Ascending Auctions

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“Every auctioneer knows that ascending auctions raise the most revenue.”
-- *Professional Auctioneer* (January 1994)
Examples

• Ascending auction: FCC spectrum auctions
  – most exceed industry revenue estimates
  – C-block business plans initially at $20/person; auction ends at $40/person
• Sealed-bid auction: Brazil cellular auction
  – BellSouth high bid at $2.5 billion ($139/person)
  – AT&T second highest at $1.5 billion

Why ascending bid?

“Who should get items and at what prices?”
• Price discovery process
  – Open and transparent (legitimate)
  – Reliable market prices (learning)
  – Efficiency
    • Single item: quite general; strategically simple
    • Many items: arbitrage and packaging possible
Why ascending bid?

- Revenue maximization
  - Efficient auctions raise a lot of revenue
    - May be optimal to award to those with highest values
  - Devices to increase revenues often impractical
    - Reserve prices and handicaps
  - Efficiency looks even better in general model
    - Endogenous participation
    - Resale

Revenue maximization

- Reduces winner’s curse
- Others willing to pay nearly as much
- Not raising is a confession of inferiority
  “If its worth $x to them, why isn’t it worth that much to us? Aren’t we a good company?”
- Budget constraints can be relaxed
Why ascending bid?

- Privacy
  - Don’t reveal upper part of demand curve
- Implementation
  - Less vulnerable to corruption (don’t need secrecy)
  - Avoid commitment problem (don’t have to reject later bids)

Why sealed bid?

- Implementation
  - Don’t have to bring parties together
  - Simple
  - Difficult bid evaluation OK
    - Procurement: Quality of job important
Why sealed bid?

• Ex ante asymmetries
  – If know high valuer wins, then no incentive to bid
  – Almost common value (Klemperer 1997)
    • Ascending bid may lead to low revenues because bids are strategic substitutes
  – Typically not possible to level playing field
    • Price preferences in government procurement

Why sealed bid?

• Risk aversion
  – First-price better in IPV (Maskin & Riley 1985)
  – But not true with affiliated values
    • Aggressive bidding risky due to winner’s curse
  – Not true if bidder is agent
    • Leaving money on the table is risky
Why sealed bid?

• Avoid collusion
  – Can’t punish deviations in current auction
  – But can punish outside or in another auction
  – Sealed bid not immune from collusion
  – Dynamic process of ascending auction can be used to identify and enforce collusive outcome
    • Zero-price equilibria
    • Can be designed to minimize problem

Ascending auction for multiple items

• Identical items
  – Demand schedules in each round
  – Activity rule (Wilson 1997)
    • Can’t increase quantity
    • Must improve a losing bid or bid is rejected
    • Based on revealed preference
Identical items

- Demand schedules
  - Pricing rules
    - Uniform pricing
    - Pay-your-bid pricing
  - Can coordinate on low revenue equilibrium under uniform pricing
    - Wilson (1979) and Back & Zender (1993)
Identical items

- Ascending clock
  - Clock indicates prices
  - Bidder selects quantity
  - Can’t increase quantity as price rises
  - Get uniform price without coordination on low revenue equilibrium
  - But inefficient (Ausubel & Cramton 1996)

Identical items

- Ausubel (1997) efficient ascending auction
  - Ascending clock, but items awarded when “clinched” at the clinched price
  - Item clinched when it becomes mathematically impossible to lose item (excess demand would drop to zero before you could drop demand to zero)
  - Get efficiency and benefits of ascending bid
Interdependent items

- FCC spectrum auctions
  - some substitutes; some compliments
- Simultaneous ascending auction
  - All items on block at same time
  - Can bid on any items
  - Auction ends when no bids on any item

Simultaneous ascending auction

- Advantages
  - Reduces uncertainty (winner’s curse)
  - Can react to prices in setting bids across items
    - Similar items sell for similar prices
    - Efficient packaging
- Disadvantage
  - May “negotiate” a split of items at low prices
  - But can eliminate undesirable bid signaling
Conclusion

• Ascending bid typically better than sealed bid on both efficiency and revenue grounds

• Concerns
  – May allow bidders to identify and enforce low revenue equilibrium
  – May do worse if weak competition or ex ante asymmetries