ECON 688: Empirical Industrial Organization
Spring 2023
Instructor: Dong Woo Hahm (dongwooh@usc.edu)
Office hours: TBD

Course Summary This is the second course in the graduate sequence of Industrial Organization. The goal is to cover empirical methods used in industrial organization research, and/or more generally structural approaches to microeconomics as well as how to read such empirical papers. The course is meant to be useful for all students who aims to use a structural model to answer questions in applied microeconomics. The first section of the course will cover demand estimation from choice data. Demand systems often form the center of structural applied microeconomics papers and understanding how to deal with the problems that arise in demand estimation is crucial. We will start from basic econometrics of discrete choice models, and cover BLP, and dynamic discrete choice models etc. The second section will look at several different topics from an empirical point of view. These classes will be run as a mixture of lecture, reading group, and guest lectures. You should read the required papers in advance of the class and be prepared to discuss them.

Time and Location Wednesdays, 4:00-7:20 pm, room CPA161

Prerequisite ECON 601, 603, 611, 609, *Recommended but not necessary:* ECON 680.
Students who are not in their second year of Economics PhD: While the course is primarily intended for the second year Economics PhD students, other students are welcome. Please email me prior to registration to see if we can accomodate you.

Course Requirements

1. Participation (20%): Portions of the class are discussion-based. Where the syllabus lists a paper with a star next to it, this indicates that you must read the paper before the class meeting. *You will be required to prepare a 15 minutes summary presentation of the paper.* A presenter will be picked *randomly* every week.

2. Problem set (20%): There will be at least one problem set assigned, mostly coding.

3. Referee report (20%): One referee report will be assigned. You will need to complete the referee report along with a cover letter summarizing your analysis. One goal of the course is to teach you how to read papers for the purpose of providing constructive criticism. Thus, this assignment will be set after you have had a chance to read and discuss several papers.

4. Research Proposal (40%): You will be required to draft a research proposal. You will soon start dissertation research so now is the right time to start thinking about ideas. You will be asked to draft a research proposal which you will present during the last few classes. Use this opportunity to look for topics that excite you for your dissertation. An ideal proposal should include:

    - Motivation: Why are you interested in this topic? Try to convince other economists that your project is interesting.
    - Question: What is the precise goal you are after by pursuing the project?
    - Contribution: How does your project contribute to the literature, and what new things can we learn?

- Data: What are (potential) data sources that you can use to answer the question?
- Empirical approach: How would you use the data to answer the question?
- Limitations: What are the limitations of the project? It is important to think hard and distinguish what you can do and cannot do, and how you would defend those weaknesses. More importantly, it guides you toward subsequent projects and build your own research agenda.

Other Resources

- Tirole (1988) is an excellent general reference textbook for underlying theory of IO.
- I found the book Train (2009) very helpful for the basics of discrete choice models. An online pdf version can be found here.
- For bayesian approaches, the book Rossi, Allenby and McCulloch (2003) is also very helpful.
- For integrating likelihood with multivariate normal random vectors, Heiss and Winschel (2008)'s sparse grids for quadrature is very helpful. It can be found here.

Course Outline *Note: the course material is subject to change throughout the semester.*
An asterisk (*) right to a paper means it is required reading and you'll have to prepare a summary presentation.

- Week 1 (1/11): Introduction and econometric foundations — MLE, Method of Moments, Hierarchial Bayes
- Week 2 (1/18): Demand system estimation (Part 1) — discrete choice models (logit, nested logit, mixed logit, probit, estimation–MLE and Bayesian methods, EM)
  Train (2009); Rossi, Allenby and McCulloch (2003)
- Week 3 (1/25): Demand system estimation (Part 2) — IV models of product differentiation Part 1
  Review: Gandhi and Nevo (2021)
  Berry (1994); Berry, Levinsohn and Pakes (1995)
  A practitioner's guide to BLP: Nevo (2000)
- Week 4 (2/1): Demand system estimation (Part 3) — IV models of product differentiation Part 2
  Berry, Levinsohn and Pakes (2004); Petrin (2002)
- Week 5 (2/8): Single agent dynamics (Part 1) — Nested Fixed Point (NFXP) Maximum Likelihood Algorithms
  Rust (1987, 1994)
  NFXP Manual by Rust
- Week 6 (2/15): Single agent dynamics (Part 2) — Conditional Choice Probability (CCP) models
  Hotz and Miller (1993); Hotz et al. (1994); Arcidiacono and Miller (2011); Gowrisankaran and Rysman (2012)*

- Week 7 (2/22): Applications—merger analysis
  US Department of Justice Horizontal Merger Guidelines
  Hausman, Leonard and Zona (1994); Miller and Weinberg (2016); Capps, Dranove and Satterthwaite (2003); Farrell and Shapiro (2010); Conlon and Mortimer (2021); Bresnahan (1987); Nevo (2001)*

- Week 8 (3/1): Applications—vertical contracting and integration
  Hastings and Gilbert (2005); Ackerberg and Botticini (2002); Asker (2016); Lee (2013); Chipty (2001); Hortacsu and Syverson (2007); Villas-Boas (2007); Mortimer (2008)*

- Week 9 (3/8): Applications—housing markets
  Bayer, Ferreira and McMillan (2007); Bayer et al. (2016); Song (2022)

- Week 10 (3/15): Spring recess

- Week 11 (3/22): Applications—education markets (Part 1)
  Dinerstein, Neilson and Otero (2022); Neilson (2021); Dinerstein and Smith (2021); Allende, Gallego and Neilson (2019); Allende (2019)*

- Week 12 (3/29): Applications—education markets (Part 2)
  Abdulkadiroğlu, Agarwal and Pathak (2017); Larroucau and Rios (2022); Idoux (2022); Laverde (2022); Luflade (2018); Son (2020); Agarwal and Somaini (2018); Hahm and Park (2022); Park and Hahm (2022); Artemov, Che and He (2022); Che, Hahm and He (2022); Otero, Barahona and Dobbin (2021); Akbarpour et al. (2022); Pathak and Shi (2021); Abdulkadiroğlu et al. (2020); Kapor, Neilson and Zimmerman (2020)*
  Guest lecture: Minseon Park

- Week 13 (4/5): Applications—market design
  Gentry et al. (2018); Waldinger (2021); Zhang (2010); Verdier and Reeling (2022); Agarwal et al. (2021)*

- Week 14 (4/12): research proposal presentation

- Week 15 (4/19): research proposal presentation

- Week 16 (4/26): research proposal presentation

References

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