Economics 567

2020 Paul Schrimpf schrimpf@mail.ubc.ca

This course is about empirical industrial organization. It focuses on what is known as "New Empirical Industrial Organization" — the use of structural econometric techniques to study specific markets. Notes and assignments will be posted on the main course web page at http://faculty.arts.ubc.ca/pschrimpf/565/565.html. UBC Canvas https://canvas.ubc.ca/ will be also be used to post grades and share material that should not be publicly posted on the web.

1 Schedule

	Day(s)	Time	Location
Lecture	Tuesday & Thursday	9:30am-11:00am	Iona 533
Office hours	Tuesday 12:00pm-1:00pm	Iona 107	

Office hours are subject to change. Any changes in office hours will be posted on the course web page. If you cannot come to my office hours, feel free to drop by anytime or email me to schedule an appointment.

2 Course Work

Course work will consist of a presentation, problem sets or replication of a paper, and a research proposal. Required reading should be completed before each lecture. Participation in class discussion is expected, especially during student presentations. If there is not enough discussion, weekly summaries of readings will be required.

2.1 Presentation

Each student will present a paper. The paper should be related to or on the reading list. Presentations will occur throughout the term. Each presentation should last for 30 minutes including questions. The presentation should:

- 1. Summarize the paper
- 2. Identify the paper's contributions
- 3. Discuss weaknesses of the paper
- 4. Make suggestions for further research

2.2 Problem Sets or Replication

There will three to five problem sets that will each involve reproducing some results from a paper. Some coding will be required for all problem sets. The problem sets will include instructions and example code using Julia. You may use another programming language if you wish, but I expect that will be more difficult. I encourage you to work together on problem sets. Sharing code is acceptable, as long you clearly indicate with whom you worked

Instead of completing the problem sets, students may choose to replicate one or two papers. If you want to pursue this route, you should discuss your choice of paper(s) to replicate with me by the due date of the first problem set. The paper(s) you replicate must include some structural estimation.

2.3 Research Proposal

A research proposal will be due on April 21st. I encourage sending a rough draft of your proposal by the last day of class, April 7th. I will give feedback on rough drafts within a week. Your proposal should clearly state a research question. It should include a related literature review. It should also include a description of some of the following: institutional background, data, and empirical approach.

2.4 Grading

The grade for this course will be 20% presentation, 45% problem sets / replication, 25% research proposal, and 10% participation. Participation includes attending lecture, contributing to discussion, attending office hours, and emailing me questions.

3 Course Outline

The topics of the course and some related readings are listed below. The slides for each topic contain the most up to date references. I will announce required readings at the end of each lecture. The order of topics may be changed depending on class interest. We are unlikely to cover all of the topics. The notes of Aguirregabiria (2017) and the *Handbook* chapters by Reiss and Wolak (2007) and Ackerberg et al. (2007) provide good overviews of many of these topics. The references therein are good sources of further reading.

- 1. Introduction
 - Recommended: Aguirregabiria (2017) chapter 1, Reiss and Wolak (2007)
 - Suggested: Einav and Levin (2010)
- 2. Estimation of production functions
 - Recommended: Ackerberg et al. (2007) section 2, Olley and Pakes (1996)
 - Suggested: Levinsohn and Petrin (2003), Ackerberg, Caves, and Frazer (2015), Aguirregabiria (2017) chapter 2, Gandhi, Navarro, and Rivers (2013), Wooldridge (2009)
- 3. Static demand and supply of differentiated products
 - Recommended: Ackerberg et al. (2007) section 1, Berry, Levinsohn, and Pakes (1995)
 - Suggested: Berry (1994), Aguirregabiria (2017) chapter 3, Nevo (2000), Nevo (2001)
- 4. Market entry
 - Recommended: Aguirregabiria (2017) chapter 5, Bresnahan and Reiss (1991),
 - Suggested: Bresnahan and Reiss (1990), Seim (2006), Sweeting (2009), Jia (2008)
- 5. Single-agent dynamic structural models
 - Recommended: Rust (1994)
 - Suggested: Aguirregabiria (2017) chapters 7, Rust (1987), Hotz and Miller (1993), Timmins (2002), Aguirregabiria and Mira (2002)
- 6. Dynamic oligopoly
 - Recommended: Ackerberg et al. (2007) section 3, Aguirregabiria and Mira (2010)
 - Suggested: Aguirregabiria (2017) chapters 6, 9, Magnac and Thesmar (2002), Pesendorfer and Schmidt-Dengler (2008), Bajari, Benkard, and Levin (2007), Pakes, Ostrovsky, and Berry (2007), Aguirregabiria and Mira (2007), Bajari et al. (2009), Ryan (2012)
- 7. Auctions
- 8. Contracting and asymmetric information
- 9. Search and matching
- 10. Networks

References

- Ackerberg, D., C. Lanier Benkard, S. Berry, and A. Pakes. 2007. "Econometric tools for analyzing market outcomes." Handbook of econometrics 6:4171–4276. URL http://www.sciencedirect.com/science/article/pii/S1573441207060631. Ungated URL http://people.stern.nyu.edu/acollard/Tools.pdf.
- Ackerberg, Daniel A., Kevin Caves, and Garth Frazer. 2015. "Identification Properties of Recent Production Function Estimators." Econometrica 83 (6):2411–2451. URL http://dx.doi.org/10.3982/ECTA13408.
- Aguirregabiria, Victor. 2017. "Empirical Industrial Organization: Models, Methods, and Applications." URL http://www.individual.utoronto.ca/vaguirre/courses/eco2901/teaching_io_toronto.html.
- Aguirregabiria, Victor and Pedro Mira. 2002. "Swapping the Nested Fixed Point Algorithm: A Class of Estimators for Discrete Markov Decision Models." <u>Econometrica</u> 70 (4):pp. 1519–1543. URL http://www.jstor.org/stable/3082006.
- ——. 2007. "Sequential Estimation of Dynamic Discrete Games." <u>Econometrica</u> 75 (1):pp. 1–53. URL http://www.jstor.org/stable/4123107.
- ——. 2010. "Dynamic discrete choice structural models: A survey." <u>Journal of Econometrics</u> 156 (1):38 67. URL http://www.sciencedirect.com/science/article/pii/S0304407609001985.
- Bajari, Patrick, C. Lanier Benkard, and Jonathan Levin. 2007. "Estimating Dynamic Models of Imperfect Competition." Econometrica 75 (5):pp. 1331–1370. URL http://www.jstor.org/stable/4502033.
- Bajari, Patrick, Victor Chernozhukov, Han Hong, and Denis Nekipelov. 2009. "Nonparametric and Semiparametric Analysis of a Dynamic Discrete Game." Tech. rep. URL http://www.econ.yale.edu/seminars/apmicro/am09/bajari-090423.pdf.
- Berry, Steven, James Levinsohn, and Ariel Pakes. 1995. "Automobile Prices in Market Equilibrium." Econometrica 63 (4):pp. 841–890. URL http://www.jstor.org/stable/2171802.
- Berry, Steven T. 1994. "Estimating Discrete-Choice Models of Product Differentiation." The RAND Journal of Economics 25 (2):pp. 242–262. URL http://www.jstor.org/stable/2555829.
- Bresnahan, Timothy F. and Peter C. Reiss. 1990. "Entry in Monopoly Markets." The Review of Economic Studies 57 (4):pp. 531–553. URL http://www.jstor.org/stable/2298085.
- ——. 1991. "Entry and Competition in Concentrated Markets." <u>Journal of Political Economy</u> 99 (5):pp. 977–1009. URL http://www.jstor.org/stable/2937655.
- Einav, L. and J. Levin. 2010. "Empirical Industrial Organization: A Progress Report." <u>Journal of Economic</u> Perspectives 24 (2):145–162. URL http://www.aeaweb.org/articles.php?doi=10.1257/jep.24.2.145.
- Gandhi, A., S. Navarro, and D. Rivers. 2013. "On the Identification of Production Functions: How Heterogeneous is Productivity?" URL https://sites.google.com/site/econsalvador/Research/production_9_25_13_FULL.pdf?attredirects=0.
- Hotz, V. Joseph and Robert A. Miller. 1993. "Conditional Choice Probabilities and the Estimation of Dynamic Models." The Review of Economic Studies 60 (3):pp. 497–529. URL http://www.jstor.org/stable/2298122.
- Jia, P. 2008. "What Happens When Wal-Mart Comes to Town: An Empirical Analysis of the Discount Retailing Industry." <u>Econometrica</u> 76 (6):1263–1316. URL http://onlinelibrary.wiley.com/doi/10.3982/ECTA6649/abstract.
- Levinsohn, James and Amil Petrin. 2003. "Estimating Production Functions Using Inputs to Control for Unobservables." The Review of Economic Studies 70 (2):pp. 317–341. URL http://www.jstor.org/stable/3648636.
- Magnac, Thierry and David Thesmar. 2002. "Identifying Dynamic Discrete Decision Processes." <u>Econometrica</u> 70 (2):801–816. URL http://www.jstor.org.libproxy.mit.edu/stable/2692293.
- Nevo, A. 2000. "A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand." <u>Journal of Economics & Management Strategy</u> 9 (4):513–548.

- Nevo, Aviv. 2001. "Measuring Market Power in the Ready-to-Eat Cereal Industry." Econometrica 69 (2):pp. 307–342. URL http://www.jstor.org/stable/2692234.
- Olley, G.S. and A. Pakes. 1996. "The dynamics of productivity in the telecommunications equipment industry." Econometrica 64 (6):1263–1297. URL http://www.jstor.org/stable/2171831.
- Pakes, Ariel, Michael Ostrovsky, and Steven Berry. 2007. "Simple Estimators for the Parameters of Discrete Dynamic Games (With Entry/Exit Examples)." The RAND Journal of Economics 38 (2):pp. 373–399. URL http://www.jstor.org/stable/25046311.
- Pesendorfer, Martin and Philipp Schmidt-Dengler. 2008. "Asymptotic Least Squares Estimators for Dynamic Games1." Review of Economic Studies 75 (3):901–928. URL http://dx.doi.org/10.1111/j.1467-937X. 2008.00496.x.
- Reiss, P.C. and F.A. Wolak. 2007. "Structural econometric modeling: Rationales and examples from industrial organization." Handbook of econometrics 6:4277–4415. URL http://www.sciencedirect.com.ezproxy.library.ubc.ca/science/article/pii/S1573441207060643.
- Rust, John. 1987. "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher." Econometrica 55 (5):pp. 999–1033. URL http://www.jstor.org/stable/1911259.
- ——. 1994. "Chapter 51 Structural estimation of markov decision processes." Elsevier, 3081–3143. URL http://www.sciencedirect.com/science/article/B7GX7-4FPWV09-P/2/e9b682c3d248e68bdb50c9fbe88ca778.
- Ryan, S.P. 2012. "The costs of environmental regulation in a concentrated industry." <u>Econometrica</u> 80 (3):1019–1061. URL http://onlinelibrary.wiley.com/doi/10.3982/ECTA6750/abstract.
- Seim, K. 2006. "An empirical model of firm entry with endogenous product-type choices." The RAND Journal of Economics 37 (3):619–640.
- Sweeting, Andrew. 2009. "The Strategic Timing Incentives of Commercial Radio Stations: An Empirical Analysis Using Multiple Equilibria." The RAND Journal of Economics 40 (4):pp. 710–742. URL http://www.jstor.org/stable/25593735.
- Timmins, Christopher. 2002. "Measuring the Dynamic Efficiency Costs of Regulators' Preferences: Municipal Water Utilities in the Arid West." Econometrica 70 (2):pp. 603–629. URL http://www.jstor.org/stable/2692284.
- Wooldridge, Jeffrey M. 2009. "On estimating firm-level production functions using proxy variables to control for unobservables." Economics Letters 104 (3):112 114. URL http://www.sciencedirect.com/science/article/pii/S0165176509001487.