



DCS/CSCI 2350:
Social & Economic Networks

Auctions
Reading: Ch. 9 of EK

Mohammad T. Irfan

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Examples

- eBay (one seller, many buyer)
- Government's procurement auction (many sellers, one buyer)
- Christie's and Sotheby's art auction
- Chicago wine company's auction on wine



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When are auctions appropriate?

1. Seller doesn't know buyers' true values

Otherwise:

- $\$y$ = max value held by buyers
- Seller imposes fixed price of $\$y - 1c$ and gets the biggest possible profit margin

2. Buyers don't know each other's value

Independent, private values

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Assumption:
Only 1 item being
auctioned

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Types of auctions

Real-time

- Descending bid/Dutch auction

http://www.youtube.com/watch?v=V2CK2TatM_U

- Ascending bid/English auction

<http://www.youtube.com/watch?v=q73-EaQydWU>

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Types of auctions

Simultaneous

- First-price sealed bid auction
 - Highest bidder wins and pays own bid
- Second-price sealed bid auction (Vickrey auction)
 - Highest bidder wins, but pays the 2nd highest bid

Equivalent to
descending price

Equivalent to
ascending price

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Next

- Second-price auction
 - Bidder's dominant strategy is to bid truthfully. Why?
- First-price auction
 - Will bidders be truthful?

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Second-price auction

Bidders' dominant strategy is to bid truthfully

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First-price auction

- Will bidders be truthful?
- No
 - Bid $v_i \rightarrow$ Payoff is 0, win or lose
 - Bid $< v_i \rightarrow$ Could potentially get positive payoff

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Winner's curse

- "Common value auction":
The "intrinsic" value of the item is common to all bidders, but bidders are uncertain about the value
- Example: offshore oil-field
- Highest bidder may end up losing money, even in second-price auction
 - Why?

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Which auction is more profitable for a seller?

- First-price
 - Seller gets the highest bid, but the buyers lied (i.e., they underbid)
- Second-price
 - Seller gets the 2nd highest bid, but that is true value
- Which one is better? Unknown.

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Auctions with multiple items?

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Multiple items

- Not well understood
- Second-prize auction may not be collusion-proof
 - Example: Germany's spectrum auction (1999)
- "Generalized" second-prize (GSP) auction
 - Coming up