University of California, Berkeley Spring 2007
ECON 100A Section 115, 116

Auctions 2

I. Basics

Bidders: *1* and *2*
Valuations: v_1 and v_2
Bidding Strategies: $b_1(v_1)$ and $b_2(v_2)$
Goal: Get as large a gain as possible—in other words maximize $v_1 - b_1$.

II. Second Price Auction

Sealed bid: Each bidder submits their bid in secrecy—each better is not sure what her opponents are bidding.
Second Price: The highest bidder pays the second highest bidder's bid.

Question: Should bidder 1 post a bid lower, higher or equal to her valuation?
Possible Actions:

1. $b_1 < v_1$

   What happens if $b_1 < b_2 < v_1$?

2. $b_1 > v_1$

   What happens if $v_1 < b_2 < b_1$?

3. $b_1 = v_1$

   $b_1 < b_2 \Leftrightarrow v_1 < b_2$ → losses and pays nothing
   $b_1 > b_2 \Leftrightarrow v_1 > b_2$ → wins and pay b_2

III. First Price Auction

Sealed bid: Each bidder submits their bid in secrecy.

First Price: The highest bidder pays her bid.

1. $b_1 > v_1$

What happens if $v_1 < b_2 < b_1$?

2. $b_1 = v_1$

$b_1 < b_2 \Leftrightarrow v_1 < b_2$ → losses and pays nothing

$b_1 > b_2 \Leftrightarrow v_1 > b_2$ → wins and pay b_1

What happens if we lower b_1 a little?

Question: How much should bidder1 lower her bid?

Answer: It depends on the distribution valuations and utility functions.

Example

2 risk neutral bidders. Valuations uniformly distributed on [0,10]

IV. Revenue Equivalence

When each bidder's valuation is known only to herself, English Dutch, First Price and Second Price auctions results in the same revenue for the auctioneer.

Idea: Rational bidders take into consideration how her payoff is affected in each form of auction.

Question to ponder: Bidders rational in real world?