

Auction Theory:

An Introduction to Modeling Applied Topics Featuring Private Information

Tentative Syllabus

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Focus: The course will provide an illustration of the use of game theory to address applied economic issues. It will introduce auction theory with a minimal focus on mathematical techniques. Instead it will emphasize the relationship between an empirical issue to be modeled and the appropriate modeling techniques, such as choice of informational variables and structures, choice of environmental and valuation variables and structures, which variables are endogenous.

Grading: Each student's grade will be based entirely on his/her contributions to the learning of other students in the class. These contributions can include asking or answering questions or offering useful comments in class, arranging to summarize for the class a paper of interest (a as little as 5-10 minutes) or the relationship between a couple papers. These summaries can be on the course website or in class. In addition, postings on the website of questions and answers, links to websites of interest, and/or discussion of ongoing controversies can count as contributions.

Highly tentative schedule (the following topics are each estimated to take 3-3½ hours of class time):

1st: models to understand real-world phenomena, what auction theorists do naturally, and what research needs to be done

2nd: basic intro to auction theory, key concepts, examples of relations between assumptions and conclusions

3rd: where do prices come from? How are prices related to the information possessed by bidders, by seller

4th: relationships between auction rules, information flows, and bidders' incentives

5th: choice of endogenous variables, entry incentives

6th: multi-object auctions, rights to choose, computational manageability

7th: examples of applying auction structure to industrial economics questions

Readings: The only graduate text is Vijay Krishna, *Auction Theory*, 2nd Edition, Academic Press, 2010; students with interest in pursuing auction theory and an adequate mathematical background will wish to obtain and read the book. For many students, the book will be difficult, and stray considerably from the focus of the course. (Not required.)

Klemperer (2000), cite below, is a somewhat more accessible introductory survey, also somewhat less incongruent with the course focus. (Not required.)

Klemperer (2003), cite below, "Why Every Economist Should Learn Some Auction Theory," is probably the best introductory article for most students.

Rothkopf and Harstad (1994a), and Harstad and Pekec (2008), cites below, are notably more accessible and quite different in spirit. They will be discussed at the beginning of the course, and each student will be presumed to have at least skimmed both papers, carefully reading the introductions, and carefully reading at least one other section of his or her choosing in each paper.

Possible Readings (of course, an incomplete list):

- Azrieli, Y., and D. Levin (2009), "Dominance-Solvable Common-Value Large Auctions," working paper, Ohio State University Economics (pdf).
- Chung, K. S. and J. C. Ely (2001), "Foundations of Dominant Strategy Mechanisms", Economics working paper, Northwestern University (pdf).
- Chung, K. S. and J. C. Ely (2006), "Efficient and Dominance Solvable Solutions with Interdependent Valuations", Economics working paper, Northwestern University (pdf).
- Harstad, R. M., "Does a Seller Really Want Another Bidder?" *Applied Economics Research Bulletin*, (2008), 1st article published (pdf).
- Harstad, R. M., "Endogenous Competition Alters the Structure of Optimal Auctions," working paper (pdf).
- Harstad, R. M. (2010), "Auctioning the Right to Choose When Competition Persists" *Decision Analysis*, Special Michael Rothkopf Memorial Issue (March 2010) (pdf).
- Harstad, R. M. and R. F. Bordley (1996), "Lottery Qualification Auctions," in M. Baye, ed., *Advances in Applied Microeconomics*, Volume 6, JAI Press (pdf).
- Harstad, R. M., A. Pekec and I. Tsetlin (2008): "Information Aggregation in Auctions with an Unknown Number of Bidders," *Games and Economic Behavior*, 62, 476-508 (pdf).
- Harstad, R. M., and A. Pekec "Relevance to Practice and Auction Theory: A Memorial Essay for Michael Rothkopf" *Interfaces*, 38 (2008), 367-380 (pdf).
- Harstad, R. M., and M. H. Rothkopf, "Withdrawable Bids as Winner's Curse Insurance" *Operations Research*, 43 (1995), 983-94 (pdf).
- Harstad, R. M., and M. H. Rothkopf, "An Alternating Recognition Model of English Auctions," *Management Science*, 46 (2000), 1-18 (pdf).
- Klemperer, P. [Auction Theory: A Guide to the Literature](#), (2000).
- Klemperer, P. [Why Every Economist Should Learn Some Auction Theory](#) in *Advances in Economics and Econometrics: Invited Lectures to 8th World Congress of the Econometric Society*, M. Dewatripont, L. Hansen and S. Turnovsky (eds.), Cambridge University Press (2003).
- Mares, V. (2009), "Preemption and Jump Bidding - The Case Against Information Aggregation," MEDS working paper, Northwestern University (pdf).
- Mares, V. and R. M. Harstad, "Private Information Revelation in Common-Value Auctions," *Journal of Economic Theory*, 109 (2003), 264-282 (pdf).
- Mares, V. and M. Shor (2008), "Industry concentration in common value auctions: theory and evidence," *Economic Theory*, 35: 37-56 (pdf).
- Mares, V. and M. Shor (2008), "On the Competitive Effects of Bidding Syndicates," MEDS working paper, Northwestern University (pdf).
- Mares, V. and J. M. Swinkels (2008), "First and Second Price Mechanisms in Procurement and other Asymmetric Auctions," MEDS working paper, Northwestern University (pdf).
- Milgrom, P.R., and R.J. Weber (1982), "A Theory of Auctions and Competitive Bidding," *Econometrica* 50, 1089-1122 (pdf).
- Perry. M. and P. J. Reny (2002), "An Efficient Auction," *Econometrica* 70, 1199-1212 (pdf).
- Pesendorfer, W. and Swinkels, J.M. (1997), "The loser's curse and information aggregation in common value auctions," *Econometrica* 65, 1247-81 (pdf).
- Rothkopf, M. H. and R. M. Harstad, "Two Models of Bid-Taker Cheating in Vickrey Auctions" *Journal of Business*, 68 (1995), 257-67 (pdf).
- Rothkopf, M. H. and R. M. Harstad (1994a), "Modeling Competitive Bidding: A Critical Essay," *Management Science*, 40, 364-84 (pdf).
- Rothkopf, M. H. and R. M. Harstad (1994b), "On the Role of Discrete Bid Levels in Oral

Auctions” *European Journal of Operational Research*, 74 (1994), 572-81 ([pdf](#)).

M. H. Rothkopf, R. M. Harstad and Y. Fu, “Is Subsidizing Inefficient Bidders Actually Costly?” (with), *Management Science*, 49 (2003), 71-84 ([pdf](#)).

Rothkopf, M. H., A. Pekeć and R. M. Harstad (1998), “Computationally Manageable Combinational Auctions,” *Management Science*, 44, 1131-47(pdf).