Chapter 23
Asymmetric Information: Auctions And The Winners Curse

We discuss auctions. We first distinguish two extremes: common values and private values. We hold a common value auction in class and discover the winner's curse, the winner tends to overpay. We discuss why this occurs and how to avoid it: you should bid as if you knew that your bid would win; that is, as if you knew your initial estimate of the common value was the highest. This leads you to bid much below your initial estimate. Then we discuss four forms of auction: first-price sealed-bid, second-price sealed-bid, open ascending, and open descending auctions. We discuss bidding strategies in each auction form for the case when values are private. Finally, we start to discuss which auction forms generate higher revenues for the seller, but a proper analysis of this will have to await the next course.

Auctions
Common value - The true value for the good for sale is same for all For example, oil well.
Private value - The value of the good is different for all.and my value is relevant to you.
Payoff in this auction = v - bid if you are the highest and 0 otherwise.
Estimate $y_i = v + e_i$.
Suppose bid $b_i = y_i$.
Winner will then be b_i whose y_i is maximum and e_i is the maximum.
On average winning bid > true value.
You only care how many coins are in the jar if you win. In this case, you would have estimates $y_i \geq y_j$ for all j.
The relevant estimate when bidding is how many coins do I think are there given y_i and $y_i \geq y_j$
Bid as if you know you win.

Types of auction
1. First price sealed bid.
2. Second price sealed bid. The winner pays the second bid (Vickrey auctions).
3. Ascending open auction Ebay.
4. Descending open auction. Finding basement. Dutch auction.

Descending open auction is same is First price sealed bid auction.
Second price sealed bid auction is related to Ascending open auction.

Private value auction
Second price sealed bid or open ascending.
Value v, bid b_i
Payoff $v_i - b_j'$ if b_i is highest and 0 otherwise.
b_j' is the highest other bid.
Bid your value.
Setting $b_i = v_i$ is weakly dominant.
First price auction
Payoff - $v_i - b_i$ if win and 0 otherwise.

Bid less than bi.
Bidding your value in first price auction is weakly dominated.
Revenue equivalence theorem.