

Empirical Industrial Organization

Renmin University of China

2021FALL

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Class Hours: Tuesday 6 -8:30pm

Class Location: Mingxin 0101

Credit Hours: 3/51

Course Description

This course is designed to cover advanced topics in Industrial Economics / Industrial Organization, with emphasis of **combining data, economic models, and appropriate identification strategies and econometric techniques** to answer empirical questions in economics. The goal of this course is to equip students with economic theory and quantitative skills necessary to conduct original research on economic issues in the industry / market of interest. Toward this end, classes will involve lectures by the instructor, student presentations, and class discussion. We will focus on investigating oligopoly pricing behaviors in various markets both theoretically and empirically. In particular, we will study

- How does the market structure / design affect strategic interactions among market participants, and eventually market performance and market structure;
- How do we evaluate the market / policy performance under various market structures / designs.

Prerequisites:

Graduate-level coursework on microeconomics and econometrics is required, preferable with some knowledge on game theory. If you have not taken these courses, please obtain consent of the instructor to enroll.

Course Material

This course is mainly based on the reading of research papers. Other useful resources are

IO (and Game) Theory

- **Tirole, J. (1988):** The Theory of Industrial Organization. MIT Press.
- **Vives, X. (2009):** Oligopoly Pricing: Old Ideas and New Tools. MIT Press.
- **Belleflamme, P., Peitz, M. (2016):** Industrial Organization Markets and Strategies. Cambridge University Press.
- **Mas-Colell, Whinston, and Green (1997),** Microeconomic Theory, Oxford University Press.

IO Applications and Empirics

- **Aguirregabiria, V. (2019):** Empirical Industrial Organization: Models, Methods, and Applications.
- **Laffont, J.-J., Tirole, J., 2000:** Competition in Telecommunications.
- Viscusi, W. K., J. Harrington, Joseph E., and D. E. M. Sappington (2018): Economics of Regulation and Antitrust. MIT Press.

Auction Theory and Empirics

- Krishna, V. (2010): Auction Theory, 2nd ed. Academic Press
- Paarsch, H.J., Hong, H. (2006). An Introduction to the Structural Econometrics of Auction Data. MIT Press.

Evaluation

The final evaluation will base on the class participation, including discussion (20%) and presentations (30%) and a replication of classical papers (30% for the submitted code and 20% for the summarized draft).

Presentation and Replication

Depending on the size of final enrollment and class schedule, each student (or group of students) will be required to present 1 – 2 research papers. Each presentation should last for 60 minutes including questions and responses. The presentation should

- summarize the paper;
- identify the paper's contributions;
- discuss weaknesses of the paper;
- make suggestions for further research;
- **(for one paper) replicate the key finding of the paper** (will be specifically required by the instructor).

Lecture outline and Reading List

The topics of the course and some related readings are listed below. I will announce required readings one week before each lecture. Some topics may be adjusted over the course to account for time constraints and class interests.

Lecture 1: Introduction to (New) Empirical Industrial Organization

Required Reading: [Bresnahan \(1989\)](#); [Reiss and Wolak \(2007\)](#), Chapter 1 of [Victor Aguirregabiria \(2019\)](#)

- Economic questions and data in EIO;
- Examples of structural models in EIO;
- Skills required to conduct EIO researches

Lecture 2: Review of Game Theory

Required Reading: Part II in MWG (Game Theory, Chapters 7, 8 and 9)

- Dominant strategies and rationalizable strategies;
- Nash Equilibrium (NE) in static games of complete information;
- Bayesian Nash Equilibrium (BNE) in static games of incomplete information;
- Subgame Perfect Nash Equilibrium (SPNE) in dynamic games of complete information
- **(Optional)** Perfect Bayesian Equilibrium (PBE) in dynamic games of incomplete information

Lecture 3&4: Classical Oligopoly Theory

Required Reading: Chapter 5 of [Tirole \(1988\)](#) and Chapters 4, 5 and 7 of [Vives \(2009\)](#)

Useful Reading: [Kreps and Scheinkman \(1983\)](#); [Klemperer and Meyer \(1989\)](#)

- Bertrand competition and its variants with asymmetric costs, capacity constraint, uncertain costs; DRS (IRS) technology;
- Capacity-then-Bertrand Competition;
- Commitment and Stackelberg Model;
- **(Optional)** Supply Function Equilibrium (SFE)

Lecture 5&6: Empirical Static Oligopoly Models with Complete Information

Read Chapter 4 of [Victor Aguirregabiria \(2019\)](#) and [Bresnahan \(1982\)](#) to understand the identification of static oligopoly models with complete information. Then read [Genesove and Mullin \(1998\)](#) for testing conducts in U.S. sugar industry, and [Wolfram \(1999\)](#); [Sweeting \(2007\)](#) for measuring market power in British electricity market.

- Identification of marginal cost and/or market conduct (or structure or ownership) for markets with
 - homogeneous products;

- differentiated products;
- multiproduct;
- Estimation using IV and GMM

Required Reading:

- Chapter 4 of [Victor Aguirregabiria \(2019\)](#)
- [Bresnahan \(1982\)](#)
- [Genesove and Mullin \(1998\)](#)
- [Wolfram \(1999\)](#); [Sweeting \(2007\)](#)

Useful Reading:

- [Wilson \(2002\)](#); [Cramton \(2017\)](#)

Lecture 7&8: Empirical Models of Static Oligopoly Models with Incomplete Information

Read Chapter 8 of [Vives \(2009\)](#) for game-theoretic treatment of competition with incomplete information; then read Chapters 2 and 3 of [Krishna \(2010\)](#) for some basic knowledge of auction theory. [Laffont and Vuong \(1996\)](#); [Guerre, Perrigne, and Vuong \(2000\)](#) are seminal for identification of auction models. [Wolak \(2003\)](#) provides results for identification and estimation of cost functions using bidding data from electricity market, and ? aims for identification of forward positions using bidding data and observed costs.

- Standard auctions and bidding strategies;
- Revenue Equivalence Theorem and optimal auction;
- Identification of standard auctions in symmetric IPV paradigm

Required Reading:

- [Wolak \(2003\)](#)
- [Hortaçsu and Puller \(2008\)](#)

Lecture 9: Simulation-Based Methods

Read Chapters 9 and 10 of [Train \(2009\)](#) and Chapters 12 and 13 of [Cameron and Trivedi \(2005\)](#).

Lecture 9&10: Empirical Models of Two-Stage Oligopoly Models

Read [Allaz and Vila \(1993\)](#); [Bushnell \(2007\)](#). [Wolak \(2007\)](#)

Lecture 11&12: Multiunit Auctions: Uniform or Discriminatory

Read [Wolfram \(1998\)](#)

Student Presentation

Students can pick the suggested topics below for presentation. Please take the suggested papers as the starting point and supplement institutional and theoretical background

Suggested Topics

Topic 1: Automobile Lottery v.s. Auction in China

[Li \(2018\)](#)

Topic 2: Forward Contracting and Vertical Integration

[Bushnell, Mansur, and Saravia \(2008\)](#) and [Puller \(2007\)](#)

Topic 3: Exchange of Information in Airline Competition

[Armantier and Richard \(2003\)](#) and [Vives \(2002\)](#)

Topic 4: Subsidizing EVs v.s. Charging Stations

[Springel \(2021\)](#) and [Li, Tong, Xing, and Zhou \(2017\)](#)

Topic 5: Land Market Auctions in China

[Cai, Henderson, and Zhang \(2013\)](#) and [Fang, Gu, and Zhou \(2019\)](#)

Topic 6: Value of Renewable Energy

[Gowrisankaran, Reynolds, and Samano \(2016\)](#)

Topic 7: Marginal Cost of Traffic Congestion in China

[Yang, Purevjav, and Li \(2020\)](#)

Topic 8: Imperfect Monitoring and Regulatory Costs of Enforcement

[Kang and Silveira \(2021\)](#)

Topic 9: Strategic Heterogeneity and Cognitive Hierarchy Model

[Hortaçsu, Luco, Puller, and Zhu \(2019\)](#) and [Camerer, Ho, and Chong \(2004\)](#)

References

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- FANG, H., Q. GU, AND L. A. ZHOU (2019): "The gradients of power: Evidence from the Chinese housing market," *Journal of Public Economics*, 176, 32–52.
- GENESOVE, D., AND W. P. MULLIN (1998): "Testing Static Oligopoly Models: Conduct and Cost in the Sugar Industry, 1890-1914," *RAND Journal of Economics*, 29(2), 355–377.
- GOWRISANKARAN, G., S. S. REYNOLDS, AND M. SAMANO (2016): "Intermittency and the value of renewable energy," *Journal of Political Economy*, 124(4), 1187–1234.
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- HORTAÇSU, A., F. LUCO, S. L. PULLER, AND D. ZHU (2019): "Does Strategic Ability Affect Efficiency? Evidence from Electricity Markets," *American Economic Review*, 109(12), 4302–4342.
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