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Jeffrey Ely

Competitive Markets
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- Today we will explore the effects of competition among sellers.
We will analyze the following model of a market.

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- A buyer who does not buy has utility zero.
Competing English Auctions

We will analyze the following game.

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Competing English Auctions

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- The sellers simultaneously set and announce reserve prices.
- All sellers will simultaneously run English auctions with their announced reserve prices.
- When the bidding ends in all auctions, the winners are declared and prices determined.

Think eBay.
Example with 2 sellers

We order the buyers’ values (decreasing order) and the sellers’ reserve prices (increasing order.)
Example with 2 sellers

The bidding will begin at the auction with the lower starting bid.
Example with 2 sellers

At this price, both bidders are willing to buy so they bid up the price.
Example with 2 sellers

This competition continues driving up the price until it reaches $r_2$, the reserve price in the other auction.
Example with 2 sellers

At this point, bidding becomes active on both auctions. Notice how this encourages the second seller to choose a higher reserve.
Example with 2 sellers

One bidder switches from the first auction to the second, bids $r_2$ there, and the bidding ends because there is no further competition.
Example with 2 sellers

If instead the values are lower, then the bidding will stop when the low-bidder drops out, before reaching the higher reserve price.
Example with 2 sellers

Notice how this encourages the second seller to choose a lower reserve.
Now suppose there are many buyers and sellers.
The downward sloping curve is the true schedule of costs. It indicates how many sellers have costs below every possible $c$. 
Every seller will set a reserve price no higher than her cost. The schedule of reserve prices will therefore be above the cost curve.
The auction will drive bidding up to price $p^*$ where the market clears.
At this point, $Q^*$ buyers remain in the bidding and $Q^*$ sellers have their reserve prices met.
But at this price there are $Q'$ sellers with costs below $p^*$. 
So there are $Q' - Q^*$ sellers who would make a profit by setting a lower reserve price. No seller would improve profits by increasing her reserve price.
Dominant Strategy

In a large market it is a dominant strategy for a seller to set her reserve price equal to her true cost, i.e. \( r = c \). Because by setting \( r > c \),

- When the market clearing price \( p^* \) is larger than \( r \) the reserve price is irrelevant.

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- When the market clearing price is greater than $c$ but lower than $r$, then
  - A reserve price of $r$ results in no sale and zero profit.
  - A reserve price of $c$ would result in a sale and profit $p^* - c$.

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