

## Empirical Industrial Organization

Course title – Intitulé du cours	Empirical Industrial Organization
Level / Semester – Niveau /semestre	M2 / S2
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Bontemps Christian - Dubois Pierre
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
Lecture Hours – Volume Horaire CM	30
TA Hours – Volume horaire TD	
TP Hours – Volume horaire TP	
Course Language – Langue du cours	Anglais
TA and/or TP Language – Langue des TD et/ou TP	

### **Teaching staff contacts – Coordonnées de l'équipe pédagogique :**

Pierre Dubois (T687), email: [pierre.dubois@tse-fr.eu](mailto:pierre.dubois@tse-fr.eu), Office hours to be determined. Preferred mean of interaction: meeting by appointment. Pr. Dubois teaches the first part.

Christian Bontemps (T516), email: [christian.bontemps@tse-fr.eu](mailto:christian.bontemps@tse-fr.eu), Office hours to be determined. Preferred mean of interaction: meeting by appointment. Pr. Bontemps teaches the second part.

### **Course Objectives – Objectifs du cours :**

This is a course in the Graduate Industrial Organization sequence. We aim to give a solid grounding in understanding the structure of markets, and the strategic behavior of firms and their consumers. The objective of the course is to familiarize students with the structural econometric methodologies used in empirical industrial organization. At the end of the course, students are expected to know how to interpret the results in an empirical study, how to provide constructive criticism, and how to carry out an empirical research project. The course will be devoted to the study of demand modeling in IO and their applications, to the analysis of structural estimation of auction models, to regulation, asymmetric information models and entry models.

Beyond academic careers, there are clear policy issues (on anti-trust and regulation) and commercial implications (reflected by the growing economics consulting sector, which is based primarily around IO issues including pricing and competitive analysis). In addition to the economics discipline, estimating demand, understanding product positioning, pricing, the communication, gathering and use of product information, merger analysis, reputation and the other topics that we cover are central concerns in the literature on marketing, strategy and information systems.

The course will consist of two parts:

Part I: Demand modeling in IO and applications, taught by Pierre Dubois.

Part II: Five applied Topics in IO (entry models, productivity and production function, cost frontier estimations, estimation of auction models, models of regulation) taught by Christian Bontemps.

### **Prerequisites – Pré requis :**

Knowledge of linear and non linear econometric methods, generalized method of moments is required.

To perform the assignments, you will need to use Matlab, R or Stata or other econometric software. R will be used in the second part with C. Bontemps.

**Practical information about the sessions – Modalités pratiques de gestion du cours :**

There are several kinds of tasks you'll have to do:

1. There will be assigned readings for each class, marked with one asterisk (\*). We strongly recommend you to do the readings before class, as it will allow you to understand the material better.
2. In some lectures one of the required readings will be marked with a double asterisk (\*\*) meaning you are asked to prepare a brief presentation (5 slides) summarizing the paper and explaining what are the main insights.

**Grading system – Modalités d'évaluation :**

The class will have small problem sets due at the end of the sequence and a small research projects (to be chosen among two, i.e. one for each part) that determine the grades. You are encouraged to collaborate with your classmates for these works. You'll have the opportunity to discuss progress during office hours.

**Bibliography/references – Bibliographie/références :**

References:

Part I. Demand for differentiated products and IO applications

Introduction

1. Differentiated products demand

1.1. Theory and estimation on micro data

Hausman J., G. Leonard, and D. Zona (1994) ""Competitive Analysis with Differentiated Products""  
Annales d'Économie et de Statistique, 34, 159-180

McFadden D. and K. Train (2000) ""Mixed MNL Models for Discrete Response""  
Journal of Applied Econometrics, 15, 5, 447-470.

Train K. (2009) Discrete Choice Methods with Simulation, Cambridge University Press

1.2. Theory and estimation on aggregate data

(\*) Berry, S. T. (1994) ""Estimating discrete-choice models of product differentiation""  
RAND Journal of Economics, 25, 2, 242-262

(\*) Berry S. T., J. Levinsohn, and A. Pakes (1995) ""Automobile prices in market equilibrium""  
Econometrica, 63, 4, 841-890

Nevo, A. (2000) ""A practitioner's guide to estimation of random coefficients logit models of demand""  
Journal of Economics & Management Strategy, 9, 4, 513-548

Knittel C. R. and K. Metaxoglou (2014) ""Estimation of Random Coefficient Demand Models: Challenges, Difficulties and Warnings""  
Review of Economics and Statistics, 96, 1, 34-59

Petrin A. and K. Train (2010) ""A Control Function Approach to Endogeneity in Consumer Choice Models""  
Journal of Marketing Research, 47, 1, 3-13

2. Measuring market power and merger analysis

2.1 Market power estimation

(\*\*) Nevo, A. (2001) ""Measuring Market Power in the Ready-to-Eat Cereal Industry"", *Econometrica*, 69(2), 307-342

## 2.2. Merger analysis and simulation

(\*) Nevo, A. (2000) ""Mergers with Differentiated Products: the Case of the Ready-to-Eat Cereal Industry"", *RAND Journal of Economics*, 31, 395-421.

Gowrisankaran, G., A. Nevo, and R. Town (2015) ""Mergers When Prices Are Negotiated: Evidence from the Hospital Industry"" *American Economic Review*, 105(1): 172-203

(\*\*) Michel C. (2013) ""Identification and Estimation of Intra-Firm and Industry Competition via Ownership Change"", Working Paper

Björnerstedt J. and F. Verboven (2013) ""Does Merger Simulation Work? Evidence from the Swedish Analgesics Market"", Working Paper

Houde, J.-F. (2012) ""Spatial Differentiation and Vertical Mergers in Retail Markets for Gasoline"" *American Economic Review*, 102(5): 2147-82.

## 3. Measuring consumer welfare

Trajtenberg M. (1989) ""The Welfare Analysis of Product Innovations, with an Application to Computed Tomography Scanners"" *Journal of Political Economy*, 97, 2, 444-479

(\*) Petrin (2002) ""Quantifying the Benefits of New Products: The Case of the Minivan,"" *Journal of Political Economy*, 110:705-729

Dubois P., R. Griffith, M. O'Connell (2014) ""The Effects of Banning Advertising in Junk Food Markets"" Working Paper

Bhattacharya D. (2015) ""Nonparametric Welfare Analysis for Discrete Choice"" forthcoming *Econometrica*

## 4. Identifying contracts in vertical relations

(\*) Bonnet C. and P. Dubois (2010) ""Inference on Vertical Contracts between Manufacturers and Retailers Allowing for Non Linear Pricing and Resale Price Maintenance"" *RAND Journal of Economics*, 41, 1, 139-164

Bonnet C. and P. Dubois (2014) ""Identifying Non Linear Pricing in Vertical Contracts: Empirical Estimation on Food Retailing in France""

(\*) Villas-Boas, S. B. (2007) ""Vertical Relationships between Manufacturers and Retailers: Inference with Limited Data,"" *Review of Economic Studies*, 74, 2, 625-652

(\*\*) Nurski L. and F. Verboven (2013) ""Exclusive Dealing as an Entry Barrier - Evidence from the Car Market""

## 5. Identifying margins with price discrimination or price constraints

Dubois P. and L. Lasio (2014) ""Identifying Industry Margins with Unobserved Price Constraints: Structural Estimation on Pharmaceuticals""

D'Haultfoeuille X., Durrmeyer I., P. Février, (2014) ""Automobile Prices in Market Equilibrium with Unobserved Price Discrimination""

(\*\*) Grennan, M. (2013), "Price discrimination and bargaining: Empirical evidence from medical devices", *American Economic Review* 103(1), 145--177.

#### 6. Consumer demand with limited information and advertising

(\*) Akerberg, D. (2001) "Empirically distinguishing informative and prestige effects of advertising" *Rand Journal of Economics* 32 (2), 316-333.

Akerberg, D. (2003) "Advertising, learning, and consumer choice in experience good markets: An empirical examination" *International Economic Review* 44 (3), 1007 - 1040.

(\*) Sovinsky-Goeree, M. (2008) "Limited information and advertising in the us personal computer industry" *Econometrica* 76 (5), 1017-1074.

Erdem T., Keane MP (1996) "Decision-making under uncertainty: Capturing dynamic brand choice processes in turbulent consumer goods markets" *Marketing Science*. 15(1):1--20

Anand B. and R. Shachar (2011) "Advertising, the matchmaker" *RAND Journal of Economics*, 42, 2, 205--245

Shum, M. (2004) "Does Advertising Overcome Brand Loyalty? Evidence from Breakfast Cereals" *Journal of Economics and Management Strategy*, 13: 241-272

Anderson, S., F. Ciliberto, J. Liukonyte, and R. Renault (2012) "Push-me pull-you: Comparative advertising in the OTC analgesics industry" *CEPR Discussion Paper* 8988.

#### 7. Applications on Industry and Trade

Berry S. T., J. Levinsohn, and A. Pakes (1999) "Voluntary Export Restraints on Automobiles: Evaluating a Trade Policy" *American Economic Review*, 89, 3, 400-430

(\*) Goldberg, P.K. (1995) "Product Differentiation and Oligopoly in International Markets: The Case of the U.S. Automobile Industry", *Econometrica*, 63, 891-951.

(\*) Goldberg, P.K. and R. Hellerstein (2013) "A Structural Approach to Identifying the Sources of Local-Currency Price Stability", *Review of Economic Studies*, 80(1), 175-210.

Bonnet C., P. Dubois, S.B. Villas Boas, D. Klapper (2013) "Empirical Evidence on the Role of Non Linear Wholesale Pricing and Vertical Restraints on Cost Pass-Through", *Review of Economics and Statistics* 95:2 500--515.

#### 8. Discrete/continuous Demand Models

Dubin, J.A. and D.L. McFadden (1984) "An econometric analysis of residential electric appliance holdings and consumption", *Econometrica*, 52 (2) 345-362

(\*) Dubois P. R. Griffith and A. Nevo (2014) "Do Prices and Attributes Explain International Differences in Food Purchases" *American Economic Review* 104(3), 832-67

(\*) Hanemann, W.M. (1984) "Discrete / Continuous models of consumer demand", *Econometrica*, 52(3), 541-561

Hendel I. (1999) "Estimating Multiple-Discrete Choice Models: An Application to Computerization Returns", *Review of Economic Studies*, 423-446.

Dubois P. and S. Jodar-Rosell (2010) "Price and Brand Competition Between Differentiated Retailers: A Structural Econometric Model", *CEPR Discussion Paper* 7847

Smith, H. (2004) "Supermarket choice and supermarket competition in market equilibrium", *Review of Economic Studies*, vol. 71 (1), 235-263

## 9. Dynamic Demand

(\*) Hendel I. and A. Nevo (2006) "Measuring the Implications of Sales and Consumer Inventory Behavior" *Econometrica*, 74(6), 1637-73.

Hendel I. and A. Nevo (2006) "Sales and Consumer Inventory" *Rand Journal of Economics*, Fall 2006

Hendel I. and A. Nevo (2013) "Intertemporal Price Discrimination in Storable Goods Markets", *American Economic Review* 103(7), 2722-51.

Perrone H. (2014) "Inventories, Unobservable Heterogeneity and Long Run Price Elasticities"

Nevo A., J. Turner and J. Williams (2014) "Usage-Based Pricing and Demand for Residential Broadband"

## Part II

### Topic 1 - Entry models

(\*)Berry, S. (1992), "Estimation of a Model of Entry in the Airline Industry", *Econometrica*, 60, 889-918.

Bresnahan, T. and P. Reiss (1991), "Entry and Competition in Concentrated Markets", *Journal of Political Economy*, 99, 977-1009.

(\*)Bresnahan, T. and P. Reiss (1990), "Entry in Monopoly Markets", *Review of Economic Studies*, 57, 531-553.

Cleeren, K., Verboven, F., Deekimpe, M.G., Gielens, K. (2010), "Intra- and Inter- Format Competition Among Discounters and Supermarkets", *Marketing Science*, 29, 456-473.

(\*)Mazzeo, M.J. (2002), "Product Choice and Oligopoly Market Structure", *Rand Journal of Economics*, 33, 221-242.

Seim, K. (2006), "An Empirical Model of Firm Entry with Endogenous Product-type Choices", *Rand Journal of Economics*, 37, 619-640.

### Topic 2 - Productivity and production functions

(\*)Blundell, R., and S. Bond (2000), "GMM Estimation with persistent panel data: an application to production functions", *Econometric Reviews*, 19:3, 321-340

Christensen, L.R., D.W. Jorgenson and L.J. Lau (1971), "Conjugate Duality and the Transcendental Logarithmic Production Function", *Econometrica*, 39, 255-256.

Diewert, W.E. (1971), "An Application of The Shephard Duality Theorem: A Generalized Leontief Production Function", *Journal of Political Economy*, 79, 481-507.

Greene, W. P (1997), "Frontier production functions" in *Handbook of applied econometrics*.

(\*)Levinsohn, J., and A. Petrin (2003), "Estimating Production Functions Using Inputs to Control for Unobservables", *Review of Economic Studies*, 70, 317-342.

(\*)Olley, G. Steven, and Ariel Pakes (1996), "The Dynamics of Productivity in the Telecommunications Equipment Industry", *Econometrica*, 64, 1263-1297.

#### Topic 3 - Cost and production frontiers

(\*)Aigner, C. A. K. Lovell, and P. Schmidt, "Formulation and estimation of stochastic frontier production function models," *Journal of Econometrics*, 6, 21–37, 1977.

(\*)Meeusen and J. van den Broeck, "Efficiency estimation from Cobb-Douglas production functions with composed error", *International Economic Review*, vol. 18, no. 2, pp. 435–444, 1977.

S. C. Kumbhakar and C. A. K. Lovell, *Stochastic Frontier Analysis*, Cambridge University Press, Cambridge, UK, 2000.

S. C. Kumbhakar and E. G. Tsionas, "Estimation of stochastic frontier production functions with input-oriented technical efficiency," *Journal of Econometrics*, vol. 133, no. 1, pp. 71–96, 2006.

Schmidt P. (1984), "An error structure for system of translog cost and share equations", Department of Economics, Michigan State University.

(\*)Schmidt P. and C.A.K. Lovell (1979), "Estimating technical and allocative inefficiency relative to stochastic production and cost frontiers", *Journal of Econometrics*, 9, 343-366.

#### Topic 4 - Empirical models of auctions

Athey, S., and P. Haile (2002): "Identification of Standard Auction Models", *Econometrica*, 70, 2107-2140.

(\*)Guerre, E., I. Perrigne and Q. Vuong, 2000, "Optimal Nonparametric Estimation of First Price Auctions", *Econometrica*, 68, 525-574.

(\*)Haile, P., and E. Tamer (2003), "Inference with an Incomplete Model of English Auctions", *Journal of Political Economy*, 111, 1-51.

Hendricks, K., J. Pinkse, and R. Porter (2003), "Empirical Implications of Equilibrium Bidding in First-Price, Symmetric, Common-Value Auctions", *Review of Economic Studies*, 70, 115-145.

Laffont, J. J. (1997), "Game Theory and Empirical Economics: the Case of Auction Data", *European Economic Review*, 1-36.

Laffont, J. J., and Q. Vuong (1996), "Structural Analysis of Auction Data", *American Economic Review, Papers and Proceedings*, 86, 414-420.

Li, T., I. Perrigne, and Q. Vuong (2000), "Conditionally Independent Private Information in OCS Wildcat Auctions", *Journal of Econometrics*, 98, 129-161.

(\*)Li, T., I. Perrigne, and Q. Vuong (2002), "Structural Estimation of the Affiliated Private Value Auction Model", *RAND Journal of Economics*, 33, 171-193.

#### Topic 5 - Empirical models of regulation

(\*)Gagnepain, P. and M. Ivaldi (2002), "Incentive Regulatory Policies: The Case of Public Transit Systems in France", *RAND Journal of Economics*, 33:4, 605-629.

Gagnepain, P., M. Ivaldi and D. Martimort (2013), "The Cost of Contract Renegotiation: Evidence from the Local Public Sector", *American Economic Review*, 103, 2352-2383.

Miravete, E. J. and Lars-Hendrik Röller (2004), "Estimating Markups under Nonlinear Pricing Competition", *Journal of the European Economic Association*, 2, 526-535.

(\*)Miravete, E. J. (2002), "Estimating Demand for Local Telephone Service with Asymmetric Information and Optimal Calling Plans", *The Review of Economic Studies*, 69, 943–971.

Perrigne I. and Q. Vuong, (2011) "Nonparametric Identification of a Contract Model With Adverse Selection and Moral Hazard", *Econometrica*, 79, 1499–1539.

(\*)Wolak F. (1994), "An Econometric Analysis of the Asymmetric Information, Regulator-Utility Interaction", *Annales d'Economie et de Statistique*, 1994, 13-69

**Distance learning – Enseignement à distance :**

Classe en ligne interactive