ECO2900H1F -- Industrial Organization I

Fall 2019

Tuesday 11 am – 1 pm

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Office hours: Tuesday 2:30 pm - 3:30 pm, or by appointment

Course Description:

This course introduces students to several important models that are used in empirical IO studies. It emphasizes on a balanced treatment of game theory and econometric techniques. It covers three topics: auctions, empirical contract theory, and numerical methods in IO.

The following books are useful general references for the different topics in this course:

Krishna, Vijay. *Auction Theory*. Academic Press, 2009

Osborne, Martin J., and Ariel Rubinstein. *A course in game theory*. MIT press, 1994.

Tirole, Jean. *The theory of industrial organization*. MIT press, 1988.

Grading:

There will be one midterm (Oct 29th, 2019), one problem set (due date: Nov 19th, 2019) and a term paper (due date: Dec 12th, 2019). The midterm counts for 25%, the problem set counts for 25% and the term paper counts for 50%. Collaboration on the problem sets is encouraged. You are encouraged to type your homework. Make sure to put your name and student number in the front page. Students can either hand in the problem set to the instructor by the end of the lecture on the due date, or hand in it to the receptionist of the economics department at least one day before the due date. No late problem sets will be accepted.

Topics:

A. <u>Numerical Methods in IO (4 weeks)</u>

This part introduces numerical methods that are of value in solving IO problems: optimization, solving nonlinear equations, approximation, integration and differentiation, and simulation methods.

References:

Judd, Kenneth. Numerical methods in economics. MIT press, 1998.

Miranda, Mario and Frackler, Paul. Applied computational economics and finance. MIT press, 2002

B. <u>Auctions (4 weeks)</u>

This part surveys the empirical auction literature. First, we introduce auction types, solution concepts, parameter of interest, revenue equivalence, early parametric approaches. Second, we discuss nonparametric identification and estimation of various auction models. Third, we study the literature on common value auctions and multi-unit auctions.

References:

*** Guerre, E., Perrigne, I., & Vuong, Q. (2000): "Optimal Nonparametric Estimation of First-Price Auctions," Econometrica, 68(3), 525-574.

*** Athey, S., & Haile, P. A. (2002): "Identification of standard auction models", Econometrica, 70(6), 2107-2140.

*** Haile, P. A., & Tamer, E. (2003): "Inference with an incomplete model of English auctions", Journal of Political Economy, 111(1), 1-51.

*** Haile, P. A., Hong, H., & Shum, M. (2003): "Nonparametric tests for common values at first-price sealed-bid auctions", No. w10105, National Bureau of Economic Research.

Guerre, E., Perrigne, I., & Vuong, Q. (2009): "Nonparametric Identification of Risk Aversion in First-Price Auctions under Exclusion Restrictions", Econometrica, 77(4), 1193-1227.

Hortacsu, A., & McAdams, D. (2010): "Mechanism choice and strategic bidding in divisible good auctions: An empirical analysis of the Turkish treasury auction market", Journal of Political Economy, 118(5), 833-865.

Krasnokutskaya, E. (2011): "Identification and estimation of auction models with unobserved heterogeneity", The Review of Economic Studies, 78(1), 293-327.

Marmer, V., & Shneyerov, A. (2012): "Quantile-based nonparametric inference for first-price auctions", Journal of Econometrics, 167(2), 345-357.

Marmer, V., Shneyerov, A., & Xu, P. (2013): "What model for entry in first-price auctions? A nonparametric approach", Journal of Econometrics, 176(1), 46-58.

Hu, Y., McAdams, D., & Shum, M. (2013): "Identification of first-price auctions with non-separable unobserved heterogeneity", Journal of Econometrics, 174(2), 186-193.

Liu, N. and Luo, Y., (2017): "A Nonparametric Test for Comparing Valuation Distributions in First‐Price Auctions". International Economic Review, 58(3), 857-888.

Luo, Y., & Wan, Y. (2018): "Integrated-quantile-based estimation for first-price auction models." Journal of Business & Economic Statistics, 36(1), 173-180.

Luo, Y., Perrigne, I., & Vuong, Q. (2018): "Auctions with ex post uncertainty". The RAND Journal of Economics, 49(3), 574-593.

Luo, Y., & Takahashi, H. (2019): "Bidding for Contracts under Uncertain Demand: Skewed Bidding and Risk Sharing." Available at SSRN 3364708.

Bolotnyy, V., & Vasserman, S. (2019): "Scaling Auctions as Insurance: A Case Study in Infrastructure Procurement." Working Paper.

C. **Empirical Contract Theory (3 weeks)**

This part studies empirical contract theory. In particular, we focus on models with adverse selection and moral hazard, such as nonlinear pricing, the CEO market and the insurance market.

References:

Wilson, Robert B. Nonlinear pricing. Oxford University Press, 1993.

Bolton, Patrick, and Mathias Dewatripont. Contract theory. MIT press, 2005.

Salanié, Bernard. The economics of contracts: a primer. MIT press, 2005.

Maskin, Eric, and John Riley. "Monopoly with incomplete information." The RAND Journal of Economics 15, no. 2 (1984): 171-196.

Ivaldi, Marc, and David Martimort. "Competition under nonlinear pricing."Annales d'Economie et de Statistique (1994): 71-114.

Armstrong, Mark. "Multiproduct nonlinear pricing." Econometrica (1996): 51-75.

Rochet, Jean-Charles, and Philippe Choné. "Ironing, sweeping, and multidimensional screening." Econometrica (1998): 783-826.

Armstrong, Mark. "Price discrimination by a many-product firm." The Review of Economic Studies 66, no. 1 (1999): 151-168.

Armstrong, Mark, and John Vickers. "Competitive price discrimination." RAND Journal of Economics (2001): 579-605.

Rochet, Jean-Charles, and Lars A. Stole. "Nonlinear pricing with random participation." The Review of Economic Studies 69, no. 1 (2002): 277-311.

Rochet, Jean-Charles, and Lars A. Stole. "The economics of multidimensional screening." Econometric Society Monographs 35 (2003): 150-197.

Rysman, Marc. "Competition between networks: A study of the market for yellow pages." The Review of Economic Studies 71, no. 2 (2004): 483-512.

Leslie, Phillip. "Price discrimination in Broadway theater." RAND Journal of Economics (2004): 520-541.

McManus, Brian. "Nonlinear pricing in an oligopoly market: The case of specialty coffee." The RAND Journal of Economics 38, no. 2 (2007): 512-532.

Armstrong, Mark, and John Vickers. "Competitive non-linear pricing and bundling." The Review of Economic Studies 77, no. 1 (2010): 30-60.

Luo, Yao, Isabelle Perrigne, and Quang Vuong. "Structural analysis of nonlinear pricing." Journal of Political Economy 126, no. 6 (2018): 2523-2568.

Chiappori, Pierre-Andre. "Econometric models of insurance under asymmetric information." In Handbook of insurance, pp. 365-393. Springer Netherlands, 2000.

Chiappori, Pierre-André, and Bernard Salanie. "Testing for asymmetric information in insurance markets." Journal of political Economy 108, no. 1 (2000): 56-78.

Perrigne, Isabelle, and Quang Vuong. "Nonparametric identification of a contract model with adverse selection and moral hazard." Econometrica 79, no. 5 (2011): 1499-1539.

Cohen, Alma, and Liran Einav. "Estimating risk preferences from deductible choice." The American economic review 97, no. 3 (2007): 745-788.

Finkelstein, Amy, and Kathleen McGarry. "Multiple dimensions of private information: evidence from the long-term care insurance market." American Economic Review 96, no. 4 (2006): 938-958.

Gayle, George-Levi, and Robert A. Miller. "Has moral hazard become a more important factor in managerial compensation?." The American Economic Review (2009): 1740-1769.

Gayle, George-Levi, and Robert A. Miller. "Identifying and testing models of managerial compensation." The Review of Economic Studies (2015): rdv004.