## New Empirical Industrial Organization: Estimation and Policy Issues

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The so-called new empirical industrial organization (IO) is now a well established area of research that puts together game theoretic and econometric methods in order to model and predict the behavior of firms and consumers in strategic environments subject to potential policy interventions. This is particularly useful for the evaluation of competition policy and regulation. Competition authorities, for example, might want to know the reaction of firms to a merger.
Traditional (reduced form) methods could evaluate the welfare impact of the merger, once it happened but not before on, since any reduced form estimate would be invalidated by a Lucas critique. Structural estimation, instead, may be able to identify the different elements of the strategic interaction of the firms and predict how these firms would behave under a different market environment.

Participants in this course will familiarize with some of the techniques needed for the correct estimation and evaluation of alternative competition policies. The course will emphasize the need of a correct identification of the different effects. It will also pay attention to the sophisticated econometric techniques that sometimes are needed to estimate the models. Applications will cover topics of special relevance for European anti-trust and regulation such as the automobile industry and the government-promoted auctions in regulated industries such as telecommunications.

- **Demand Estimation with Market Power.**
  - Identification problems.
  - Measures of market concentration.
  - Oligopolio. Cournot model. Conjectural variations.
  - Reduced form analysis. Functional form assumptions.
  - Structural form analysis: Static and repeated oligopoly models..

  Readings:

  Baker, J. and T. Bresnahan (1988): "Estimating the Residual Demand Curve Facing a Single Firm," *International Journal of Industrial Organization*, 6, 283-300.

  Ellison, G. (1994): "Theories of Cartel Stability and the Joint Executive Committee," *Rand Journal of Economics*, 25, 37-57.

  Porter, R. (1983): "A Study of Cartel Stability: The Joint Executive Committee, 1880-1886," *Bell Journal of Economics*, 14, 301-314.

  Tirole, J. (1988): *The Theory of Industrial Organization*, ch. 5. MIT Press.

- **Demand Estimation with Differentiated Products.**
  - Product differentiation and market power.
  - Vertical and Horizontal Differentiation.
  - Unobserved heterogeneity.
  - Discrete choice models for the analysis of markets with differentiated products.
  - Application to the analysis of horizontal mergers.

  Readings:

  Berry, S. (1994): "Estimating Discrete Choice Models of Oligopoly Product Differentiation," *Rand Journal of Economics*, 25, 242-262.

  Berry, S., J. Levinsohn, and A. Pakes (1995): "Automobile Prices in Market Equilibrium," *Econometrica*, 63, 841-890.

  Nevo, A. (2000): "A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand," *Journal of Economics & Management Strategy*, 9, 513-548.

Nevo, A. (2000): "Mergers with Differentiated Products: The Case of the Ready-To-Eat Cereal Industry," *Rand Journal of Economics*, 31, 395-421.
Tirole, J. (1988): *The Theory of Industrial Organization*, ch. 7. MIT Press.

- **Applications of Demand Models with Differentiated Products.**
  - Measuring welfare effects of the introduction of new products.
  - Competing against itself: Airbus' introduction of the A-380.
  - Market segmentation in the European automobile industry.
  - The phasing out of exclusive dealership in the European automobile industry.

Readings:

Brenkens, R. and F. Verboven (2004): "Liberalizing a Distribution System: The European Car Market." Mimeo, K.U. Leuven.
Irwin, D. and N. Pavnick. (2004): "Airbus vs. Boeing Revisited: International Competition in the Aircraft Market," *Journal of International Economics*, 64, 223-245.
Petrin, A. (2002): "Quantifying the Benefits of New Products: The Case of the Minivan," *Journal of Political Economy*, 110, 705-729.
Verboven, F. (1996): "International Price Discrimination in the European Car Market," *Rand Journal of Economics*, 27, 240-268.

- **Auctions I.**
  - Private information.
  - Common information.

Readings:

Guerre, E., I. Perrigne, and Q. Vuong (2000): "Optimal Non-Parametric Estimation of First-Price Auctions," *Econometrica*, 68, 525-574.
Krishna, V. (2002): *Auction Theory*, ch. 2 and 6. Academic Press.
Hendricks, K., J. Pinske and R. Porter (2003): "Equilibrium Implications of Equilibrium Bidding in First-Price, Symmetric, Common Value Acutions," *Review of Economic Studies*, 70, 115-145.

- **Auctions II.**
  - Collusion.
  - Multiple unit auctions.
  - Dynamic auctions.

Readings:

Jofre-Bonet, M. and M. Pesendorfer (2000): "Bidding Behavior in a Repeated Procurement Auction," *European Economic Review*, 40, 1006-1020.
Jofre-Bonet, M. and M. Pesendorfer (2003): "Identification and Estimation of a Dynamic Auction Game," *Econometrica*, 70, 1443-1489.
Cantillon, E. and M. Pesendorfer (2004): "Combination Bidding in Multi-Unit Auctions." *Mimeo*, Harvard Business School and London School of Economics.
Porter, R. and D. Zona (1993): "Detection of Bid Rigging in Procurement Auctions," *Journal of Political Economy*, 101, 518-538.

- **Estimation.**

Estimation of random coefficient logit models involve a considerable amount of technical issues and practicalities that are well explained in the Appendix to Nevo's 2000 JEMS paper. The appendix, data and Matlab code is available at Aviv Nevo's web page at Northwestern University.