Auctions With Almost Common Values

The „Wallet Game“ and its Applications

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Agenda

I. Introduction to Almost Common Value Auctions

II. Examples of Almost Common Value Auctions

III. How to sell an Almost Common Value object?

IV. Discussion
Introduction to Almost Common Value Auctions
The Wallet Game

2 Players \( \in \{1,2\} \)

Ascending English Auction

(Auctionator raises the price. The last remaining bidder pays the price at which the second-last has quit and gets \(v'\))

\[ t_i = \text{bills in Player } i\text{'s wallet} \]

\[ v = (\text{perfectly}) \text{ common value of the auctioned object} \]

\[ v = t_1 + t_2 \]
The Wallet Game

- Symmetric Equilibrium Strategy
  - Suggestion: Maximum bid for player i is $2t_i$

\[
v = t_1 + t_2
\]

\[
v = t_1 + \frac{1}{2} p
\]

\[
v > p \iff p < 2t_1
\]

- Winner's curse: Starts kicking in after $p=2t_1$. Player 1 accounts for it. He quits even though he knows that $t_2$ is at least $\frac{1}{2} p$.  

Given Player 2 follows the same strategy. If Player 1 wins, this must be the value.
Why ‘Almost’ Common Value auction?

- Common Value auction
  - All players gain the same ‘common’ value from the object
- Small asymmetries (that are common knowledge)
  - better synergies
  - reputation for aggressive bidding
  - small ownership of stocks

-> ‘Almost’ Common Value auction

- We will see why this distinction matters
Almost Common Value Auctions - Examples
The Glaxo-Wellcome Merger
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– In 1995 Glaxo took over Wellcome to become the world’s largest drug company
– All companies have private value advantages, but Glaxo’s was highest
– Glaxo was known as an aggressive bidder
– Small, but non-trivial bidding costs

What happened?
– Glaxo was first to bid £9 billion (£30 million bidding costs)
– Roche & Zeneca showed interest for bidding more (£10, £11 billion)
– But: Only if they would win!
– Glaxos reputation as aggressive bidder
– Competitors expected to lose and have to pay bidding costs

-> Small bidding costs will prevent player with smaller advantage from competing in auction
Small payoff advantages

- **Small private value advantages:**
  - If player 1 wins he earns a small bonus
  - 1 will bid as if signal was $t_1 + 1$
    - 2 bids as if signal was $t_2 - 1$
    - 1 bids as if signal was $t_1 + 2$
  - Winner’s curse increases for 2 and decreases for 1

> Player 1 *always* wins in equilibrium

- **Small ownership advantages:**
  - Player 1 has a small ownership stake in the auctioned object
  - He receives a fraction $\theta$ of the selling price
  - Winner’s curse increases for 2 and decreases for 1

> Player 1 *always* wins in equilibrium
Small bidding costs

- Additional small bidding costs:
  - Both players have private value advantage, 1’s marginally higher
  - 2 wins with very low probability and if so, very low amounts
  - Small bidding costs will prevent 2 from competing

→ Small bidding costs greatly exacerbate effects of small private value advantage (winner’s curse, selling price and revenue)
Implications

Private value-/ownership advantages lead to:
- Increased /decreased winner’s curse for the disadvantaged/advantaged player, respectively
- Advantaged player always wins
- Lower selling price
- Less revenue for seller

Bidding costs make it worse:
- Only «winner» participates
- Even lower selling price
- Even less revenue for seller
How to sell an ACV object?
Small Private Value Differences: FPA, Sealed Bid

- Single bid → no updating of beliefs
- No strategy of „staying in as long as the opponent“.
- FPA bids are not strategic substitutes as in SPA.
- Small bidding costs less likely to deter „underdog“ from entering.
- Revenue not worse for FPA than for SPA.

→ For small differences in private values, use FPA
Selling N Goods: Two Stage Auction

Selling N similar goods, many bidders.

I. Stage
   - Second price auction.
   - Choose N+1 highest bidders to enter second stage.

II. Stage
   - N+1 highest bidders from stage one have to participate.
   - FPA sealed bid, every entrant has to bid at least their first stage bid.
   - Bidders can choose bands in descending order of their bids.

„Best of both worlds“:
   - Reduced cost to contestants due to elimination of low bidders.
   - ACV revenue disadvantage of SPA avoided in second stage FPA.
Selling a Company: Tinker With Incentives

Problem 1: Committing to the sale with FPA
  – Award a break-up fee (e.g. stock options) to highest initial bidder.
  – Company becomes less valueable to second highest bidder.

Problem 2: SPA with strategic substitutes
  – Level playing field: Offer the entrant with less the chance to buy a (small) part of ownership before auction (let him commit).

Problem 3: SPA deters entries by underdogs
  – Offer the underdog a cash prize for entering the auction in the first place.
Summary
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Asymmetries matter

Second price auctions are dangerous
Questions
Discussion

– What other almost common value auctions come to your mind?

– Are the outcomes as suggested by theory?