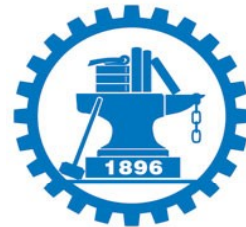


Lecture 5

Auctions (拍卖)



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Overview

- First-price Sealed Bid Auction
- Second-price Sealed Bid Auction (Vickrey Auction)
- Ascending-price Auction (English Auction)
- Descending-price Auction (Dutch Auction)

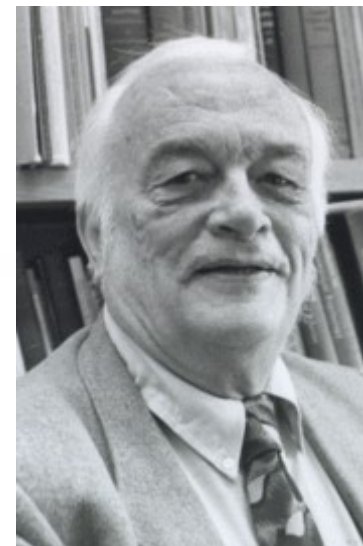
First-price Sealed Bid Auction

- Each bidder submits a sealed bid b_i
- Auctioneer opens the bids, and then:
 - Bidder i with highest b_i wins.
 - Bidder i pays her bid amount b_i .
- No dominant strategy
- Players have to reason about other player's values and strategies to come up with a bid.

First-price Sealed Bid Auction

- N bidders, with values uniformly distributed in $[0, 1]$.
- $b(v)$ must be strictly increasing in v
- There is a unique symmetric Bayes-Nash equilibrium, in which any bidder with valuation v bids: $b(v) = [(N-1)/N] v$
- In this equilibrium, bidder with highest valuation wins

Second-price Sealed Bid



- William Vickrey (1961)
- Each bidder submits a sealed bid b_i
- Auctioneer opens the bids, and then:
 - Bidder i with highest b_i wins.
 - Bidder i pays an amount equal to the second-highest bid b_j .
- If bidders have private values t_i ,
 - It is a dominant strategy for bidders to bid $b_i = t_i$.
 - Very simple for bidders to play.
 - Revenue is second-highest bid b_j .

Second-price Sealed Bid

- Note: for common-value auctions, or auctions with side-effects, bidding truthfully may not be optimal.
- Vickrey auctions are much studied in economic literature, but are not particularly common in practice.

Ascending-price Auction

- Also called English auction.
- This is an example of an oral/iterative/open outcry auction.
- Auction procedure
 - Bidding starts from 0 or base price.
 - At any time, any bidder can raise the price by bidding.
 - When no one wants to raise the price any more, the auction ends.
 - Last bidder gets the item, at the price he bid.

Ascending-price Auction

- Variation – Japanese auction
 - Auctioneer calls out increasing prices until only one bidder left.
 - At any price, bidder can quit but cannot reenter the auction.

Descending-price Auction

- Also called Dutch auction.
- This is an example of an oral/iterative/open outcry auction.
- Auction procedure
 - Bidding starts from a high price.
 - Auctioneer calls out a decreasing sequence of prices.
 - If bidder i wants to buy at the current price, she raises her hand.
 - At that point, auction stops, and i wins the item at the current price.

Descending-price Auction

- Usually fast, because auction requires only one bid.
- Bidder must reason about other bidders' strategies, take risk tolerance into account.

Equivalence between SP-SB and English auction

- If bidders in an English auction have fixed private valuations
 - Dominant strategy is to keep raising your bid until either
 - No other bidders left, or
 - Current price exceeds your valuation
 - Result: Player with highest valuation wins, pays (a little more than) second highest valuation.
 - This is the same as the Vickrey (SP-SB) auction!

Equivalence between SP-SB and English auction

■ Revenue


- English auction revenue is (approximately) the second highest valuation.

Proxy bidding on eBay



Place Bid

Hello auctions! ([Not you?](#))

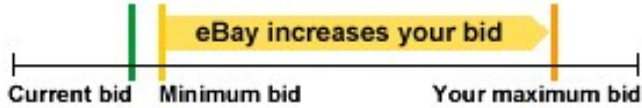
 **Item you're bidding on:**
Canon Digital Camera ELPH PowerShot SD700 IS
Current bid: US \$197.50

Your maximum bid: US \$ (Enter US \$200.00 or more)

[Continue >](#)

You'll review your maximum bid, shipping cost, and payment methods in the next step.

What is a maximum bid?
A maximum bid is the highest price you're willing to pay for an item.
You won't necessarily pay the amount of your maximum bid. eBay will increase your bid on your behalf, using **only as much of your bid as is necessary** to maintain your high bid position. Your maximum bid is kept confidential.



[Learn more about bidding and bid increments.](#)

Equivalence between FP-SB and Dutch auctions

- In a Dutch auction:
 - Strategies for player i are of the form “Bid if price reaches b_i and no one else has bid”
 - Winning bidder is player i with highest b_i , pays b_i
 - Equivalent to each player i bidding b_i in a FP-SB auction.
- Does not require independence of valuation
- Revenue of Dutch and FP-SB are the same.

Equivalence between Auctions

- Milgrom & Weber(1982) studied the case of auctions in which player valuations are affiliated: higher value for a competitor makes a higher bid more likely.
- $ER(\text{Ascending auction}) \geq ER(\text{Vickrey}) \geq ER(\text{FP-SB})$
 - (Assuming bidders can see other bidders drop out in ascending auction)
- Intuition: In this kind of setting, more information about other players reduces the risk of bidding too high

Common Value Auctions

- There is a true common value for the item, but players know only an approximation of the value.
- Example: “Signals” of value distributed about the true value.

Common Value Auctions

- *Winner's curse:*
 - Winning bidder probably has a higher signal than true value.
 - May actually incur a loss when true value is accounted for.

- *Winner's curse: Why?*
 - Overconfidence: people think they know more than they do
 - Disregard: people think others know less (or think less about what others know)

Reverse Auction

- Seller-bid (Reverse) Auction
 - Sellers bid the prices at which they are willing to sell. The buyer can accept the lowest offer

Reverse Auction

The screenshot shows a Priceline search results page for hotels in New York City. The search parameters are: City or airport: New York, NY USA; Check-in: 11/17/2012; Check-out: 11/19/2012; 1 Room. The page features several filters: Hotel Area (New York City), Hotel Amenities (Showing All Amenities), Star Rating (Choose Stars), Price Range (\$0 to \$300+), Overall Rating (1 to 5), and Hotel Brand (Choose Br.). A prominent banner for 'Name Your Own Price' offers a 60% off discount. The search results are sorted by 'Most Popular' and list three hotels: Westin New York Times Square (\$287 per night), Courtyard New York Manhattan/Upper East Side (\$299 per night), and Flatotel At Times Square (\$201 per night). A 'chat now' button is visible in the bottom right corner.

470 Hotels in New York City Sat, Nov 17, 2012 - Mon, Nov 19, 2012 - 1 Room

city or airport: check-in: check-out: [update search](#)

[list view](#) [best deal](#) [express deals](#) **NEW!**

Hotel Area: Hotel Amenities: Star Rating: **470** matching hotels [update hotel list](#)

Price Range: to Overall Rating: to Hotel Brand: search by name

[Show Map View](#)

Name Your Own Price
Save up to **60% Off** in New York City

change my search
city or airport:
check-in:
check-out:
 [search hotels](#)

Sort by: [Most Popular](#) | [Lowest Price](#) | [Star Rating](#) | [Hotel Name](#) | [Hotel Near...](#)

Westin New York Times Square
★★★★★ out of 10 from 303 guest reviews
New York, NY (Midtown West - Times Square)
\$287 per night
[Choose](#)

Courtyard New York Manhattan/Upper East Side
★★★☆☆ out of 10 from 126 guest reviews
New York, NY (Upper Manhattan)
\$299 per night
[Choose](#)
Freebies: Free internet in room

Flatotel At Times Square
★★★☆☆ out of 10 from 143 guest reviews
New York, NY (Midtown West - Times Square)
\$201 per night
[Choose](#)
Freebies: On Sale Now - Save 15% on this stay (in select rooms)

Let us help you shop [chat now](#)

All Pay Auction

任务总金额: 34216380元 任务总数: 51073个 已发放任务款: 33720043元 获得收入的威客: 260947个 威客总数: 3294004个

新招标任务和高级威客正式上线

- 威客“搜索直通车”正式启动
- 关于因私下交易产生纠纷的说明
- 发帖任务注意事项及常见问题
- 推荐好友注册任务中国有奖啦

最新交易

- 邀请: 雇主laurel177向任务中国发出工作邀请
- 发布: 全款悬赏 泵品牌取名Logo 设计
- 邀请: 雇主kuangshi shenzhe向buwenbuwen发出工作邀请
- 邀请: 雇主kuangshi shenzhe向keyang123发出工作邀请
- 成交: 全款悬赏 公司Logo, VI设计招标

需 有项目, 我要外包
任务中国有200万的威客为您服务

供 有才能, 我要接单
有才能的在这做威客, 赚得真金白银

在任务中国如何成功发布任务?

明确任务需求 → 选择任务类型 → 提交任务内容 → 托管任务款项 → 成功发出任务

交易安全

任务宝

- 什么是任务宝?
- 为何使用任务宝收支任务款?
- 怎样为我的任务宝充值?

一周排行榜

| 排行 | 任务名称 | 金额 |
|----|---------------------|--------|
| 1 | 依美光电LOGO及VI设计征集项... | ¥ 3000 |
| 2 | LOGO及VI设计征集 | ¥ 3000 |
| 3 | KISS-SKIN面膜产品宣传页设计 | ¥ 1200 |
| 4 | 甜白酒(醪糟)包装设计 | ¥ 1000 |
| 5 | 软件公司LOGO及VI设计 | ¥ 1000 |
| 6 | 长沙银行产品名称宣传语logo... | ¥ 1000 |
| 7 | 东大医药连锁有限公司VI | ¥ 800 |
| 8 | LOGO设计, 期待长久合作 | ¥ 610 |
| 9 | 云南威得泰经贸有限公司logo | ¥ 500 |
| 10 | 时时卫士拟人标识 | ¥ 500 |

推荐任务

- ¥ 3000 LOGO及VI设计征集
- ¥ 3000 logo、名片、手提袋、软件产品包装设计
- ¥ 2000 玉皇花生油瓶贴和包装礼盒的设计
- ¥ 1815 公司logo、门头
- ¥ 3000 依美光电LOGO及VI设计征集项目
- ¥ 2500 logo设计
- ¥ 2000 已有logo 公司VI设计
- ¥ 1500 星汉影视LOGO及简单VI设计

Other Design Choices

- Reserve price
 - Price below which item will not be sold.
 - Can be treated as seller's bid.
 - Any of the classic auction forms can accommodate reserve prices.
- Stopping rule
 - Fixed time (e.g., eBay)
 - 5 minutes after last bid (e.g., Amazon (still?), Yahoo (seller's choice))
- Bid units and increments.
- Information revealed during open outcry auctions

Other Design Choices

- Tricks to encourage entry (esp. of weaker bidders)
 - Discount on final price.
 - Premium to second-highest bidder.
 - Not-always-efficient auctions.
- Auction fees
 - Listing fee
 - Closing fee
- Preferential treatment to selected bidders.
- Include non-price attributes (usually for procurement auctions).

Behaviors in Auctions

- Seller Bidding
- Sniping