Lecture 1(ii)

Announcements

1. HW1 due Tues 11:45 pm c.s.t at Aplia.

2. Should have found the reading assignments for this week on Moodle. Textbook Ch 1,2 and Reading 1 (covering today)

3. Large Lectures MWF 9:05&10:10
Next Friday, we will have an experiment during class time. Don't come to class, stay home (or anywhere on campus) and log into Aplia.
Other Lectures: Your instructor will announce time of experiment.

Lecture

1. Auctions: A "Warm-Up" to Supply and Demand
(and a few experiments)

2: Wholesale Electricity Auctions in the United Kingdom

3. Shifts in Demand and Changes in the Auction Price

1. Auctions

- An important form of market exchange
  - treasury bills
  - cell phone spectra (recent auction for unused TV spectrum reallocated to cell phones raise $20 billion).
- And relatively easy to see how they work (so good warm up)
- Let's discuss a few types and and illustrate them with experiments.

- Can be single-sided where just one side of the market submit bids
  - Example just buyers submit?

Consumers buying at eBay

  - Example where just sellers submit?

Highway construction projects.

- Can be double-sided where both sides submit.
  - Experimental auctions next week one example.
  - UK power auctions

- Can be
  - Pay-as-bid (if bidder wins, price is as bid)
  - Uniform Price (bids determine who wins, but price is same for all winning bids. More on this below)

Do a few experiments. Illustrate:

1) that economists sometimes do research through experiments
2) get you ready for the experiments next week
3) get you ready for the way things work in "Econland" that is coming

Experiment I: single-sided, sellers submit bids, sealed bid, pay as bid.

A buyer needs a book

- There are three sellers, i=1,2,3
- The buyer has a reserve price (won't pay any more than this)
- w(i) is the wholesale price of seller i (seller's cost)
- seller i submits price p(i) (sealed bid)
- sale goes to the lowest bidder at this bid (if below reserve price)
- If bidder i gets sale, has profit of

$$p(i) - w(i)$$

A word about currency...

This is a global perspectives class, so the currency is Euros.

Let's ask Google the exchange rate

Currently, one euro = $1.16 (US)

In the two large lectures we use the euro as the unit of account in the auctions.

In the other lectures we use renmimbi (China) which is denominated in units of yuan.

Experiment 1: Setup

Buyer reservation price = 80

Seller names S1, S2, S3

Seller Cost:

w1=60, w2=60, w3=60. So the sellers all have the same wholesale costs, but they do not know this when they are bidding.

Outcome of the auction:
First Lecture (MWF 9:05)
p1 = 68, p2 = 65, p3 = 68.

Low bidder is S2, his profit is

p2 - w2 = 65 - 60 = 5 euros.

2nd large lecture (MWF 10:10)

p1=64, p2=50, p3=37. Wait, S2 and S3 are being screwy here! Their costs are 60. But S2 bid 50 and S3 bid 37!. I should make S3 sell me a book for 37, meaning she would have a los for 37-60= -23 euros! However, I left S3 off the hook here and disqualified both S2 and S3's bid because they were below cost. S1 had the only valid bid, so S1 won and made a profit of:

p1 - w1 = 64 - 60 = 4 euros.

Note: sellers sometimes set prices below wholesale cost initially to get publicity and to get consumers to try their goods. The point is that losing some money up front can result in a future gain from profits down the line. But S3 is closing down her book business after class, and taking a loss on the one book she ever sells would be a really bad idea.

Key take away lesson from experiment 1:

There is a tradeoff when deciding to submit a low or high bid. The good thing about a low bid is that there is a higher probability of winning. The bad thing is that if you win, you don't make as much profit as you would from winning with a high bid.

Experiment 2:

Role of competition. Let's set up a situation where the bidders know each other's costs up front, and they are all the same.

Costs: w1 = w2 = w3 = 75.

(i) Sale price with three bidders in 9:05 class
p1 = 76, p2 = 75.50, p3 = 75.99
Winner is S2 with the lowest price 75.50
Profit is 75.50 - 75 = 0.50 euro

(ii) Now a new auction with only a single bidder, S1. In both lectures S1 would 80. That was pretty smart! 80 is the reservation price or reserve price, the highest I am willing to pay. S1 made a profit of
80 - 75 = 5 euros.

Lessons from experiment 2

1) If there are three bidders and if they all have the same costs, and if they are not working together in a cartel (i.e. colluding), the selling price will be relatively close to cost. Here the selling price of 75.50 euros was only 0.50 above cost.

2) If there is only one bidder, we have a monopoly situation and the price will be high. For both lectures, the students playing the part of the S1 monoplist extracted the full monopoly price of 80 euros (which was the maximum amount I was willing to pay).

Experiment 3:
Role of Collusion

The setup is similar to the first part of Experiment 2, with 3 bidders. Only this time we found 3 bidders who are friends. Same as in experiment 2, the wholesale cost for all three is w1 = w2 = w3 = 75. The difference is now the bidders have a chance to talk to each other and collude on price.
In the first lecture the bids were p1=77, p2=77, p3=77.98. So the S1 and S2 tied for the win splitting the profit of 77-75 = 2 euro. (Their friend S3 was left out.) This is indeed better than the 0.50 profit we found without collusion. But the cartel could have done even better than this, as we found out in the second lecture. There the bids were:

p1 = 79.99, p2 = 79.99 p3 = 79.99

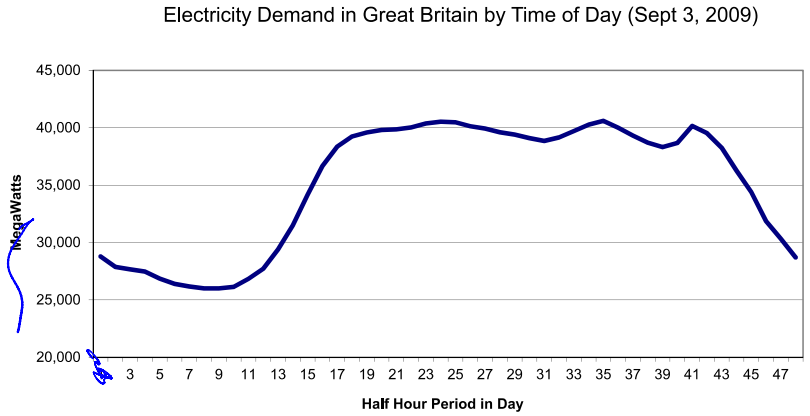
They submitted the exact same bids.
So they split the profit of

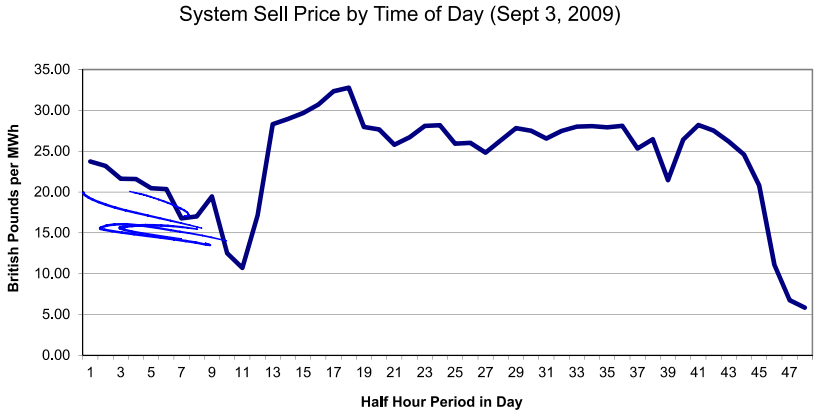
79.99 - 75.00 = 4.99 euro (or about $5.60 converting to dollars).

Since I said I was willing to pay 80 euro, they ended up leaving 0.01 on the table.
But cartel didn't seem to mind missing out on the 0.01. It seems thy didn't want to take the chance that I might change my mind about buying, if they had tried to extract the full 80 euros.

By the way, collusion to fix prices like this has been illegal in the U.S. since 1890 (The Sherman Act). So don't do it !

2. Electricity Auction in UK





Independent System Operator

1. Receives offers to sell from Suppliers

"I will sell 10 Megawatt hours for £25 from 11:00-11:30…"

2. Sees forecast of demand

3. Picks P, Q and Who

Rules: Sort bids by price, set price equal to last need to meet demand. Use uniform price auction format in this example.

Hourly Electricity Market: Friday, 16:00

Buyer: submits quantity demanded (Qd=6)

Sellers: submit bids

Seller Name	Sell Price for 1 MHd (£ per MWh
S1	30
S2	5
S3	50
S4	10
S5	20
S6	25
S7	5
S8	10
S9	50
S10	15

First task of ISO (Independent System Operator): Sort Bids (lowest to highest

	Rank	Seller Name	Sell Price	In?
	1	S2	5	x
	2	S7	5	x
	3	S4	10	x
	4	S8	10	x
	5	S10	15	x
Q_d =	6	S5	20	x
	7	S6	25	
	8	S1	30	
	9	S3	50	
	10	S9	50	

p system price

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	2	S7	5	x
	3	S4	10	x
	4	S8	10	x
	5	S10	15	x
Q_d =	6	S5	20	x
	7	S6	25	
	8	S1	30	
	9	S3	50	
	10	S9	50	

Can Do it with a Graph: