Course Title

Course title – Intitulé du cours	Empirical Industrial Organization II
Level / Semester – Niveau /semestre	Semester 2
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Chuqing Jin
Other teacher(s) – Autre(s) enseignant(s)	
Lecture Hours – Volume Horaire CM	15
TA Hours – Volume horaire TD	
TP Hours – Volume horaire TP	
Course Language – Langue du cours	English
TA and/or TP Language – Langue des TD et/ou TP	English

Teaching staff contacts:

Chuqing Jin: chuqing.jin@tse-fr.eu;
Office number: T688;
Office hour: Tuesday 14:00 – 15:00 (Zoom or in office);
Zoom link:
https://ut-capitole-fr.zoom.us/j/92870541761?pwd=5VOAoIaDrLK7xyCAkxukO4aWiBBcsF.1

Course Objectives:

Topics

- Static discrete game: entry/exit
- Single-agent dynamics
    - Dynamic demand
- Multi-agent dynamics
- Auction

These topics are analyzed from both a theoretical and an empirical perspective. Particular emphasis is given to recent empirical methods for the structural analysis of these markets. The goal is to be able to build, identify, and estimate these models, discuss the trade-offs in modelling choices, as well as to conduct counterfactuals and interpret their results.

Practical information about the sessions:

- This class will alternative between a "lecture style" and a "discussion style". Typically for each section, I will present the first few papers in lecture format and then announce that we will discuss a particular paper. For discussion papers, I will hand out a list of questions a week in advance. You are expected to come to class with answers to each question.
- Laptops or tablets are accepted in the class.
- I expect students to collaborate on assignments, such as discussing papers together for referee report or presentation. However, I expect each assignment to represent substantial independent work by the student.

Grading system:

There will be two "problem sets" based on the readings. They will be computer and data intensive. Make sure you have access to the relevant computer programs, such as Matlab, R, Python, Julia, SAS, Stata, or Gauss (or C/C++ if you are so inclined).

In addition, there will be one "referee report" assignments. A referee report is a 3-page critical summary of a paper relevant for this class. You are free to choose one of the papers in the references below, or other papers. Note if you choose one of the papers that will likely be covered in class (marked with * or Δ), you must turn it in before the paper is discussed in class. You must obtain my approval of your choice of paper for the referee report by the end of the second week of class.

Final grades are weighted as follows:

- Problem sets (2) : 60%
- Referee report (1) : 20%
- Class participation : 20%

All assignments are due on Fridays at 12pm (noon) Central European Time. The due dates for each assignment are listed under **important dates** below.

Important dates:

- Jan. 24th 2025: Submit choice of paper for referee report
- Feb. 7th 2025: First problem set due
- Mar. 7th 2025: Second problem set due
- Mar. 7th 2025: Referee report due

References:

The papers that will likely be covered in detail in lectures are marked with an asterisk (*). The papers for discussion are marked with a triangle (Δ). This syllabus will be updated online as the course progresses with additional papers and (*/Δ)'ed listings likely to be added.

Textbooks and overview articles

Tirole, J. (1988). The theory of industrial organization. MIT Press.

Wooldridge, J. M. (2010). Econometric analysis of cross section and panel data. MIT Press.

Cameron, A. C., & Trivedi, P. K. (2005). Microeconometrics: Methods and applications. Cambridge University Press.

Train, K. E. (2009). Discrete choice methods with simulation. Cambridge University Press.

Judd, K (2020). Computational Economics. https://kennethjudd.github.io/CompEcon2020/

Krishna, V. (2009). *Auction theory*. Academic press.

Handbook chapters:

- Aguirregabiria, V., Collard-Wexler, A., & Ryan, S. P. (2021). Dynamic games in empirical industrial organization. In Handbook of Industrial Organization (Vol. 4, No. 1, pp. 225-343). Elsevier.
- Athey, S., & Haile, P. A. (2007). Nonparametric approaches to auctions. Handbook of Econometrics, 6, 3847-3965.
- Doraszelski, U., & Pakes, A. (2007). A Framework for Applied Dynamic Analysis in IO. In Handbook of Industrial Organization, Vol. 3.
- Hortaçsu, A., & Perrigne, I. (2021). Empirical perspectives on auctions. In *Handbook of Industrial Organization* (Vol. 5, No. 1, pp. 81-175). Elsevier.

Static discrete game: entry/exit

*Bresnahan, T. and Reiss, P. (1991). Entry and competition in concentrated markets. Journal of Political Economy, 99:977–1009.

*Berry, S. (1992). Estimation of a model of entry in the airline industry. Econometrica, 60:889–917.

Mazzeo, M. (2002). Product choice and oligopoly market structure. RAND Journal of Economics, 33:1–22.

*Seim, K. (2006). An empirical model of firm entry with endogenous product-type choices. RAND Journal of Economics, 37:619–640.

Jia, P. (2008). What happens when Wal-Mart comes to town: An empirical analysis of the discount retailing industry. Econo met- rica, 76:1263–1316.

*Ciliberto, F. and Tamer, E. (2009). Market structure and multiple equilibria in airline markets. Econometrica, 77:1791–1828.

Eizenberg, A. (2014). Upstream innovation and product variety in the United Sstates home PC market. The Review of Economic Studies, 81:1003–1045.

*Sutton, J. (1991). Sunk Costs and Market Structure: Price Com- petition, Advertising and the Evolution of Concentration. MIT Press.

*Ellickson, P. (2007). Does Sutton apply to supermarkets? RAND Journal of Economics, 38:43–59.

Moment inequality

*Pakes, A., Porter, J., Ho, K., and Ishii, J. (2015). Moment inequalities and their application. Econometrica, 83:315–334.

Ho, K. (2009). Insurer-provider networks in the medical care market. American Economic Review, 99:393–430.

Dickstein, M. J., & Morales, E. (2018). What do exporters know?. The Quarterly Journal of Economics, 133(4), 1753-1801.

Single-agent dynamics

*Rust, J. (1987). Optimal replacement of GMC bus engines: An empirical model of Harold Zurcher. Econometrica, 55, 999–1033.

Pakes, A. (1986). Patents as Options: Some Estimates of the Value of Holding European Patent Stocks. Econometrica, 54(4).

*Hotz, J., & Miller, R. (1993). Conditional Choice Probabilities and the Estimation of Dynamic Models. Review of Economic Studies.

Hotz, J., Miller, R., Sanders, S., & Smith, J. (1994). A Simulation Estimator for Dynamic Models of Discrete Choice. Review of Economic Studies.

Magnac, T., & Thesmar, D. (2002). Identifying Dynamic Discrete Decision Processes. Ecma, 2002.

Timmins, C. (2002). Measuring the Dynamic Efficiency Costs of Regulators' Preferences: Municipal Water Utilities in the Arid West. Econometrica, 70(2).

Arcidiacono, P., & Miller, R. A. (2011). Conditional choice probability estimation of dynamic discrete choice models with unobserved heterogeneity. Econometrica, 79(6), 1823-1867.

Dynamic demand

*Ackerberg, D. A. (2003). Advertising, learning, and consumer choice in experience good markets: A structural empirical examination. International Economic Review, 44:1007–1040.

Hendel, I. and Nevo, A. (2006). Measuring the implications of sales and consumer stockpiling behavior. Econometrica, 74:1637–1673.

*Gowrisankaran, G. and Rysman, M. (2012). Dynamics of consumer demand for new durable goods. Journal of Political Economy, 120:1173–1219.

Δ Lee, R. S. (2013). Vertical integration and exclusivity in platform and two-sided markets. American Economic Review, 103(7), 2960-3000.

Multi-agent dynamics

Equilibrium

*Ericson, R., & Pakes, A. (1995). Markov-Perfect Industry Dynamics: A Framework for Empirical Work. Review of Economic Studies, 62(1), 53-82.

Pakes, A., & McGuire, P. (1994). Computing Markov-Perfect Nash Equilibria: Numerical Implications of a Dynamic Differentiated Product Model. RAND Journal of Economics, 25, 555-589.

*Pakes, A., & McGuire, P. (2001). Stochastic Algorithms, Symmetric Markov-Perfect Equilibrium, and the Curse of Dimensionality. Econometrica, 69(5), 1261-1281.

Doraszelski, U., & Satterthwaite, M. (2010). Computable Markov-perfect industry dynamics. RAND Journal of Economics, 41(2), 215-243.

*Fershtman, C., & Pakes, A. (2012). Dynamic games with asymmetric information: A framework for empirical work. The Quarterly Journal of Economics, 127(4), 1611-1661.

Benkard, C. L., Jeziorski, P., & Weintraub, G. Y. (2015). Oblivious equilibrium for concentrated industries. The RAND Journal of Economics, 46(4), 671-708.

*Ifrach, B., & Weintraub, G. Y. (2017). A framework for dynamic oligopoly in concentrated industries. The Review of Economic Studies, 84(3), 1106-1150.

Weintraub, G. Y., Benkard, C. L., & Van Roy, B. (2010). Computational methods for oblivious equilibrium. Operations research, 58(4-part-2), 1247-1265.

Estimation

*Pakes, A., Ostrovsky, M., and Berry, S. (2007). Simple estimators for the parameters of discrete dynamic games (with entry/exit examples). RAND Journal of Economics, 38:373–399.

*Bajari, P., Benkard, L., and Levin, J. (2007). Estimating dynamic models of imperfect competition. Econometrica, 75:1331–1370.

Aguirregabiria, V. and Mira, P. (2007). Sequential estimation of dynamic discrete games. Econometrica, 75:1–53.

Pesendorfer, M., & Schmidt-Dengler, P. (2008). Asymptotic least squares estimators for dynamic games. Review of Economic Studies, 75(3), 901-928.

Imai, S., Jain, N., & Ching, A. (2009). Bayesian estimation of dynamic discrete choice models. Econometrica, 77(6), 1865-1899.

Application

Ryan, S. (2012). The costs of environmental regulation in a concentrated industry. Econometrica, 80:1019–1062.

*Collard-Wexler, A. (2013). Demand fluctuations and plant turnover in the ready-mix concrete industry. Econometrica, 81:1003–1037.

*Jeon, J. (2022). Learning and investment under demand uncertainty in container shipping. The RAND Journal of Economics, 53(1), 226-259.

Δ Igami, M. (2017). Estimating the innovator's dilemma: Structural analysis of creative destruction in the hard disk drive industry, 1981–1998. Journal of Political Economy, 125(3), 798-847.

Goettler, R. L., & Gordon, B. R. (2011). Does AMD spur Intel to innovate more?. Journal of Political Economy, 119(6), 1141-1200.

*Takahashi, Y. (2015). Estimating a war of attrition: The case of the us movie theater industry. American Economic Review, 105(7), 2204-2241.

+ Policy Uncertainty in the Market for Coal Electricity: The Case of Air Toxics Standards (with Ashley Langer and Wendan Zhang) September 2024 Slides (Accepted, Journal of Political Economy)

Auction markets

*Guerre, Perrigne & Vuong (2000). "Optimal Nonparametric Estimation of First-Price Auctions," Econometrica, 2000, 68, 525-574.

Haile & Tamer, 2003. "Inference with an Incomplete Model of English Auctions," Journal of Political Economy, vol. 111(1), pages 1-51.

*Krasnokutskaya (2011). "Identification and Estimation in Procurement Auctions under Unobserved Auction Heterogeneity", Review of Economic Studies.

*Compiani, G., Haile, P., & Sant'Anna, M. (2020). Common values, unobserved heterogeneity, and endogenous entry in US offshore oil lease auctions. Journal of Political Economy, 128(10), 3872-3912.

Bhattacharya, V., Ordin, A., & Roberts, J. W. (2022). Bidding and drilling under uncertainty: An empirical analysis of contingent payment auctions. Journal of Political Economy, 130(5), 1319-1363.

Recent Job Market Papers on these topics:

Entry, exit, dynamics

Boehm, E. (2023). Intermediation, Choice Frictions, and Adverse Selection: Evidence from the Chilean Pension Market.

Chen, L. (2023). The Dynamic Efficiency of Policy Uncertainty: Evidence from the Wind Industry.

Elliott, J. (2022). Investment, Emissions, and Reliability in Electricity Markets.

Lopez, G. and Pareschi, F. (2023). Reducing Consumer Inertia in Tobacco Markets.

Li, A. (2023). Commitment, Competition, and Preventive Care Provision.

Yang, H. (2023). What Determines 401(k) Plan Fees? A Dynamic Model of Transaction Costs and Markups.

Zahn, M, (2023). Entry and Competition in Insurance Markets: Evidence from Medicare Advantage

Bodéré, P (2023). Dynamic Spatial Competition in Early Education: an Equilibrium Analysis of the Preschool Market in Pennsylvania

Tiew, A (2023). Flailing Firms and Joint Operating Agreements: An Application to U.S. Local Daily Print Newspapers from 1932 to 1992.

Obolensky (2024). Protect or Prepare? Crop Insurance and Adaptation in a Changing Climate.

Auction

Richert, E. (2023). Quantity Commitments in Multiunit Auctions: Evidence from Credit Event Auctions.

Allen, J., & Wittwer, M. (2023). Centralizing Over-the-Counter Markets? Journal of Political Economy, 131(12), 3310-3351.

Harris, A., & Nguyen, T. M. A. (2022). Long-term relationships and the spot market: Evidence from us trucking.