

Empirical Industrial Organization: Syllabus – Davide Zufacchi

1. Introduction

- Introduction of the course
- Data and structural models in EIO
- Identification and Estimation (general overview)

2. Production functions

This lecture examines identification and estimation of production functions (fixed effects approach, control function methods, Levinsohn and Petrin, ACF, and De Loecker)

1. **De Loecker, J. and Syverson, C. (2021)** "Chapter 3 – An industrial organization perspective on productivity." *In Handbook of Industrial Organization, Volume 4*
2. **Van Beveren, I. (2012)** "Total factor productivity estimation: a practical review." *Journal of Economic Surveys*
3. **Olley, S. and Pakes, A. (1992)** "The dynamics of productivity in the telecommunications equipment industry." *Econometrica*
4. **Levinsohn, J. and Petrin, A. (2003)** "Estimating production functions using inputs to control for unobservables." *The Review of Economic Studies*

3. Consumer demand

This lecture examines identification and estimation of consumer demand models in product (from CES to multi-stage budgeting) and characteristics space (logit, nested logit, random coefficient logit).

1. **Nevo, A. (2011)** "Empirical models of consumer behavior." *Annual Review of Economics*
2. **Berry, S. T., Levinsohn, J. A. and Pakes, A. (1993)** "Automobile prices in market equilibrium: Part I and II"
3. **Berry, S. T. (1994)** "Estimating discrete-choice models of product differentiation." *The RAND Journal of Economics*
4. **Nevo, A. (2001)** "Measuring market power in the ready-to-eat cereal industry." *Econometrica*

4. Estimation of competition models

Given an estimate of demand elasticities, this lecture examines equilibrium conditions in different forms of competition to jointly identify marginal costs and the nature of competition in the industry (homogenous product, differentiated product, conjectural variation approach, and asymmetric/imperfect information)

1. **Genesove, D. and Mullin, W. P. (1998)** "Testing static oligopoly models: conduct and cost in the sugar industry, 1890-1914." *The RAND Journal of Economics*
2. **Sullivan, D. (1985)** "Testing hypotheses about firm behavior in the cigarette industry." *Journal of Political Economy*
3. **Michel, C, Jose Manuel Paz y Mino and Weiergraeber, S. (2024)** "Estimating industry conduct using promotion data." *The RAND Journal of Economics*

5. Market Entry

This lecture examines market entry models and the estimation of entry costs using the revealed preference principle. When doing so, it discusses multiple equilibria in structural models.

1. **Bresnahan, T. F. and Peter C. Reiss, P. C. (1991)** "Entry and competition in concentrated markets." *Journal of political economy*
2. **Mazzeo, M. J. (2002)** "Product choice and oligopoly market structure." *RAND Journal*

of Economics

3. **Jia, P. (2008)** "What happens when Wal-Mart comes to town: An empirical analysis of the discount retailing industry." *Econometrica*
4. **Ciliberto, F. and Tamer, E. (2009)** "Market structure and multiple equilibria in airline markets." *Econometrica*
5. **De Paula, A. (2013)** "Econometric analysis of games with multiple equilibria." *Annual Review of Economics*

*** Reading week ***

6. Dynamic games

This lecture introduces dynamic games by looking at patent renewal, inventories and dynamic pricing, sales and intertemporal consumer choice, and the determination of airplane networks.

1. **Pakes, A. (1986)** "Patents as options: Some estimates of the value of holding European patent stocks." *Econometrica*
2. **Aguirregabiria, V. (1999)** "The dynamics of markups and inventories in retailing firms." *The review of economic studies*
3. **Hendel, I. and Nevo, A. (2006)** "Measuring the implications of sales and consumer inventory behavior." *Econometrica*
4. **Aguirregabiria, V. and Ho, Chun-Yu (2012)** "A dynamic oligopoly game of the US airline industry: Estimation and policy experiments." *Journal of Econometrics*
5. **Aguirregabiria, V., Collard-Wexler, A. and Stephen P. Ryan, S. P. (2021)** "Dynamic games in empirical industrial organization." *Handbook of industrial organization. Vol. 4.*

7. Mergers

This lecture examines the competitive effects of mergers, focusing on both horizontal consolidation and vertical mergers. We will analyze their effects on pricing, market structure, and consumer welfare, while distinguishing between efficiency gains and anticompetitive effects.

1. **Miller, N. H., Sheu, G. and Matthew C. Weinberg, M. C. (2021)** "Oligopolistic price leadership and mergers: The united states beer industry." *American Economic Review*
2. **Björnerstedt, J. and Frank Verboven, F. (2016)** "Does merger simulation work? Evidence from the Swedish analgesics market." *American Economic Journal: Applied Economics* 8.3 (2016): 125-164.
3. **Crawford, G. S., Lee, R. S., Whinston, M. D., and Yurukoglu, A. (2018).** "The welfare effects of vertical integration in multichannel television markets." *Econometrica*
4. **Hortaçsu, A. and Syverson, C. (2007)** "Cementing relationships: Vertical integration, foreclosure, productivity, and prices." *Journal of political economy*

8. Innovation, R&D, and productivity

This lecture examines how R&D investments drive innovation and productivity growth. We first focus on the endogenous relationship between R&D investments and productivity, then explore market failures in innovation and how market size influence innovation incentives and outcomes.

1. **Griliches, Z. (1979)** "Issues in assessing the contribution of research and development to productivity growth." *The bell journal of economics*
2. **Doraszelski, U. and Jaumandreu, J. (2013)** "R&D and productivity: Estimating endogenous productivity." *Review of economic studies*
3. **Acemoglu, D. and Linn, J. (2004)** "Market size in innovation: Theory and evidence from the pharmaceutical industry." *Quarterly Journal of Economics*
4. **Jaffe, A. B., Trajtenberg, M. and Michael S. Fogarty, M. S. (2000)** "Knowledge spillovers and patent citations: Evidence from a survey of inventors." *American Economic Review*

9. Other strategic decisions

This lecture examines other firm strategic decisions, from quality, to advertising, vertical integration, environmental commitments, and workplace security.

1. **Crawford, G. S., Shcherbakov, O. and Matthew Shum, M. (2019)** "Quality overprovision in cable television markets." *American Economic Review*
2. **Lewis, R. A., and Rao, J. M. (2015)** "The unfavorable economics of measuring the returns to advertising." *The Quarterly Journal of Economics*
3. **Atalay, E., A. Hortaçsu, A. and Syverson, C. (2014)** "Vertical integration and input flows." *American Economic Review*
4. **Zufacchi, D., Sales, I., Leotta, S. (2025)** "Violent Competition in Illegal Sectors"
5. **Castelluccio, M. and Zufacchi, D. (2025)** "The market cost of environmental misconducts"
6. **Vasca, M. and Zufacchi, D. (2025)** "Work-related deaths"

10. Auctions

This lecture examines structural econometric methods for analyzing auction data, focusing on how to recover bidders' private value distributions from observed bids across different auction formats. We'll cover nonparametric identification strategies, estimation techniques that exploit bidders' first-order conditions, and recent advances in handling unobserved heterogeneity and incomplete data scenarios.

1. **Guerre, E., Perrigne, I. and Vuong, Q. (2000)** "Optimal nonparametric estimation of first-price auctions." *Econometrica*
2. **Haile, P. A. and Tamer, E. (2003)** "Inference with an incomplete model of English auctions." *Journal of Political Economy*
3. **Athey, A. and Haile, P. A. (2002)** "Identification of standard auction models." *Econometrica*
4. **Krasnokutskaya, E. (2011)** "Identification and estimation of auction models with unobserved heterogeneity." *The Review of Economic Studies*