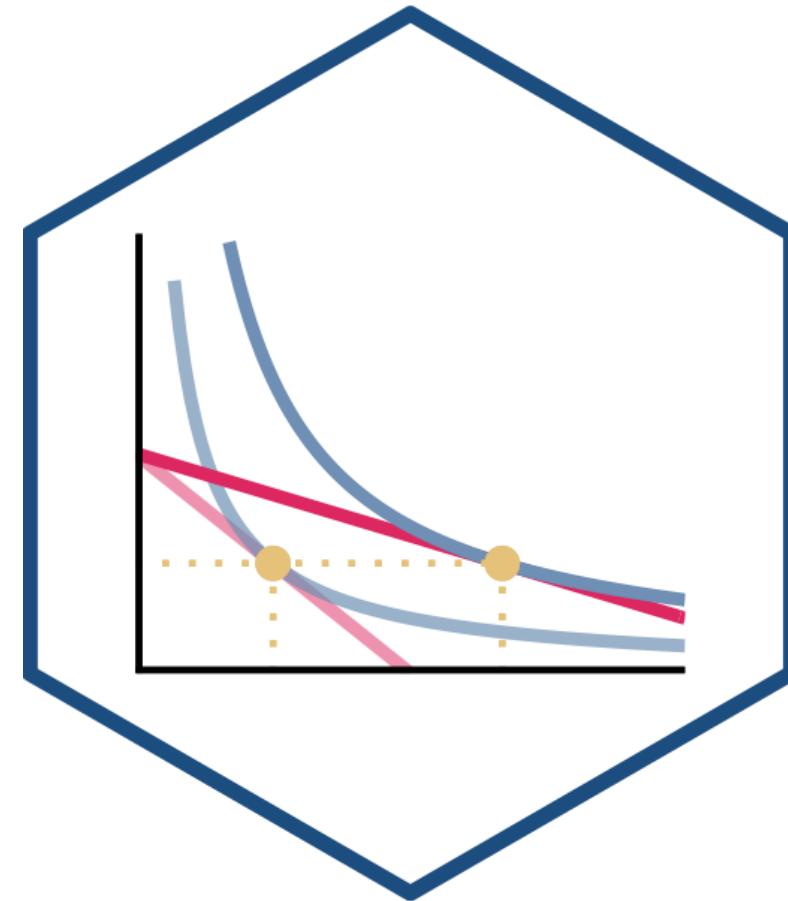
“These courses deal with the size, structure, the effects of concentration on competition, the effects of competition upon prices, investment, innovation, and so on. But this is precisely the content of economic theory — price or resource allocation theory, now often given the unfelicitous name of **microeconomics**,” (p.1).

Stigler, George J, 1968, *The Organization of Industry*

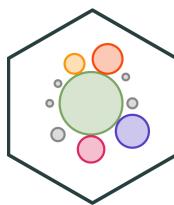
# You Already Know a Lot of IO Basics



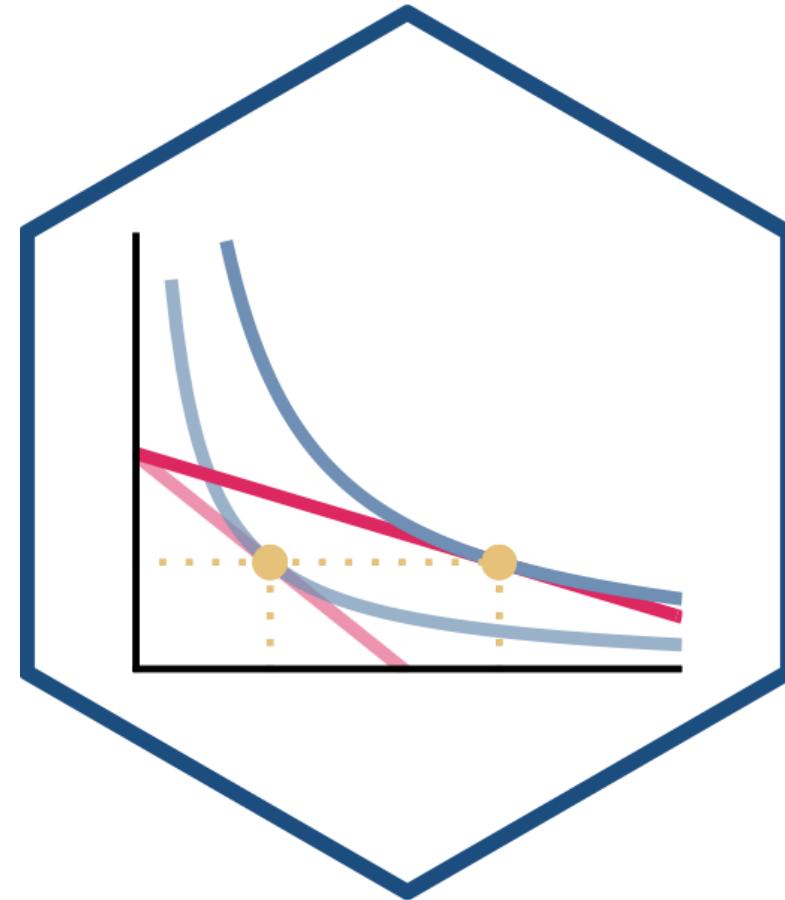
- You (hopefully) learn(ed) in  
**Microeconomics (206, 306):**
- **Market structures:**
  1. **perfect competition**
  2. **monopoly**
  3. **monopolistic competition**
  4. **oligopoly**



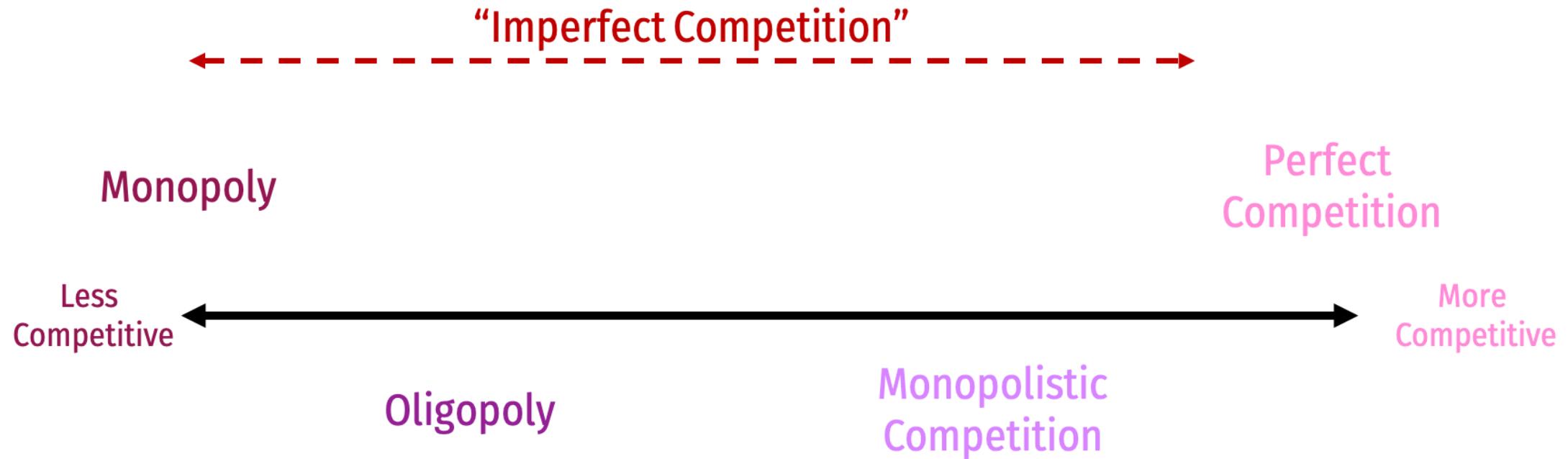
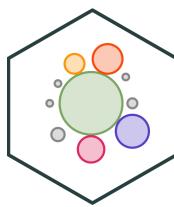
# You Already Know a Lot of IO Basics



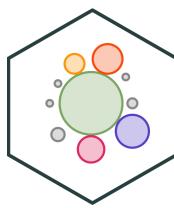
- You (hopefully) learn(ed) in  
**Microeconomics (206, 306):**
- **Something** about the following **concepts:**
  1. **pricing**
  2. **game theory**
  3. **antitrust**
  4. **entrepreneurship**
  5. **market failures/regulation/welfare**



# Spectrum of Market Structures



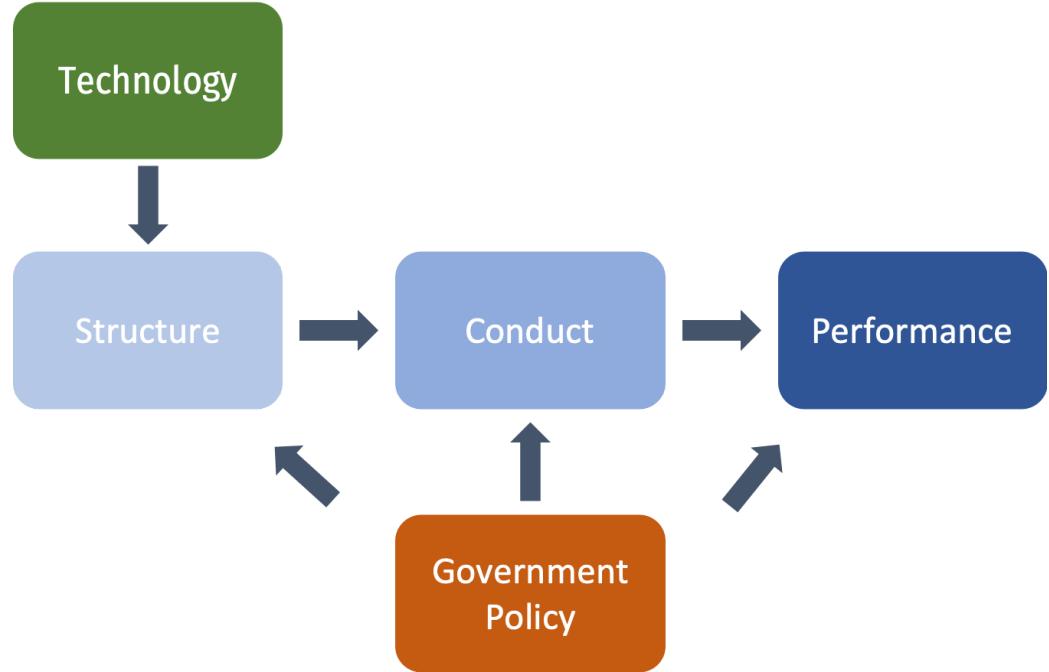
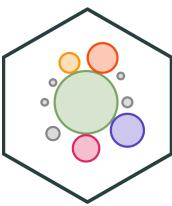
# Classic Elements of Industrial Organization



1. Structure-Conduct-Performance (SCP) paradigm
2. Price theory and Game theory
3. Economics of Organization/Firms
4. Antitrust and economics of regulation

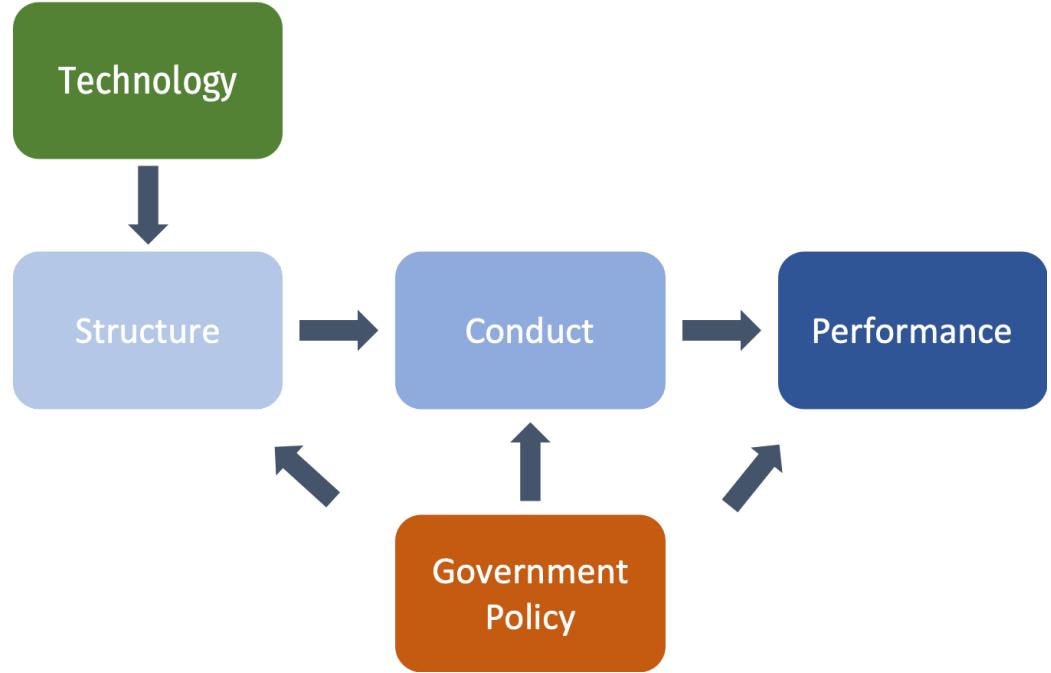
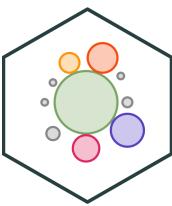


# Structure-Conduct-Performance Paradigm



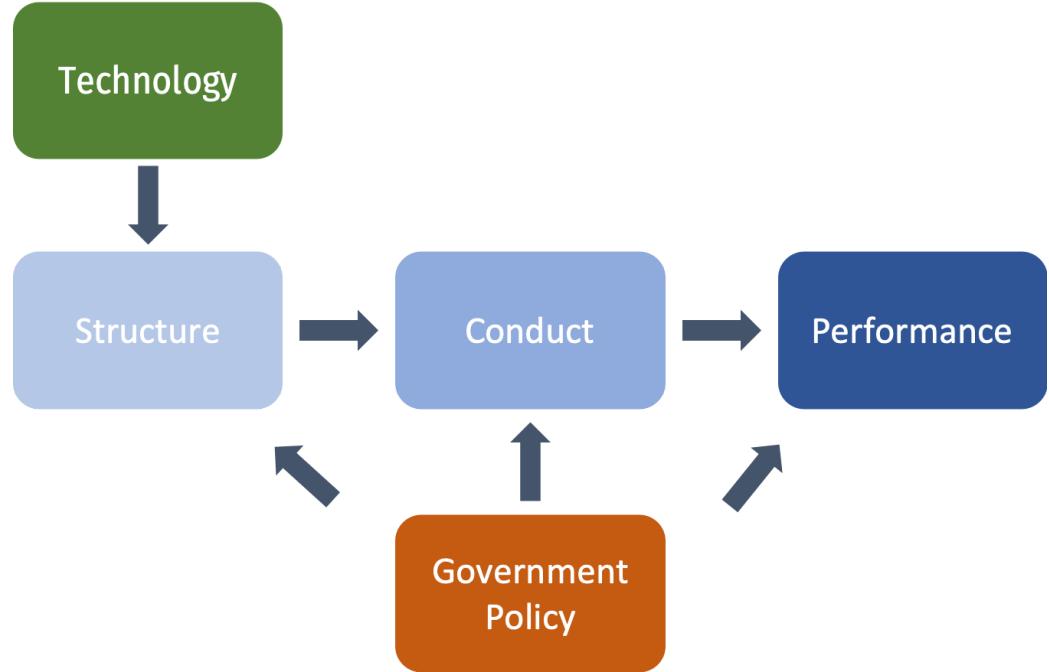
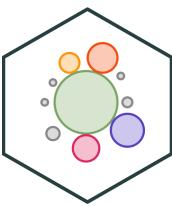
- An industry's **“Performance”**
  - Price (high, low)
  - Output (high, low)
  - Profit
  - Productive efficiency
  - Allocative efficiency (CS, DWL)
  - Quality, safety, etc.

# Structure-Conduct-Performance Paradigm



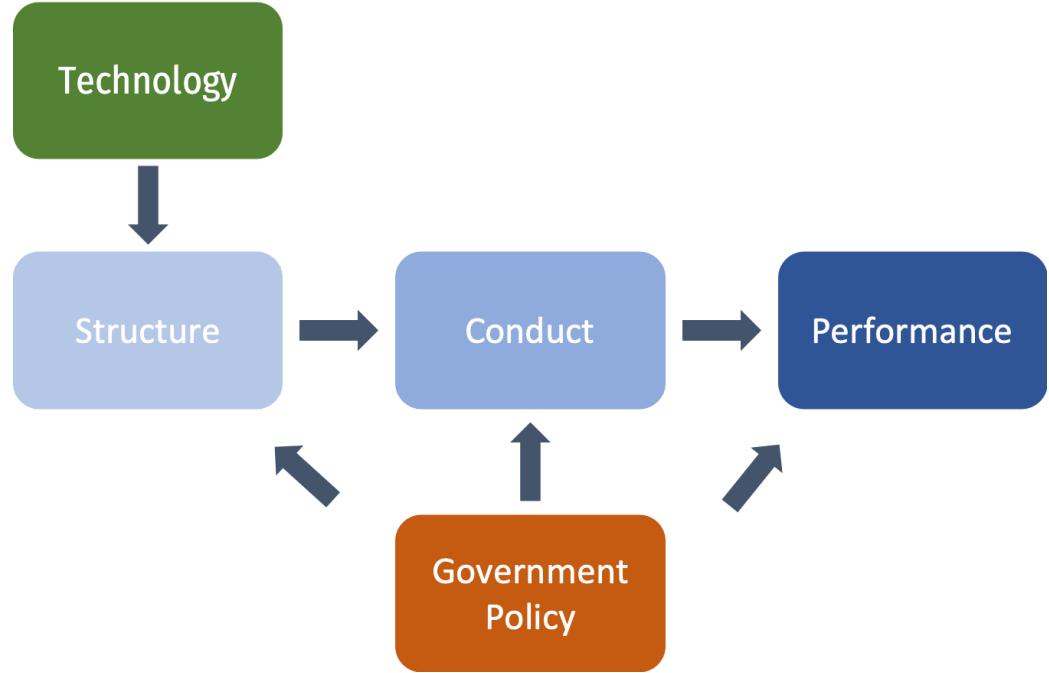
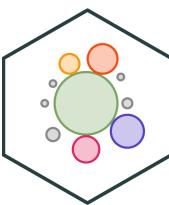
- ... which is determined by its firms' "Conduct"
  - Pricing behavior
  - Output choices
  - Advertising
  - Lobbying
  - Lawsuits
  - Entry and exit
  - Collusion
  - Innovation

# Structure-Conduct-Performance Paradigm



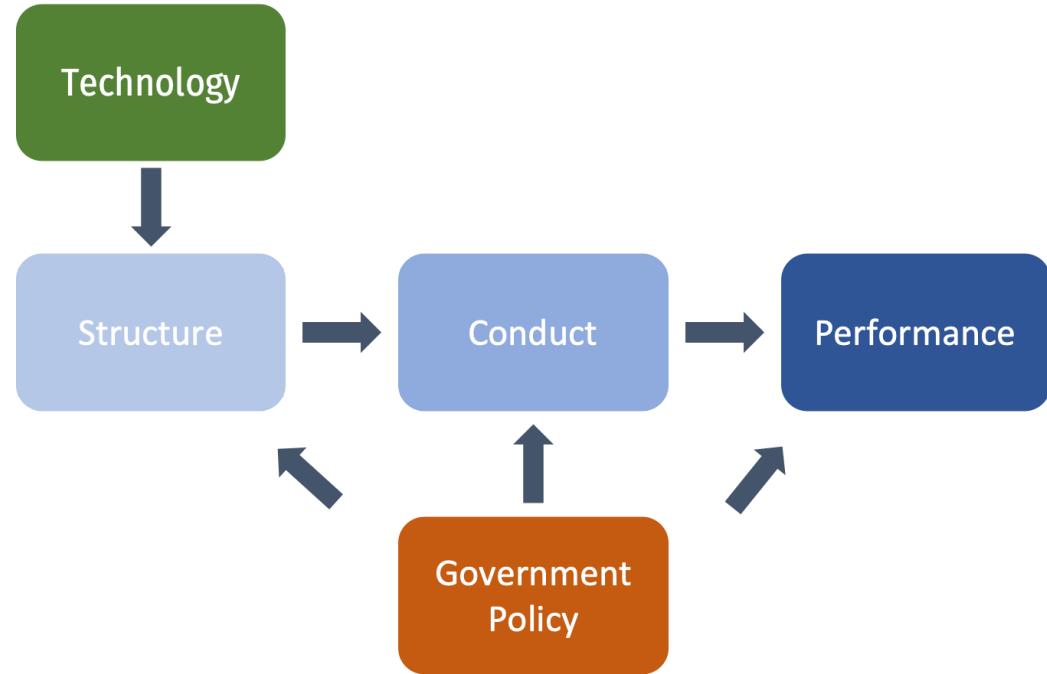
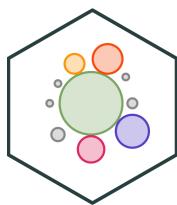
- ... which is determined by the industry's **"Structure"**
  - Number of buyers
  - Number of sellers
  - Product differentiation
  - Vertical integration
  - Barriers to entry

# Structure-Conduct-Performance Paradigm



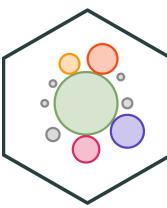
- ... which is determined (exogenously) by the product's “**Technology**”
  - **Consumer demand** (price and income elasticity, substitutes, location, etc)
  - **Product's features**: experience, information, durability, rivalry, excludability
  - **Production features**: economies of scale, economies of scope, network externalities, two-sided platforms

# Structure-Conduct-Performance Paradigm



- **Government policy** can affect nearly every stage
  - Entry regulation
  - Price regulation
  - Antitrust regulation
  - Taxes and subsidies

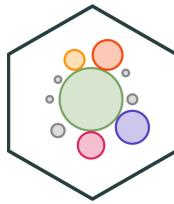
# A Brief Sketch of IO History



- Theory of perfect competition perfected  
1920–1930s
- SCP paradigm dominant (1950s–1970s)
  - cross-industry comparisons
  - positive correlation between industry concentration and profits

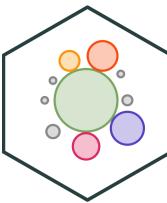


# A Brief Sketch of IO History

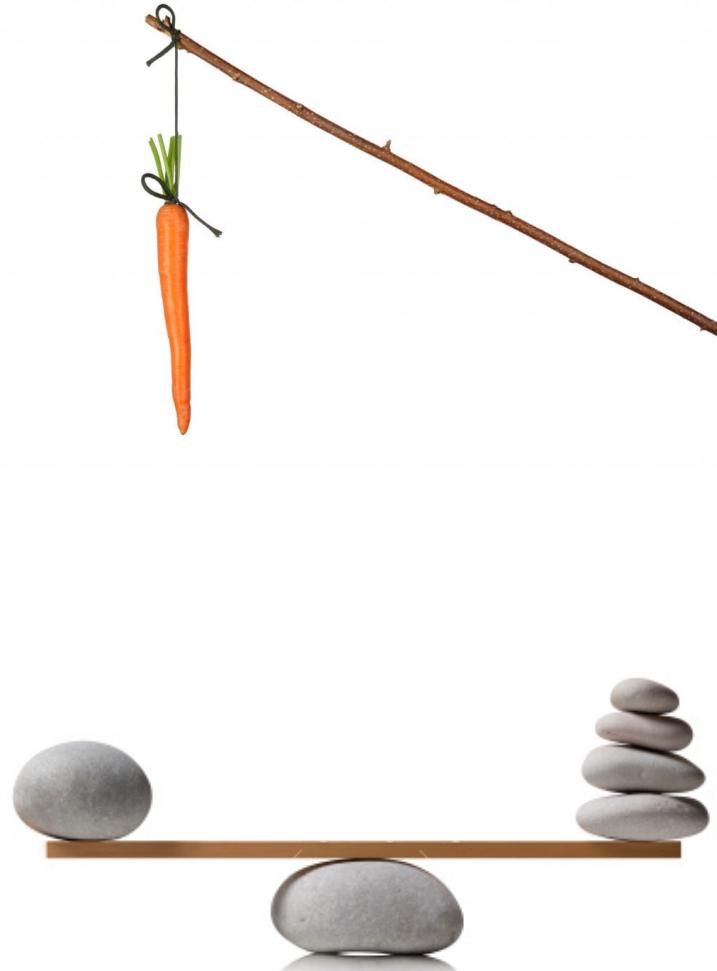


- “New learning” rejects SCP paradigm  
(1970s-1980s)
  - game theory in imperfect competition,  
strategic behaviors
  - efficiency arguments for firm behaviors
  - revolution in antitrust thinking
- “New Empirical Industrial Organization”  
(1980s-present)
  - better data & better theory
  - focus on individual industries, micro-level
  - 1990s credibility revolution in

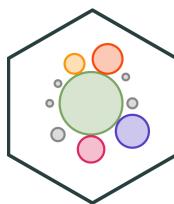
# Price Theory



- Economics is a **way of thinking** based on a few core ideas:
- **People respond to incentives**
  - Money, punishment, taxes and subsidies, risk of injury, reputation, profits, sex, effort, morals
- **Environments adjust until they are in equilibrium**
  - People make adjustments until their choices are optimal given others'



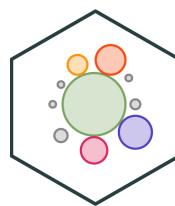
# Price Theory: Optimization and Equilibrium



- If people can **learn** and **change** their behavior, they will always switch to a higher-valued option
- If there are no alternatives that are better, people are at an **optimum**
- If **everyone** is at an optimum, the system is in **equilibrium**



# The Major Models of Price Theory



## Optimization

- Agents have **objectives** they value
- Agents face **constraints**
- Make **tradeoffs** to maximize objectives within constraints

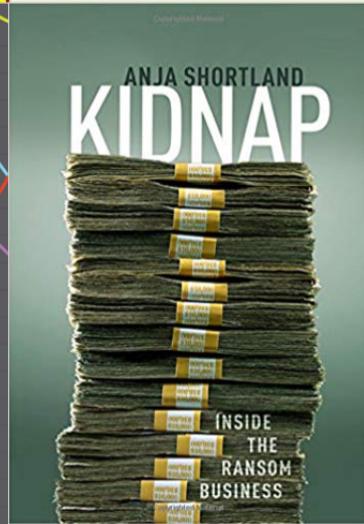
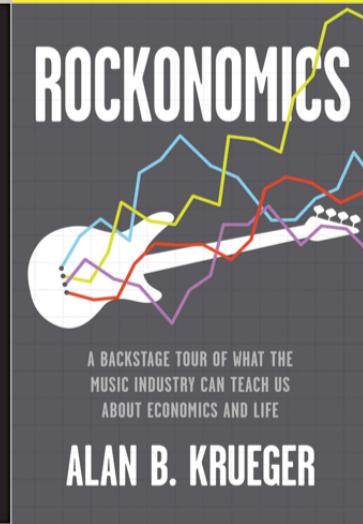
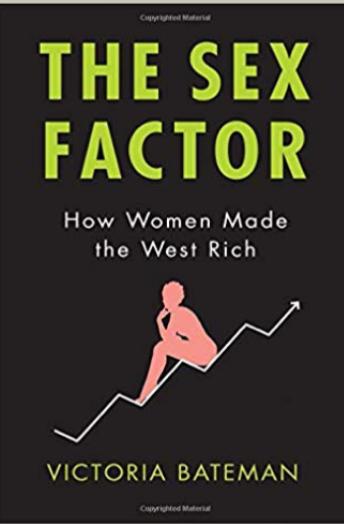
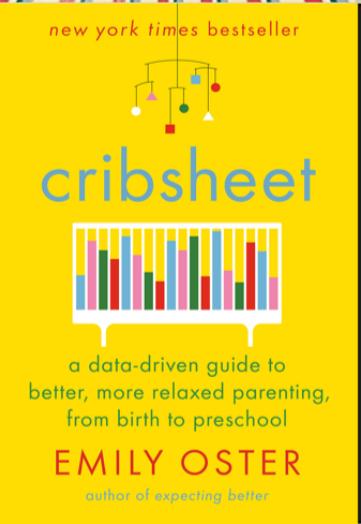
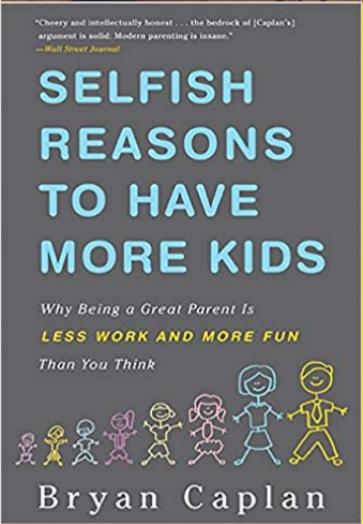
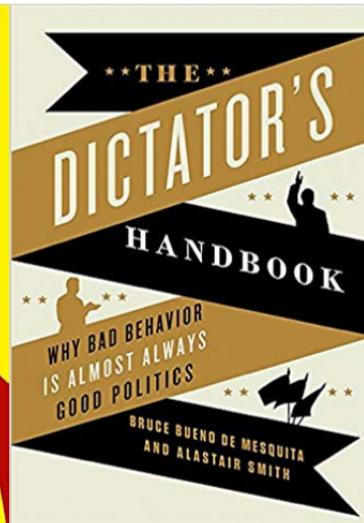
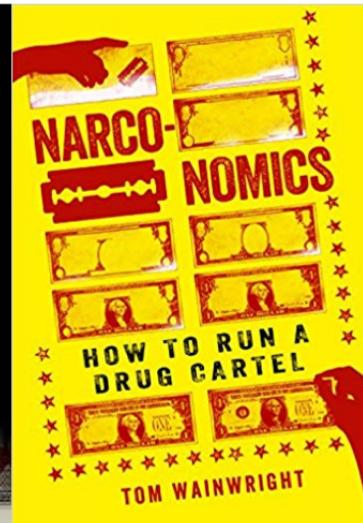
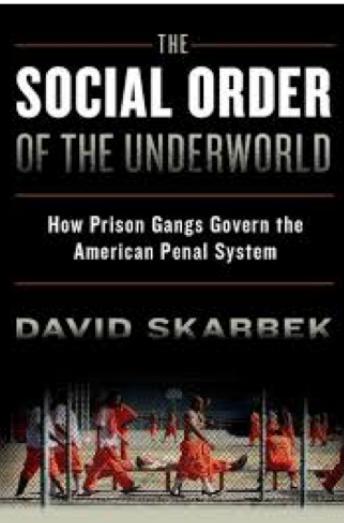
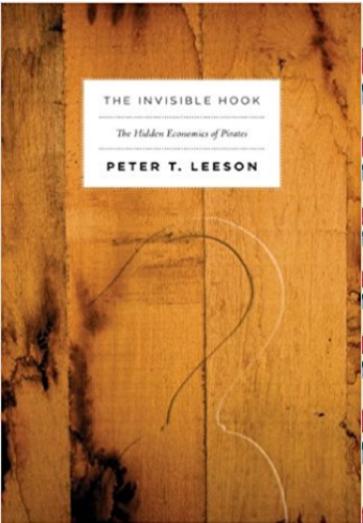
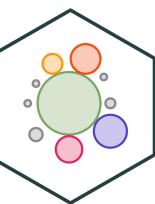


## Equilibrium

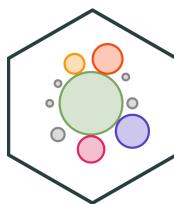
- Agents **compete** with others over **scarce** resources
- Agents **adjust** behaviors based on prices
- **Stable outcomes** when adjustments stop



# Economics (Price Theory) Is Broader Than You Think



# Remember: All Models are Wrong!

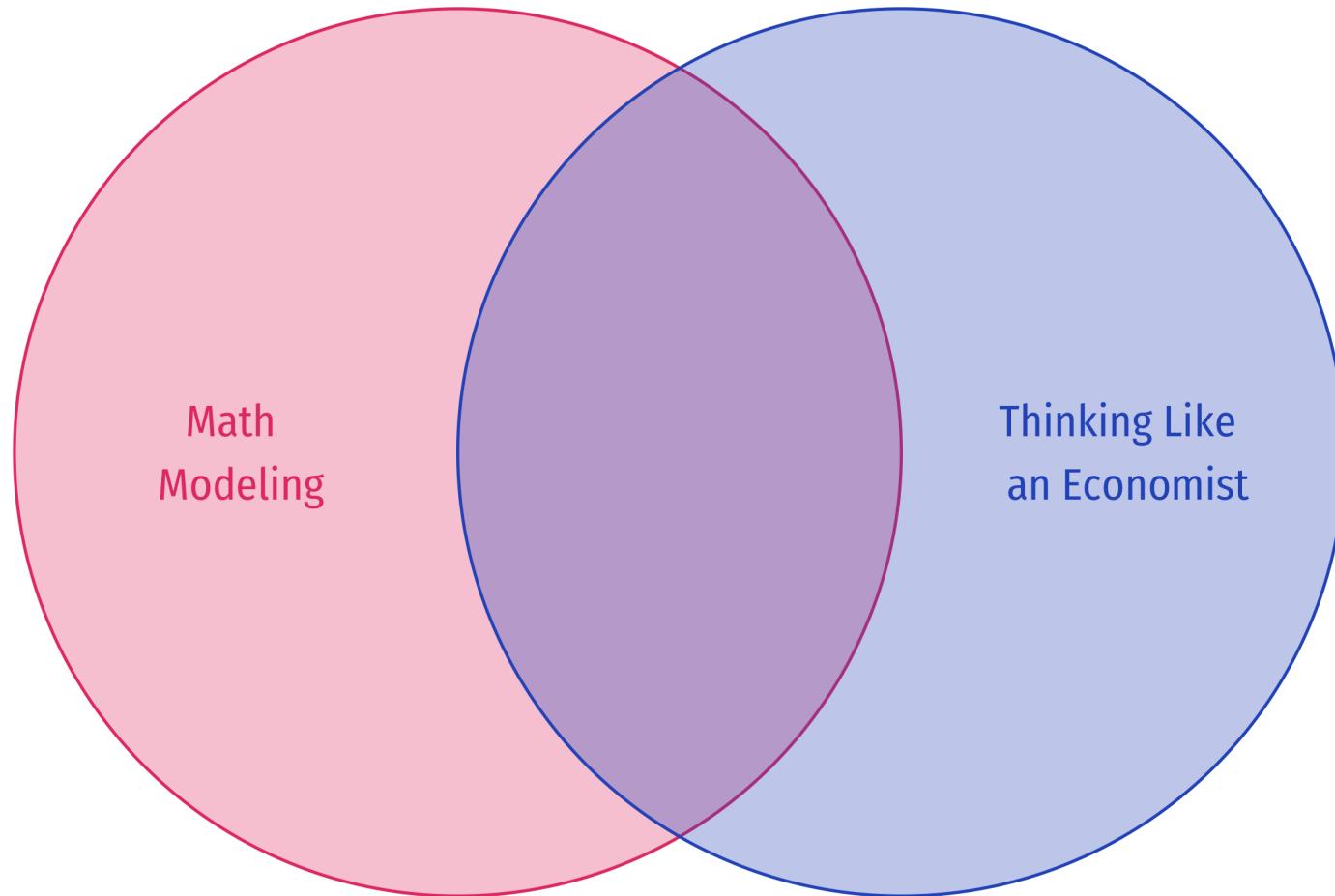
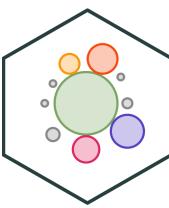


**Caution:** Don't conflate models with reality!

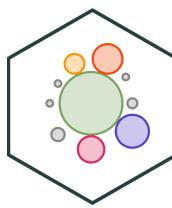
- Models help us *understand* reality.
- A good economist is always aware of:
  - "*ceterus paribus*"
  - "...and then what?"
  - "...compared to what?"



# Economics IO Often Uses, but Is Not Limited to, Math



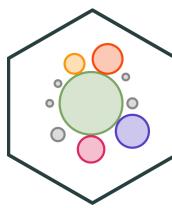
# The Economics of Organization



- Studying the problem of **economic organization** provides more perspectives
- **Firms** (hierarchies) and **markets** are substitutable methods of production
- **Team production** of many economic goods and services
- Organize to **minimize transaction costs** in production



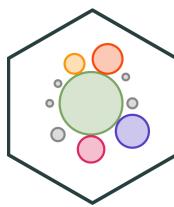
# The Economics of Organization



- **Most** production takes place in firms
- Firms grapple with their own **principal-agent problems**:
  - management vs. labor, management vs. owners
- Firms must relate to other firms
  - specialization & division of labor
  - up/downstream market power
  - mergers & acquisitions, vertical integration



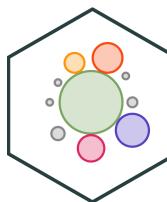
# Efficiency Arguments and Antitrust



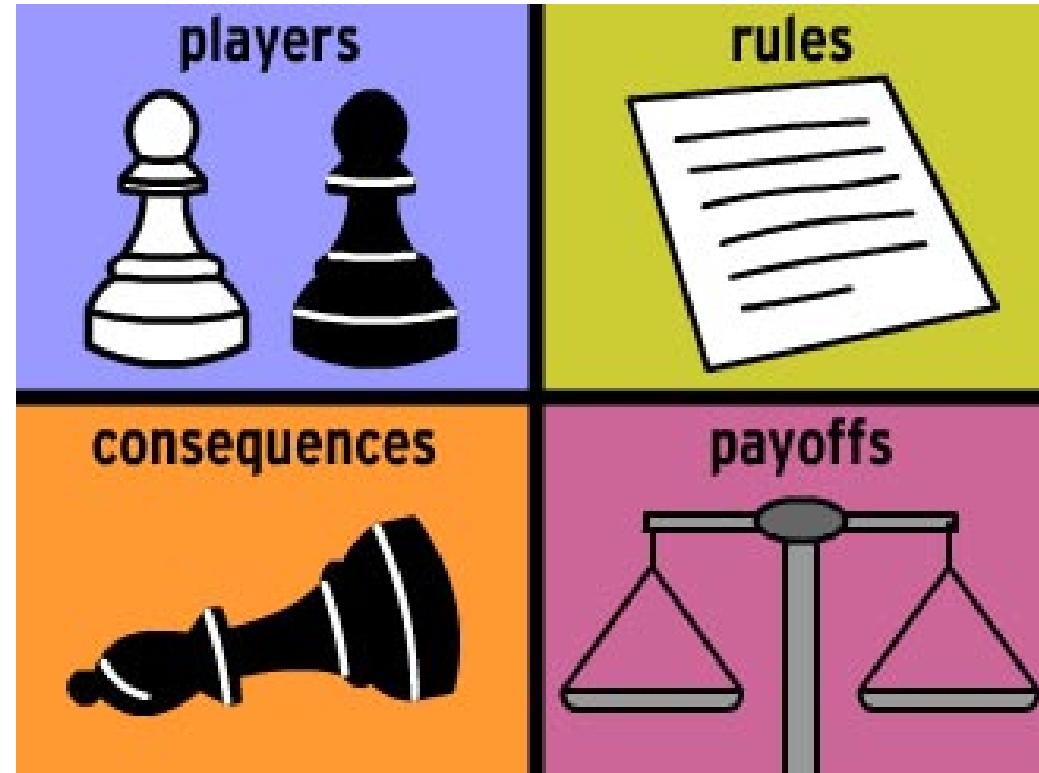
- A lot of business activities that appear anti-competitive are actually pro-competitive (i.e. they improve **consumer welfare**)



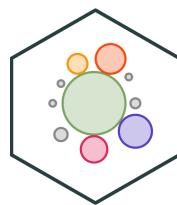
# Game Theory and Strategic Behavior



- **Game theory:** a set of tools that model strategic interactions ("games") between rational players, 3 elements:
  1. **Players**
  2. **Strategies** that players can choose from
  3. **Payoffs** are *jointly-determined* from combination of all players' strategies



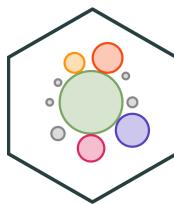
# Game Theory vs. Price Theory Models I



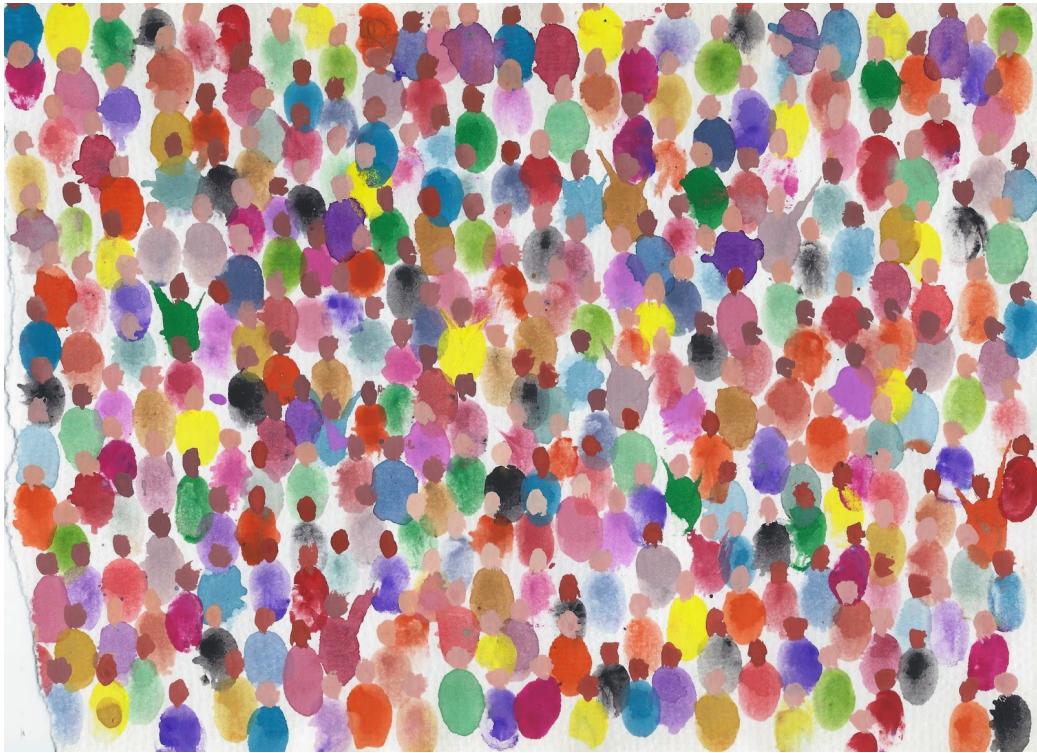
- Optimization models **ignore all other agents** and just focus on how can **you** maximize **your** objective within **your** constraints
  - Other agents are a primary cause of your constraints - but not considered in the model!
  - Consumers max utility; firms max profit, etc.
- **Outcome:** optimum: decision where *you* have no better alternatives



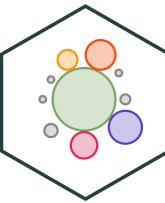
# Game Theory vs. Price Theory Models II



- Traditional economic models are often called **Decision theory**:
- **Equilibrium models** assume that there are **so many agents** that **no agent's decision can affect the outcome**
  - P.C.: firms are price-**takers**
  - Monopoly: the **only** buyer or seller
  - **Ignores all other agents' choices!**
- **Outcome: equilibrium:** where *nobody* has no better alternatives



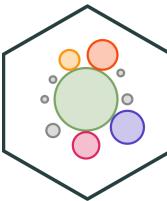
# Game Theory vs. Price Theory Models III



- **Game theory models** directly confront **strategic interactions** between players
  - How each player would respond to a strategy chosen by other player(s)
  - Lead to a stable outcome where everyone has considered and chosen their best responses
- **Outcome:** **Nash equilibrium**: where *nobody* has a better strategy *given the strategies everyone else is playing*



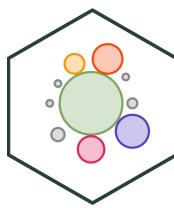
# Challenges to Consider



- Positive correlation between concentration (fewer, bigger firms) and profits across industries
- Is this because: a. big firms buy up their rivals to capture market share *and then* earn higher profits (anti-competitive) b. more efficient firms earn higher profits and outlast inefficient firms earning losses that go out of business or are acquired (pro-competitive)



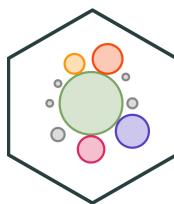
# Challenges to Consider



- Are the following business practices **anti-competitive** (and worth regulating/prosecuting) or **pro-competitive** (creates efficiency & benefits consumers):
  - price discrimination
  - mergers & acquisitions
  - franchising, exclusive dealing
  - vertical restraints
  - resale price maintenance
  - advertising/marketing



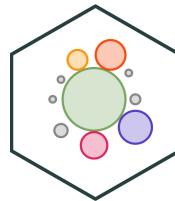
# Challenges to Consider



- How do you define "an industry" or a market?
  - What does Coca Cola compete with?
  - What does Google compete with?
- Substitutes in production vs. substitutes in consumption
- Geographic boundaries



# Challenges to Consider



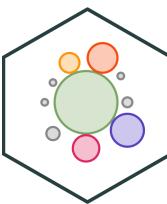
- Is regulation used by the government to regulate firms in the public interest? Or is regulation used by firms to bludgeon their competition? (Or something else?)





# Motivations for this Semester

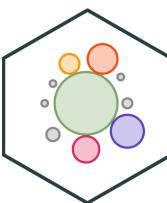
# Unequal Growth, or Unshared Prosperity? I



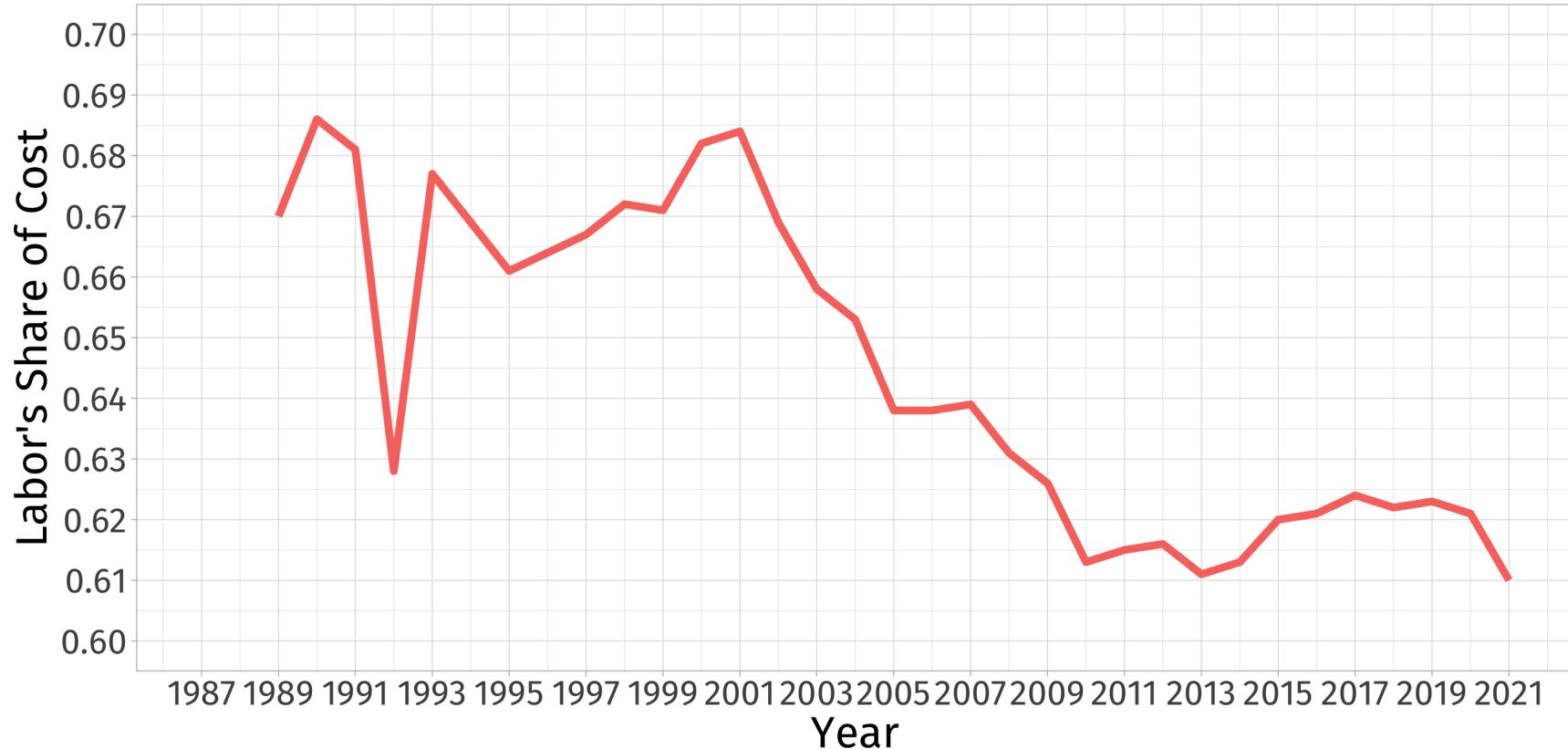
- Common argument: "**real wages** have been stagnant since 1970" or "real wages have not kept up with productivity since 1970"
- **Labor's share** of national income has gone down recently
- Might this be because of *increasing market power?*



# Unequal Growth, or Unshared Prosperity? II

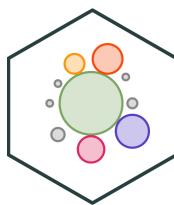


## The Decline of Labor's Share in Cost (Private Nonfarm Business Sector)



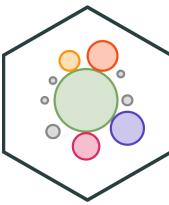
Data Source: FRED

# Unequal Growth, or Unshared Prosperity? III



Data Source: FRED

# The Rise of Market Power?



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**UP FRONT**

### The rise of corporate market power

Zia Qureshi · Tuesday, May 21, 2019

**T**he rise of corporate market power is receiving increasing attention in recent years, as former US president Barack Obama's 2019 *World Economic Forum* speech had the opportunity to highlight.

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ECONOMY CORPORATIONS MONOPOLY

## America Has a Monopoly Problem—and It's Huge

*The Nobel Prize winner argues that an economy dominated by large corporations has failed the many and enriched the few.*

By Joseph E. Stiglitz

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### Paul Krugman: Monopoly capitalism is killing US economy

We aren't just living in a second Gilded Age, we're also living in a second robber baron era

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Tech Tools: wireless earbuds with top-class sound and noise cancelling 35 mins

Tech Tools: Bluetooth mask will aid you drift into sleep 2 hours

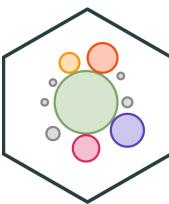
# Is New Antitrust Action Necessary?



The image displays five screenshots of news articles from various publications, all centered around the theme of antitrust investigations against tech companies.

- The Hill:** Headline: "Antitrust should be used to break up partisan tech giants like Facebook, Google".
- Washington Examiner:** Headline: "Consumer doom: Both parties are pushing antitrust rules as a 2020 issue".
- Wall Street Journal:** Headline: "The Antitrust Case Against Facebook, Google and Amazon". Subtext: "A few technology giants dominate their worlds just as Standard Oil and AT&T once did. Should they be broken up?"
- Wall Street Journal:** Headline: "Justice Department Is Preparing Antitrust Investigation of Google". Subtext: "Probe would closely examine Google's practices related to search, other businesses".
- New York Times:** Headline: "Is It Time to Break Up Google?". By Jonathan Taplin. Subtext: "The Justice Department is preparing to closely examine Google's practices in search and other businesses. PHOTO: CHARLES PLATIAU/REUTERS".

# Is New Antitrust *Thinking* Necessary?



The image displays three separate web browser windows side-by-side, each showing a different article related to antitrust thinking.

- Mercatus Center (mercatus.org):** The title is "The Bridge / SMART POLICY FOR A GROWING WORLD". The main image shows a street scene with a red brick building and a sign for "CHICOS". The article title is "What Is 'Hipster Antitrust?'".

**What Is 'Hipster Antitrust?'**  
Why the Newest Antitrust Thinking Isn't

By Andrea O'Sullivan Feature Writer
- American Bar Association (americanbar.org):** The title is "ABA Young Lawyers CLE & Resources Career Tools More Search This Group". The article title is "Hipster Antitrust: A Brief Primer".

**Hipster Antitrust: A Brief Primer**
- The New York Times (nytimes.com):** The title is "The New York Times Account". The article title is "Amazon's Antitrust Antagonist Has a Breakthrough Idea".

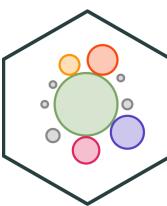
**Amazon's Antitrust Antagonist Has a Breakthrough Idea**

With a single scholarly article, Lina Khan, 29, has reframed decades of monopoly law.

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# Big Changes in Regulatory Approach



THE WALL STREET JOURNAL.

Ryan Safner ▾

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## FTC Proposes Banning Noncompete Clauses for Workers

Move would allow former employees to take jobs with rival companies or start competing businesses



The Federal Trade Commission says noncompete clauses have been imposed on lower-wage workers who lack access to trade secrets.

PHOTO: ERIC LEE FOR THE WALL STREET JOURNAL

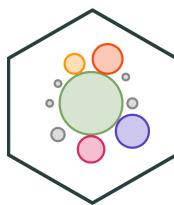
By [Dave Michaels](#) [Follow](#)

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Yearly Summary

# Some Questions for the Semester

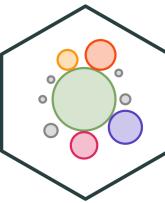


1. Has there been a **general increase in market power/concentration?**
2. If so, what should we do about it?
3. Should we revitalize **antitrust laws?**
4. Are **platforms** like Facebook, Amazon, Google, etc. uniquely problematic? How should we regulate them?
5. Should your **data** be **owned** (and compensated) as **labor?**
6. Will **automation** take all the jobs? If so, what do we do about that?



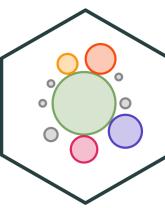
# About This Course

# Learning Goals I



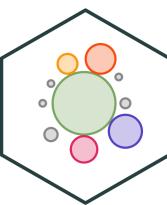
1. Understand key economic models of perfect competition, monopoly, monopolistic competition, oligopoly (Bertrand, Cournot, and Stackelberg competition), and contestable markets
2. Apply models of competition to different industries and regulatory regimes
3. Simulate strategic and game theoretic interactions and apply them to industry behavior
4. Discuss how firms actually compete with one another

# Learning Goals II



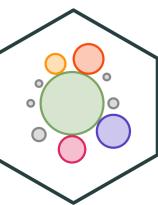
5. Critique textbook models and theories of regulation and antitrust
6. Understand the economic problems that firms solve, create, and grapple with
7. Debate regulatory solutions to problems and current events in various industries

# A Course in Five Acts



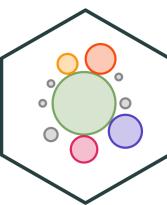
- **I. Models/Review**
  - Production theory (technology, costs, etc)
  - Market structures (perfect competition, monopoly)
  - Some extensions beyond ECON 306 (factors markets, etc.)
  - *Some math & practice (**HWs, Midterm**)*

# A Course in Five Acts



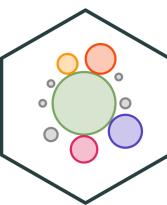
- **II. Oligopoly**
  - Oligopoly models
  - (Static) game theory
  - **Playing games** in class (**Moblab**)

# A Course in Five Acts



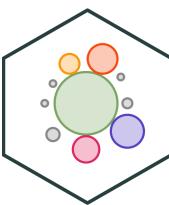
- **III. Economic Organization**
  - Theory of the firm: why firms exist (and look/act the way they do)
  - Efficiency rationales for firm organization & behavior

# A Course in Five Acts



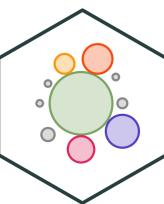
- **IV. Strategic Behavior**
  - Dynamic/sequential game theory
  - Repeated games
  - Entry barriers
  - Anticompetitive behavior
- More **readings** and **discussions** with some lecture

# A Course in Five Acts



- **V. Regulation & Applications**
  - Antitrust (theory, history, applications)
  - Regulating natural monopoly
  - Automation, gig economy
  - Networks, platforms, ownership of data
- More **readings** and **discussions** with some lecture

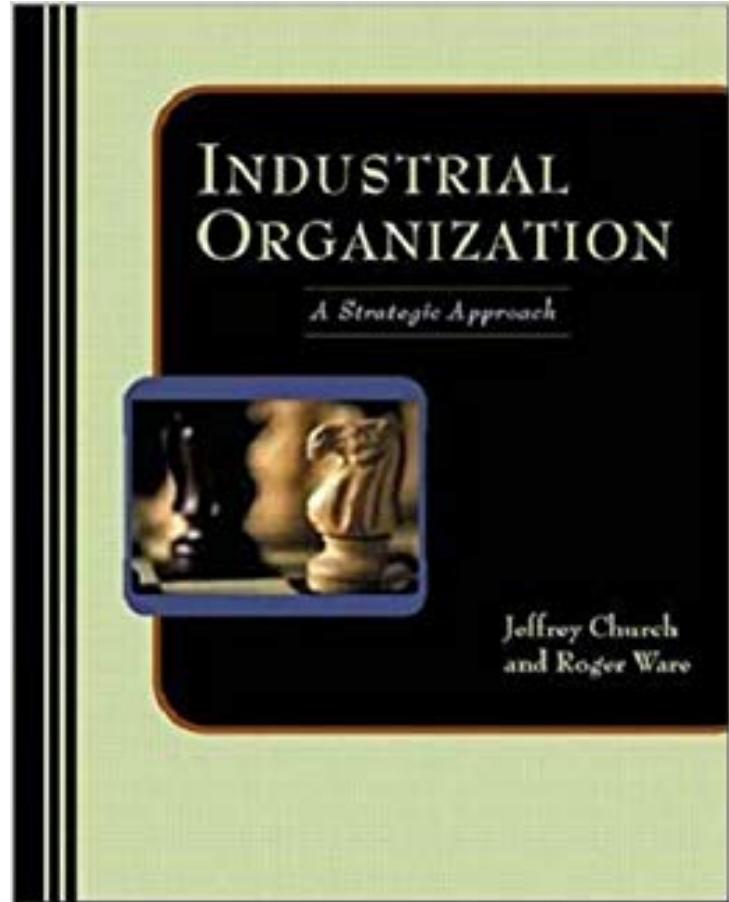
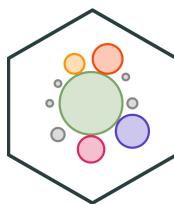
# Assignments



| Assignment                | Percent |
|---------------------------|---------|
| n Participation (Average) | 10%     |
| n Homework (Average)      | 20%     |
| 1 Midterm                 | 20%     |
| 1 Final (Take-home)       | 30%     |
| 1 Industry Report         | 20%     |

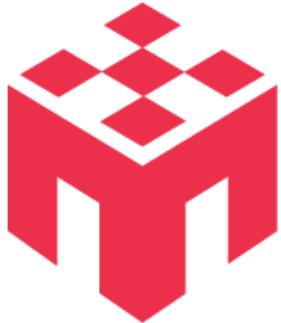
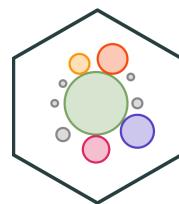
See more details at the [assignments page](#)

# Textbooks You Might Want



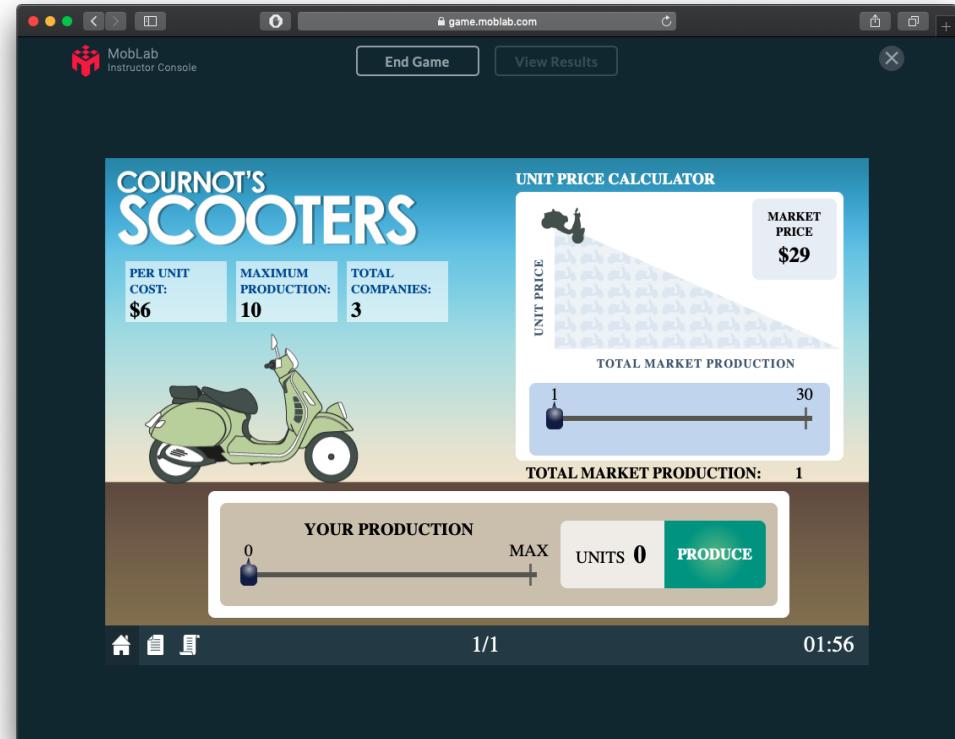
- It's free online (PDF):  
[https://works.bepress.com/jeffrey\\_church/23](https://works.bepress.com/jeffrey_church/23)
- But you may purchase a hard copy if you wish

# And So We Can Play Games

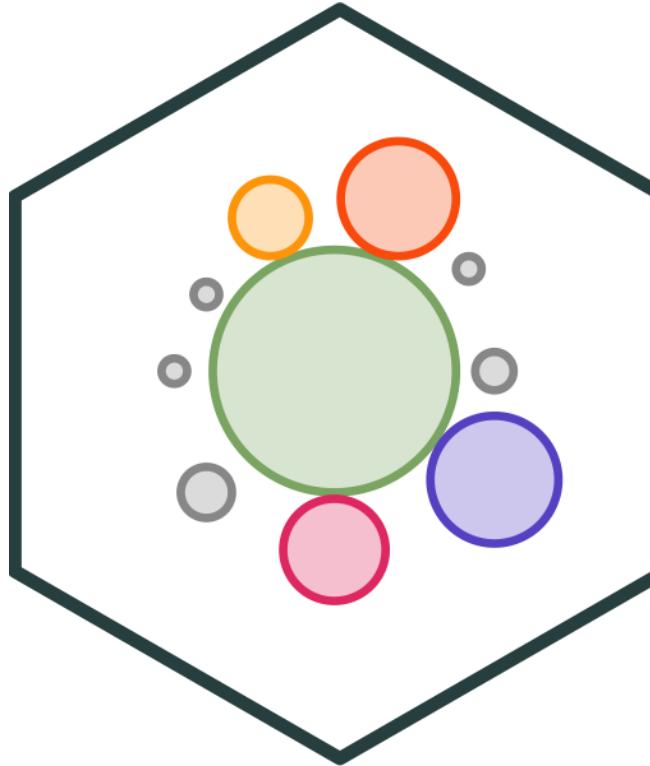
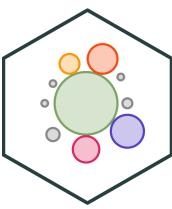


# MobLab

A playground for decisions

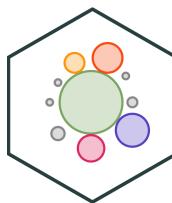


# Course Website



[iOS23.classes.ryansafner.com](https://ios23.classes.ryansafner.com)

# Tips for Success, Or: How to College



- Take notes. On paper. Really.
- Read the readings. I've optimized them for you.
- Participate\*
- You are learning how to learn
- See the [reference page](#) for more



\* To the degree you feel comfortable. But try to push that boundary with baby steps!