

## Lecture 1(ii)

### Announcements

1. HW1 due Tues 11:45 pm c.s.t at Apla.
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 Apla.  
**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?
  - Example where just sellers submit?
- 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

Auction outcome:

Buyer reservation price €80

Seller costs:

$$w_1 = \text{€} \quad w_2 = \text{€} \quad w_3 = \text{€}$$

Bids:

Winner is Bidder

Selling price is winner's bid of

Profit to Bidder \_\_\_\_ is

Foreign exchange desk here today.  
Better rates than at airport!

A Tradeoff: What are the costs and  
benefits of submitting a low bid?

## Experiment 2:

Role of competition Let's set up a situation where bidders know each others' costs)

Costs  $w_1 = w_2 = w_3 =$

(i) Sale price with three bidders?

(ii) Sale price with one bidder?

## Experiment 3:

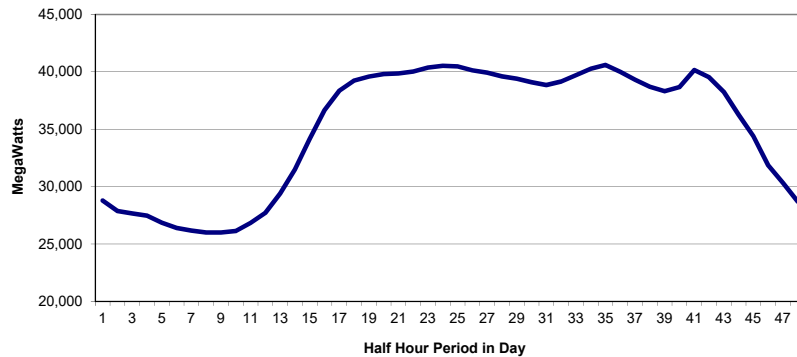
Role of Collusion

Set up similar to Ex. 2 with three bidders.

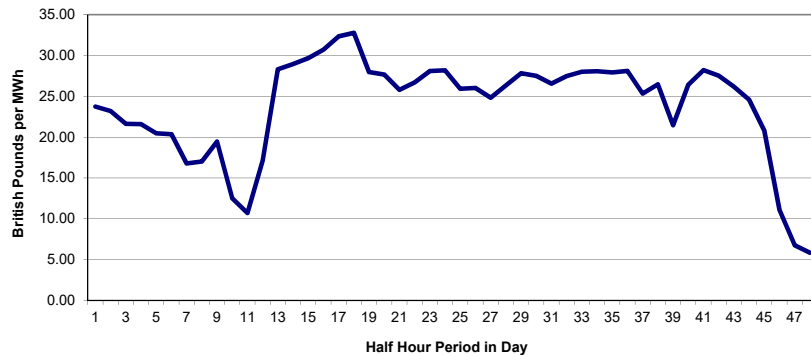
Are there three people in the class who are friends. (Or maybe would like to be friends....)

## 2. Electricity Auction in UK

Electricity Demand in Great Britain by Time of Day (Sept 3, 2009)



System Sell Price by Time of Day (Sept 3, 2009)



## 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.

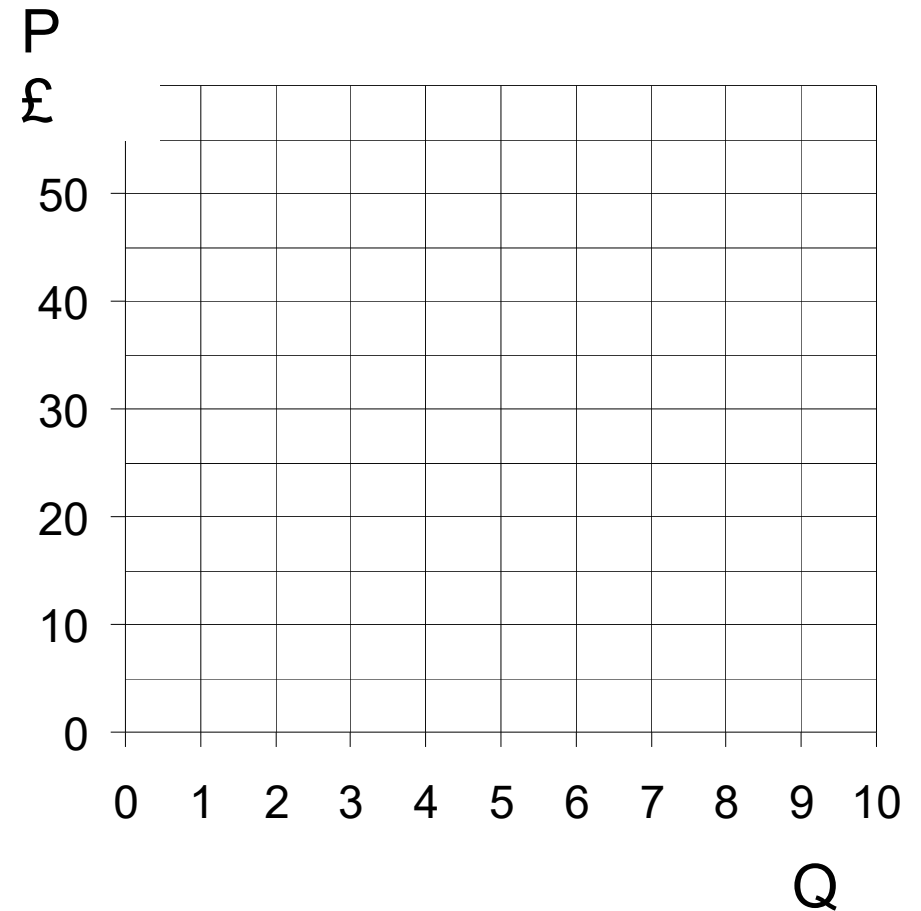




First task of ISO (Independent System Operator): Sort Bids (lowest to highest)

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	

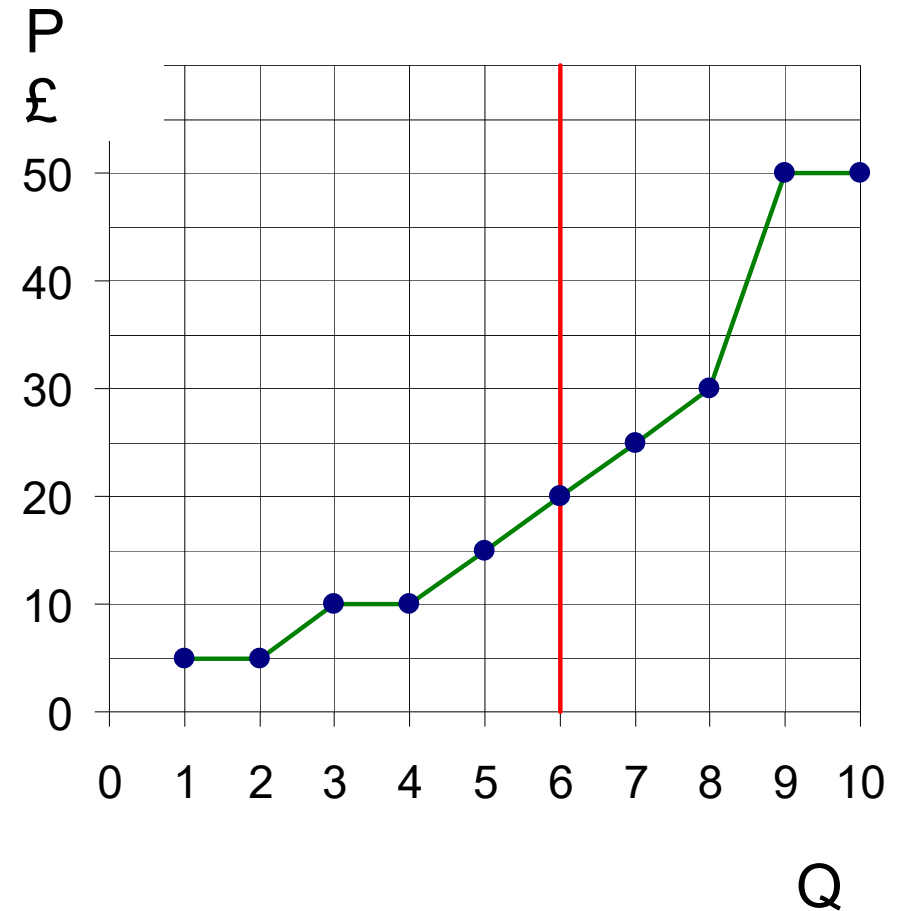
Can Do it with a Graph:



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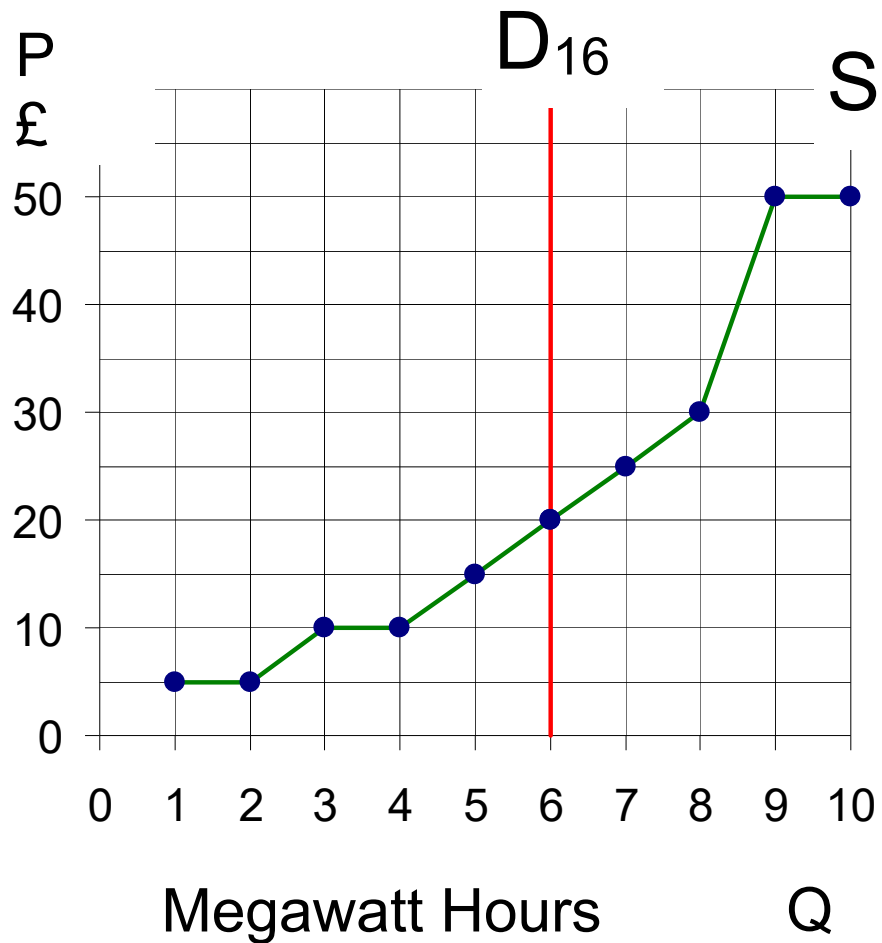
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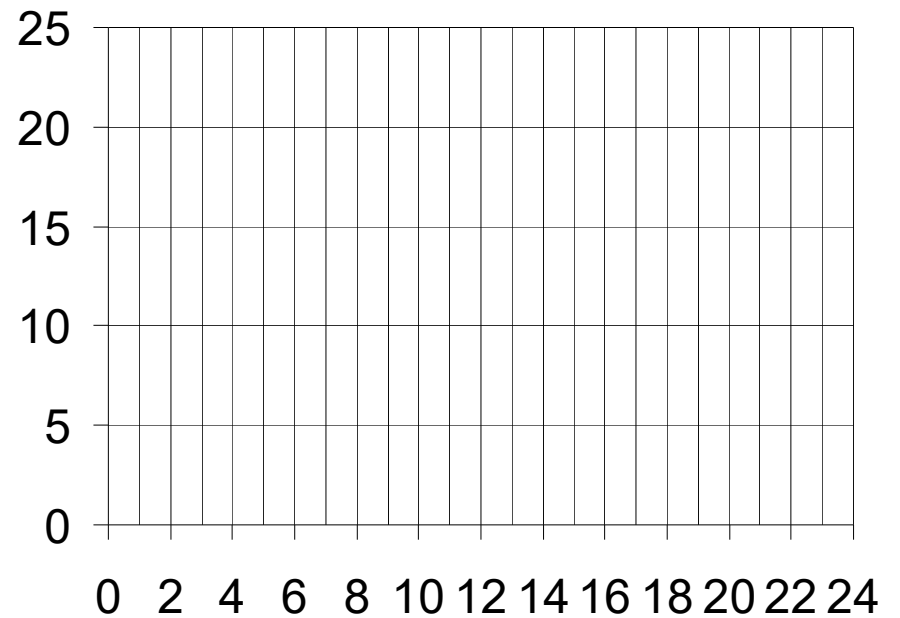


What happens to price throughout the day?

Suppose seller bids the same.



Time	Demand	Price
4:00 (off-peak)	2	
10:00	4	
16:00 (peak)	6	



Big idea here:  
Price is high when demand is high.

If extra time, let's look what is  
happening in the electricity market in  
the UK right now,

<https://www.bmreports.com/bmrs/?q=eds/main>

and in California

<http://www.caiso.com/Pages/TodaysOutlook.aspx>