December 2003 Auction Theory
An Outline of A Graduate (Mini) Course, Tel Aviv University,

Contact information:
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Short Course Description: Auctions are among the oldest and robust institutions for exchange. In the last twenty-five years we have seen an unprecedented interest in auctions from theoretical and practical perspectives. The use of auctions increased dramatically both in scope and volume of transactions. Auctions are now routinely used to sell spectrum rights, privatization schemes, finance national debt and over the internet (between producers and consumers as well as between business to business (intermediate goods markets). In this course we start with Vickrey’s 1961 seminal work and build upon it by using modern tools of game theory with incomplete information. We will derive and characterize equilibria of the various auctions, analyze and compare their performances in terms of allocation efficiency and/or revenues capabilities.

Many economists regard auction theory as the best application of game theory to economics. As such, auctions are (or ought to be) of interest also to the non specialists as they provide a model (canvas) to address many of the most fundamental questions in economics such as: price formation, information aggregation by non-centralized institutions, public policy issues (e.g., choice of auctions, providing additional information, helping “weak” bidders, allowing joint bidding) as well as behavioral and bounded rationality aspects.

It is impossible to be conclusive and do “justice” to this area in microeconomic theory in a series of 6-7 lectures. We will start at the “beginning” and cover many of the baseline models. But then, my selection will be somewhat biased toward areas that I have researched over the years. I will also insert from time to time evidence from experimental work in the relevant areas (usually where I was involved.)

Immediately following this short description an outline of topics to be covered in our seven meetings is presented. The relevant readings are marked with a number from the list of references next to each topic. The reference list is produced for the interested students mainly for future reference. The more direct and relevant papers (or parts of them) will be covered in class and they are marked by an asterisk, *.

Please note (and mark your calendars) that our meetings are in different hours and the pace is fast so I strongly recommend attending all classes. My contact information is above. I plan to “be around” and available between December 7 and December 21. I welcome and encourage students to see me.
Lecture I  (Sunday, December 7, 2003, 14:15-15:45)

- **Course Organization and Structure.**
- **Introduction.** A brief history, motivation and importance of the subject. {Books, Surveys, [15]}.
- **Issues.** A short review of the many issues addressed in the auction litterateur.

Lecture II  (Wednesday, December 10, 2003, 18:15-19:45).

**Single unit, Private-Values-Auctions**

- **The Independent-Private-Values (IPV) Model:** The assumptions and the model, deriving equilibria of the four “standard” auctions, strategic equivalence, optimal auctions, revenue equivalence. {[5]*, [6], [12], [26]*, [29]*, [30]}.
- **The role of Risk-Aversion and The number of Bidders:** Theoretical predictions from First-, Second, and Third-Price auctions. {[12]*, [20]}.
- **Experimental evidence.** {[12]*}.

Lecture III  (Thursday, December 11, 2003, 18:15-19:45).

- **The Independent-Interdependent-Values (IIV) Model:** First encounter with the Winner’s Curse (WC), or “When and Why not to Auction.” {[10]*}.
- **The Common-Values Model:** Equilibrium, the WC. {[7], [8], [31]*}.
- **Experimental evidence.** {[11]*, [18]}.

Lecture IV  (Sunday, December 14, 2003, 14:15-15:45).

- **The Common-Values Model (once more):** Equilibrium, Information aggregation {[31]*, [27]}.
- **Convergence.** {[27], [31]*}.
- **The General Affiliation Model:** Affiliation, the linkage principle. {[28]*}.

Lecture V  (Tuesday, December 16, 2003, 16:15-17:45).

- **Almost Common-Value model.** Theory and experimental evidence. {[3], [4], [16]*, [19]*}.
- **Stochastic number of bidders.** The risk aversion approach with EU bidders. The ambiguity aversion approach with MMEU bidders. {[22]*, [24], [25]}.
- **Endogenous entry.** {[21]*}.
Lecture VI  (Wednesday, December 17, 2003, 18:15-19:45). Recent and new Issues:

- **Auctions with an Insider.** {[9]*, [13]}.  
- **Multiple-Units Auctions.** Demand Reduction. Efficient auctions (static and dynamic). Clinching (Ausubel) auctions. {[1], [14], [17]*, [23]}.  
- **Multiple-Units Auctions with Synergies:** Combinatorial auctions, the threshold and the exposure problems. {[?]}.


- Joint Bidding.  
- Indicative bidding.  
- Possible presentations.  
- Exam.

References:

I. Books


II. Surveys:

III. Articles: