Econ 106D Designed Markets. Lecture 13. Introduction to Auctions

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May 11, 2015
Auctions are commonly used to sell and buy goods

Financial assets (treasury bills, corporate debt).
Procurement (construction, defense).
Commodities (timber, gas, oil)
Radio spectrum, emissions permits
Real estate
Art, antiques, collectibles, used cars
Sale of companies: privatization, IPOs, take-overs, etc.
Bankruptcy auctions (foreclosure auctions)
FCC & Radio Spectrum

- FCC regulates use of electromagnetic radio spectrum: used for broadcast TV, radio, cell phones, WiFi, etc.

- Why regulate?
  - There is a limited amount of spectrum
  - There are many potential users
  - There are interference problems if users overlap.

- Historically, licenses were allocated administratively (TV & radio stations) or by lottery. Why did we switch to auctions?
Spectrum Auctions

- Coase (1959) suggested that the FCC should auction spectrum licenses.
  - If there were no transaction costs, the initial assignment of ownership would not matter from efficiency perspective (a claim known as "the Coase Theorem").
  - If so, why do we care about the initial assignment of ownership rights?
    - ...
    - ...
    - Myerson and Sattherwaite’s theorem
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- In the early 1990s, the FCC started to think about auctions as a way to allocate licenses efficiently, and adopted a new design proposed by economists Paul Milgrom and Robert Wilson (and supported by others, e.g. Preston McAfee and John McMillan).

- Many countries now use auctions
Sponsored Search Auctions

- Google revenue in the first quarter of 2015: $15 billion.

- Hal Varian, Google chief economist: “What most people do not realize is that all that money comes pennies at a time.”

- Google’s primary revenue source are ads: there is an automated auction each time someone enters a search query.

- Bids in the auction determine the ads that appear on the right-hand side of the page, and sometimes at the top.

- Google design evolved from earlier, and problematic, design used by Overture (now part of Yahoo!)
How to Sell Goods?

- How to sell an object?
How to Sell Goods?

- How to sell an object?

- How to run the auction?
  - The details of auction design affect how bidders buyers bid in the auction, and hence the revenue of the seller and the efficiency of the resulting allocation.
The last two last digits of your UCLA Id number times 20 cents is your value of winning the auction.
I will quote prices in 50 cents increments. If you want to participate, please stand up. Last student standing wins the auction, and gets his/her value minus the price at which the second last dropped out.
Descending auction, private value environment

The first two of last three digits of your UCLA Id number times 20cents is your value of winning the auction.

I will quote prices in 50 cents decrements. The first person to stand up wins the auction, and gets his/her value minus the price at which he or she stood up.
Other formats
Sealed Bid First price auction

Auction participants submit their bids (non-negative amount in dollars). The person with highest bid wins the auction (in case of a tie, we draw the winner randomly), and gets their value minus their bid.
Sealed Bid Second Price Auction

Auction participants submit their bids (non-negative amount in dollars). The person with highest bid wins the auction (in case of a tie, we draw the winner randomly), gets the object being auctioned and pays the bid of the second highest bidder (if there is a tie, the winner pays his/her own price)
Auction participants submit their bids (non-negative amount in dollars). The person with highest bid wins the auction (in case of a tie, we draw the winner randomly) and gets the auctioned object. Everybody pays his or her bid.
The Structure of Values and Information