Econ 1101
Spring 2013
Week 2

Section 038

1/30/2013

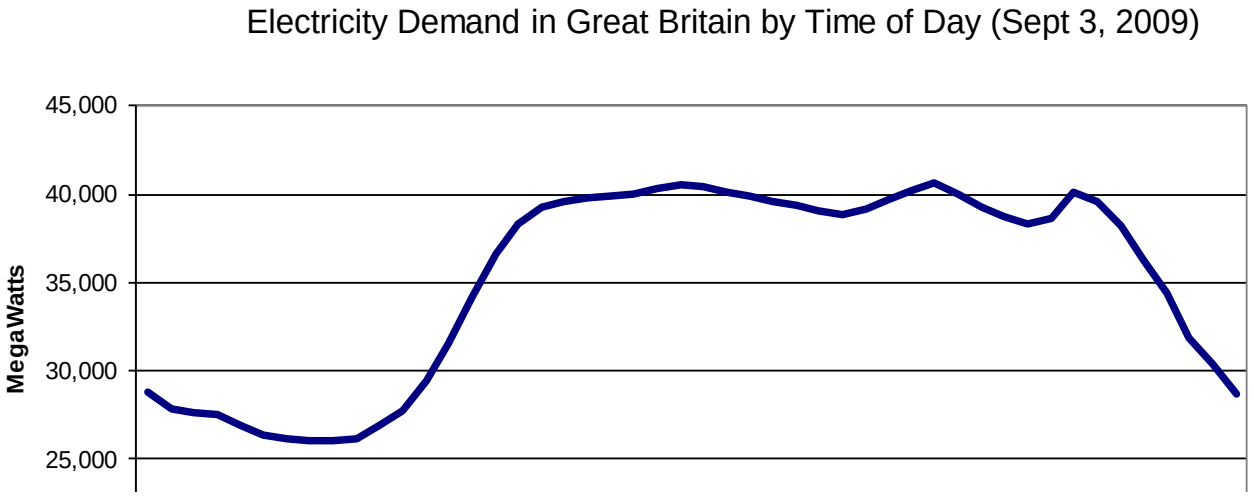
Announcements

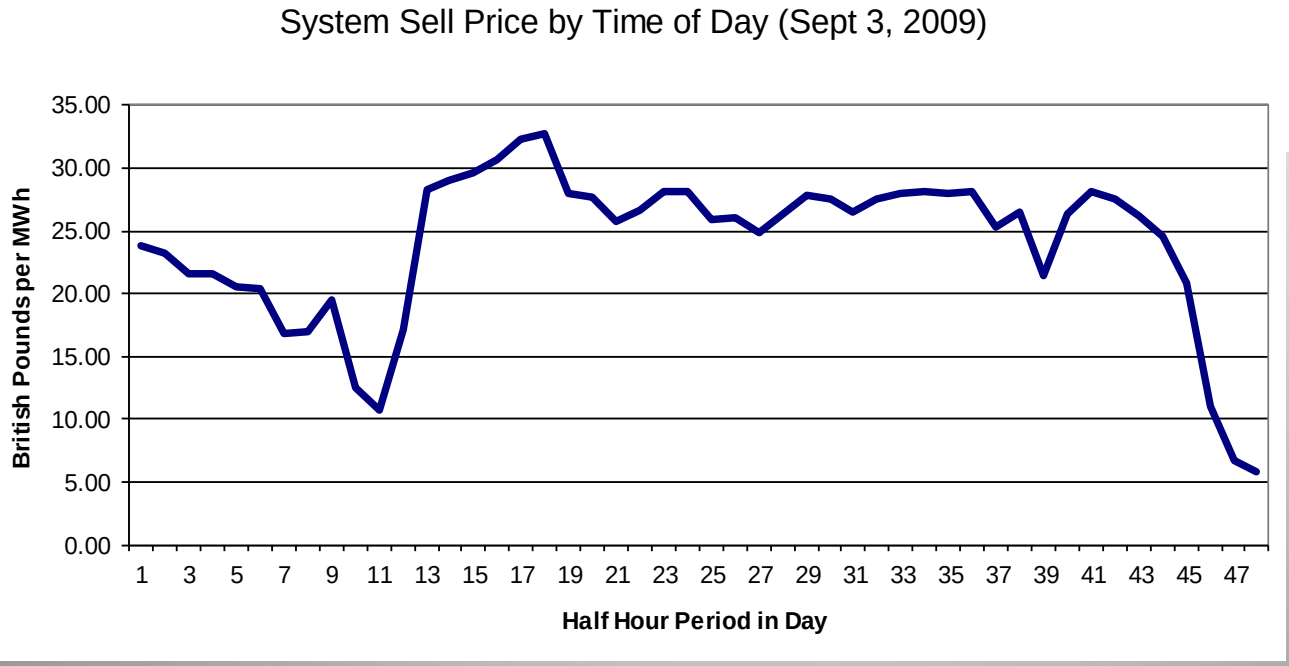
- Homework 1 is due on Friday! (11:45pm CST)
- Shorter lecture today.
- After we are done, get a computer and log on to Aplia to join the experiment auction.
- If you haven't gone over the pre-experiment homework yet, do so during the break!
- Recitation starts at 7.30pm today!!! (in BH260)

Agenda for today

1. Shifts in Demand and Changes in the Auction Price
2. Bidding Strategies
3. Intro to Supply and Demand
4. Supply and Demand Shifters

Recap


Electricity Demand in Great Britain by Time of Day (Sept 3, 2009)
MegaWatts
45,000
40,000
35,000
30,000
25,000


System Sell Price by Time of Day (Sept 3, 2009)
British Pounds per MWh
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Half Hour Period in Day

Recap, cont'd

There's an "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 forecasts of demand
3. Picks "P, Q and Who"

Rules: Sort bids by price, set price equal to last unit needed to meet the demand. This is a **uniform price auction:**

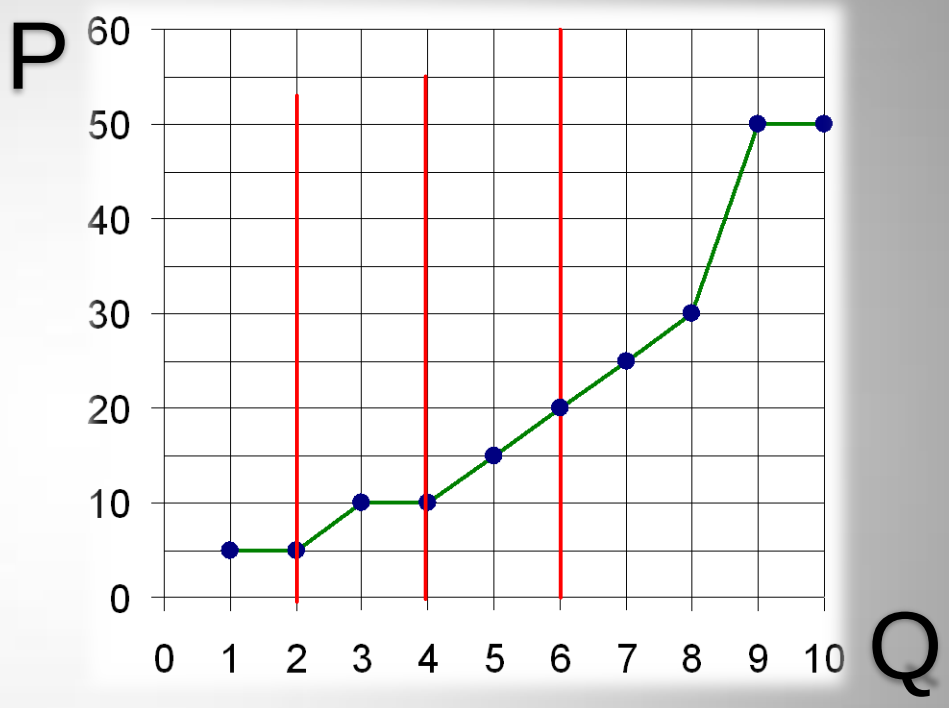
- Contrast with "pay as you bid auction"

Recap, cont'd

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
6	S5	20	X
7	S6	25	
8	S1	30	
9	S3	50	
10	S9	50	

Electricity Auction, cont'd

- What happens to price as the day progresses?



Time	Demand	Price
4:00 (off-peak)	2	5
10:00	4	10
16:00 (peak)	6	20

Electricity Auction, cont'd

The big idea here:

Price is high when demand is high.

Seems to confirm the common sense!

Bidding Strategies

- Suppose you are bidding in a uniform price auction. If there are many bidders and if you are not working together as a cartel, the best strategy is for you to bid close to the cost (or your break-even level).

Bidding Strategies, cont'd

Reasons:

1. With many bidders, the chance that you will be exactly the last one in who determines the system price is small. Mainly, your choice of bid determines whether you are in (your bid to sell is below the system price) or out (your bid to sell is above the system price.)

Bidding Strategies, cont'd

2. If you bid more than your cost, and the system price turns out to be higher than your cost, but lower than your bid, then you are out, even though you could have made a profit selling at that system price.

Example: Your cost: $10, your bid: $15, system price: $12. You can't sell, but if you had bid closer to cost you could have made profit.

Bidding Strategies, cont'd

3. If you bid less than your cost, and the system price turns out to be below your cost but above your bid, then you are in. But the system price is below your cost so you lose money!

Example: Your cost: $10, your bid: $5, system price: $8 – You get to sell! But you lose $2 selling at $8.

Bidding Strategies, cont'd

Bottom line: in a uniform price auction with many bidders, your bid determines whether you are in or out, but probably not what you get paid when you are in.

Bidding Strategies, cont'd

So in the UK electricity auctions, is it a good idea to bid at cost (suppose that the bid prices are actually their costs)?

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
6	S5	20	X
7	S6	25	
8	S1	30	
9	S3	50	
10	S9	50	

Bidding Strategies, cont'd

Perhaps you see S5's bid and think that he could have bid $24.99 instead. He'd still get to sell, and plus he makes $4.99 of extra profit!

For this example, true. But if we look at situations with a lot more bidders – it seems to make sense that there will be more bidders with costs between $20 and $25, such that it will no longer make sense for S5 to bid $24.99 (he risks not selling).

Experimental auctions

Experimental auctions this week are in the Pay as You Bid format, not Uniform Price.

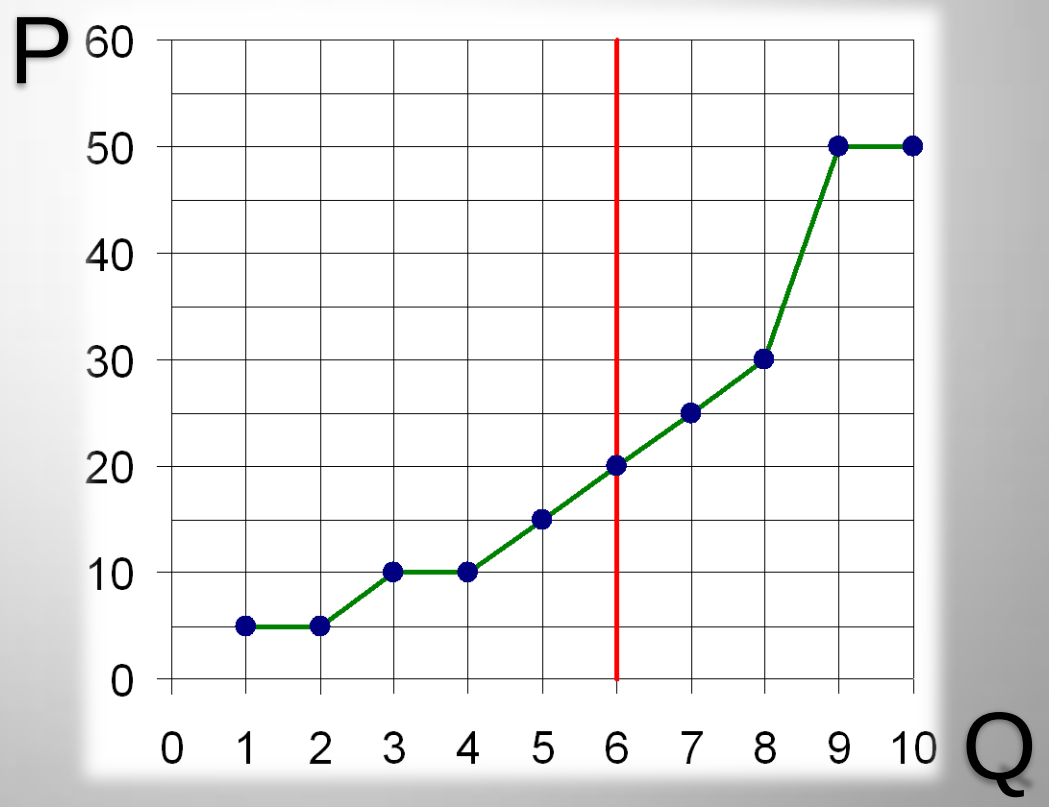
Incentives are different here!

Should you bid at cost?

NO !!!

Intro to Supply/Demand

- From last class, we realized that the higher the demand, the higher the price. (bids to sell don't change much during the day, so in this case it's not the supply that drives the price)



Supply/Demand, cont'd

In what we have been discussing, there is an ISO running things. You can see it as a Visible Hand at wheel.

- Now we will develop Demand and Supply analysis and apply it to markets without the equivalent of ISO.
- For certain markets we will argue that the market behaves as if there was an ISO picking "P, Q, and Who".
- These competitive markets work as if guided by an Invisible Hand (Adam Smith's term).

Supply/Demand, cont'd

By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an ***invisible hand*** *to promote an end which was no part of his intention. Nor is it always the worse for the society that it was not part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. It is an affectation, indeed, not very common among merchants, and very few words need be employed in dissuading them from it*.

– Adam Smith, The Wealth of Nations (chapter II)

Supply/Demand, cont'd

- We said that competitive markets are guided by the invisible hand. What do we mean by competitive markets?

Definition of a competitive market:

A market in which there are many buyers and many sellers so that the behavior of an individual buyer or seller has a negligible impact on the market price (technically – infinite buyers and infinite sellers).

Would the market for tablets be a competitive market? NO!

How about corn?

Supply/Demand, cont'd

Market for Corn:

- Quantity Supplied: amount sellers are willing and able to sell.
  - Depends upon the price of corn.
  - Higher price: more farmers willing to plant corn.

(Go back to UK auction market and look at supply. At higher price...)

- Quantity Supplied depends on other things like inputs that we will discuss later.

(Go back to "supply" in the UK auction. What happens if oil prices increase....)

Supply/Demand, cont'd

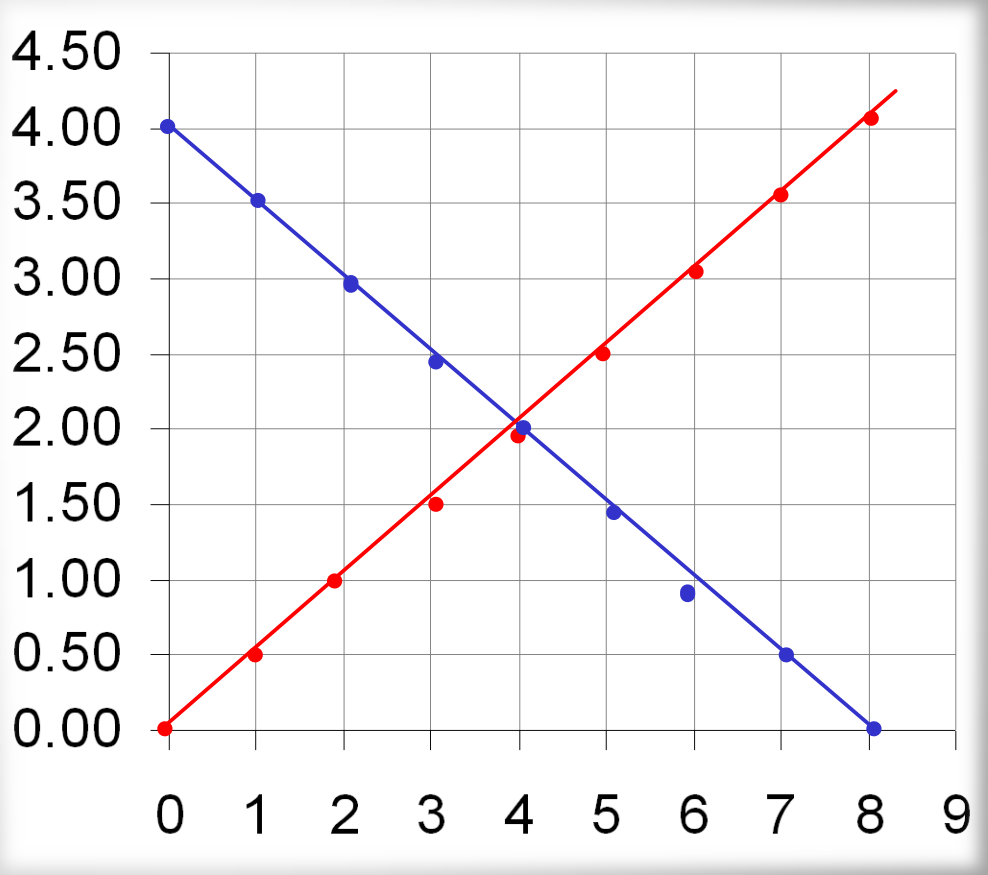
- Quantity Demanded: amount buyers are willing and able to purchase.
- Depends upon the price of corn (and other stuff we will discuss later.)
- Higher price: quantity demanded is lower. (think about your own shopping behavior!)

Supply/Demand, cont'd

Market for Corn

Price	Q^S	Q^D
0	0	8
.50	1	7
1.00	2	6
1.50	3	5
2.00	4	4
2.50	5	3
3.00	6	2
3.50	7	1
4.00	8	0

Hypothetical Numbers
(that are easy to work with!)

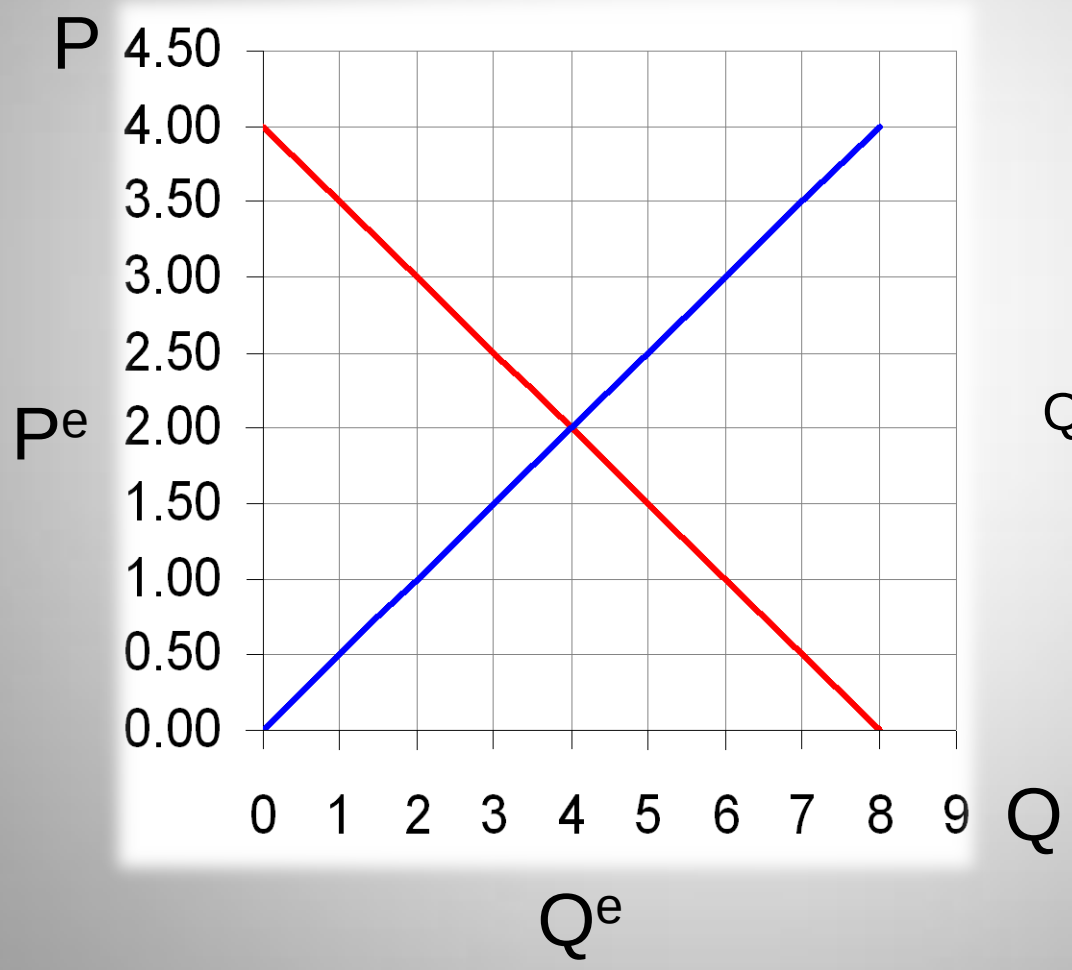


Equilibrium: P=$2 , Q = $4

"P, Q, and Who"

Supply/Demand, cont'd

Market for Corn



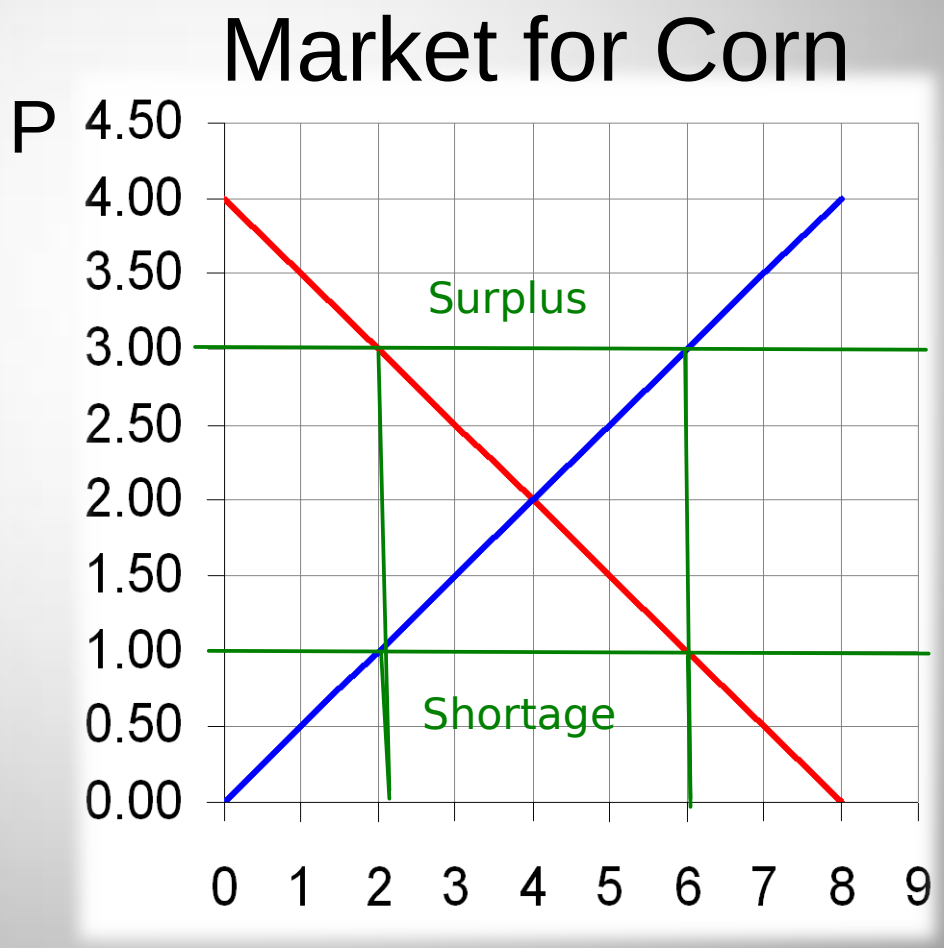
At P=2,
$Q_D = 4$ and $Q_S = 4$
$Q_D = Q_S$ so they are in equilibrium

Supply/Demand, cont'd

- Does it make sense that this is an equilibrium?
- What if P=1? P=3?

If P=$1…

If P=$3…



Think of equilibrium as some stable arrangement between buyers and sellers

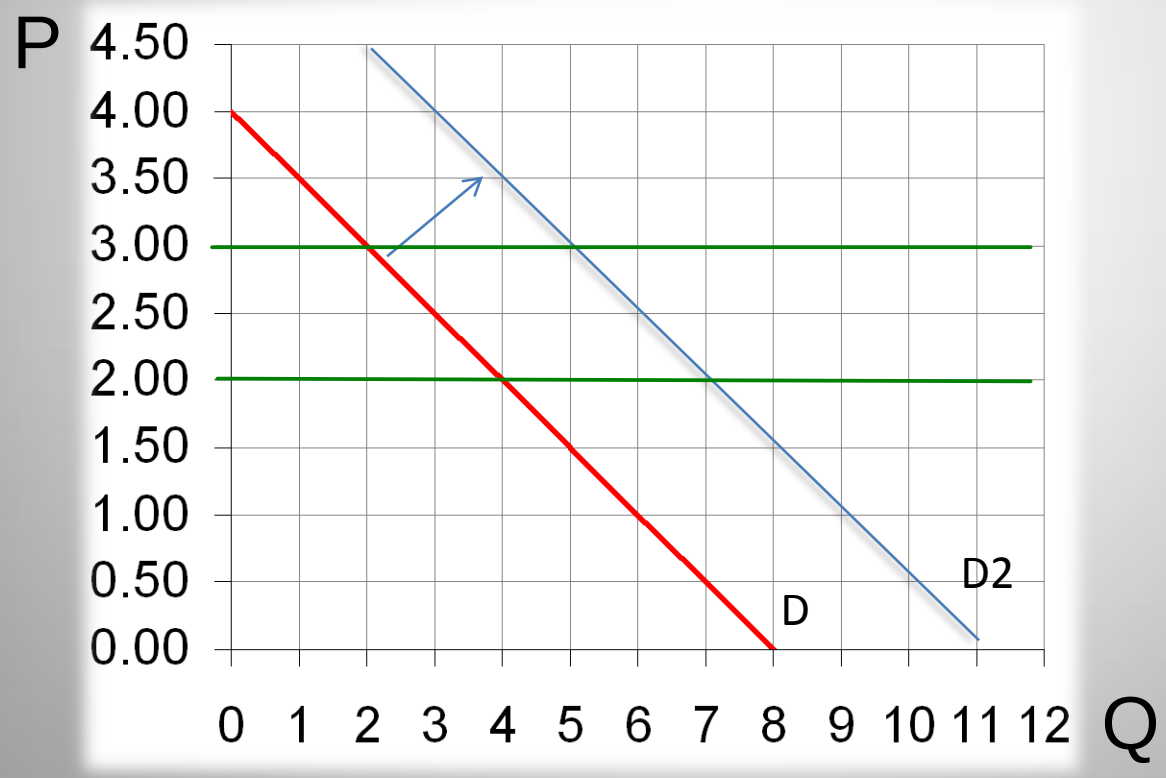
Supply/Demand Shifting

For now, assume the market is in equilibrium.

- Look for how the market price and quantity change when the market fundamentals change.
- Learn about shifting!

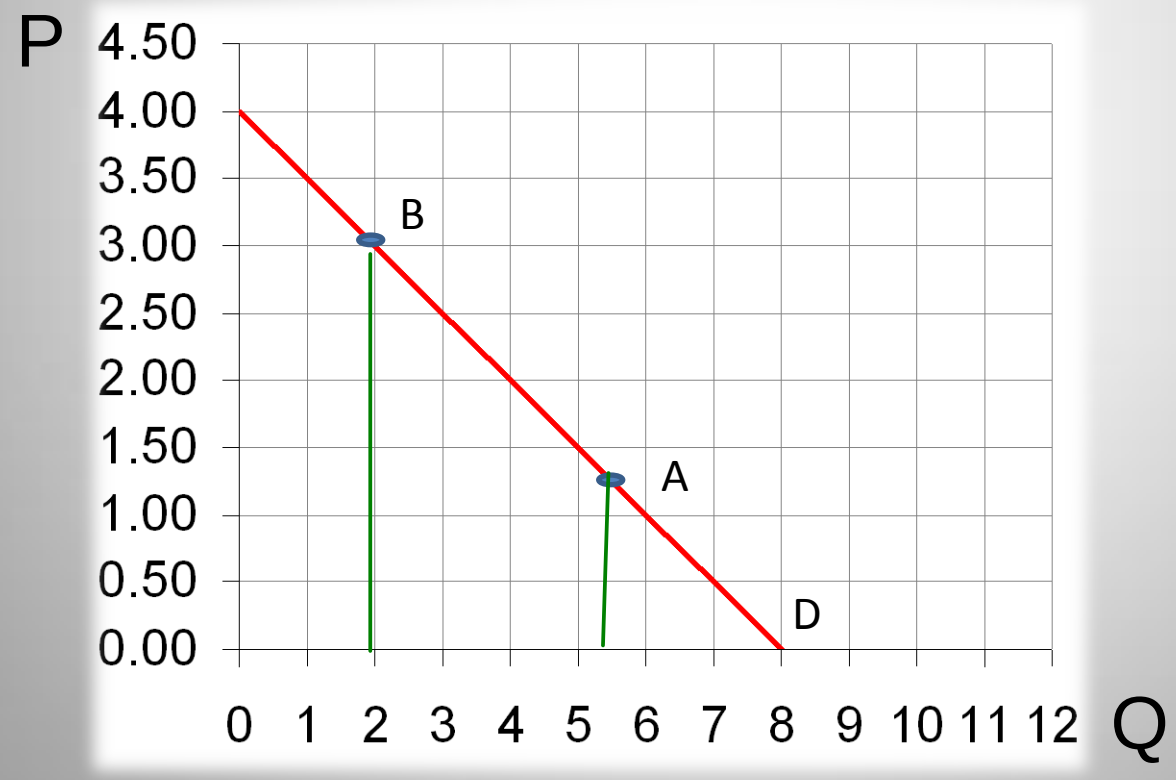
Shifting, cont'd

What exactly is shifting? At every single price, the quantity demanded is higher.



Shifting, cont'd

- Contrast this with <u>moving along the curve</u>, like going from A to B… caused by a price increase.



Shifting, cont'd

- You can think of the difference as such: since Price and Quantity are the Y and X axis, how the quantity reacts to a change in price is something that is already expressed by the demand curve.
- A shift of the entire demand curve, then, cannot just be caused by a change in price. It has to be something aside from price that affects quantity.

Shifting, cont'd

So shifting along the demand curve is one sense of talking about demand, but more specifically, we refer to this as changes in the quantity demanded.

As price changes, quantity demanded also changes.

Law of Demand

- P ↓ implies Q^D ↑ (which of course, also means P ↑ implies Q^D ↓)

Basically, this means that the demand line is downward sloping.

Shifting, cont'd

So what are some factors that cause the demand to shift? (Note: not prices of the good itself, since that causes a movement along the curve only)

Think about the demand for Starbucks coffee. What would change the demand for it?

Determinants of Demand

1. Prices of related goods
2. Income
3. Number of Buyers
4. Consumer tastes

Related goods

What relations can two goods have?

They can either be substitutes or complements.

Are these pairs of goods substitutes or complements?

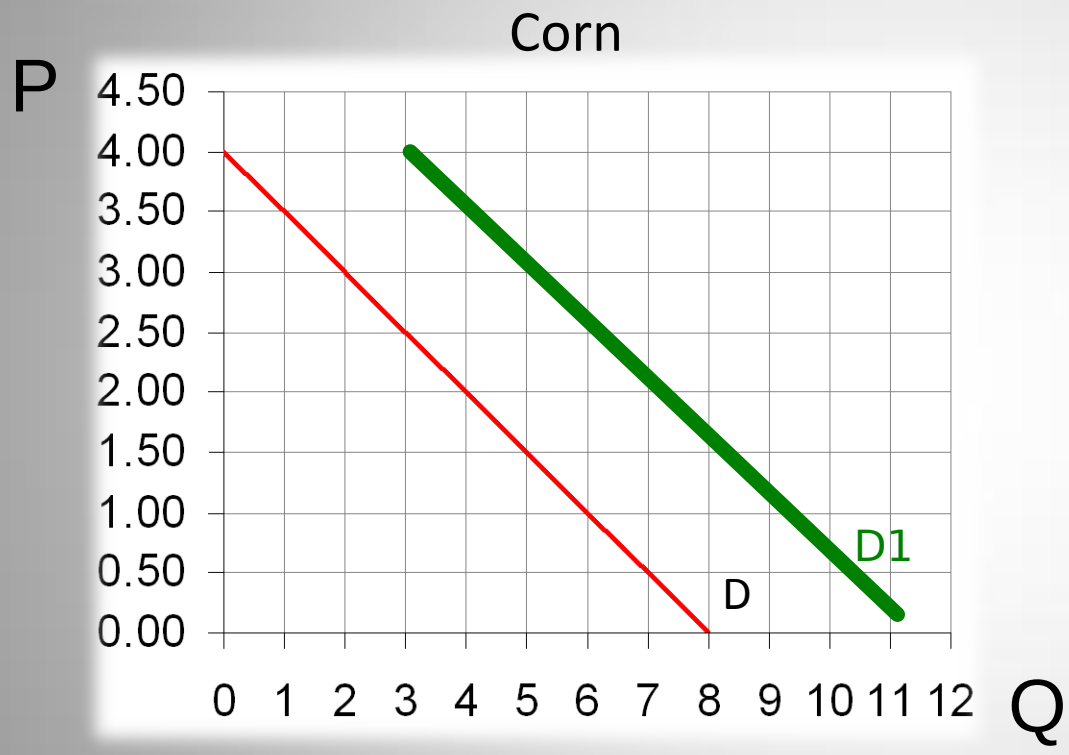
1. Coke and Pepsi are Substitutes
2. Flat screen TVs and Blue-ray players are complements
3. Cheesecake and ice cream not clear
4. Econ 1101 classes and other fun activities

Substitutes

Related goods, cont'd

- The idea: when the price of a related good changes, the demand for the good we are looking at will change (i.e. at every single price level, we'd want more (or less) of the good)

Related goods, cont'd



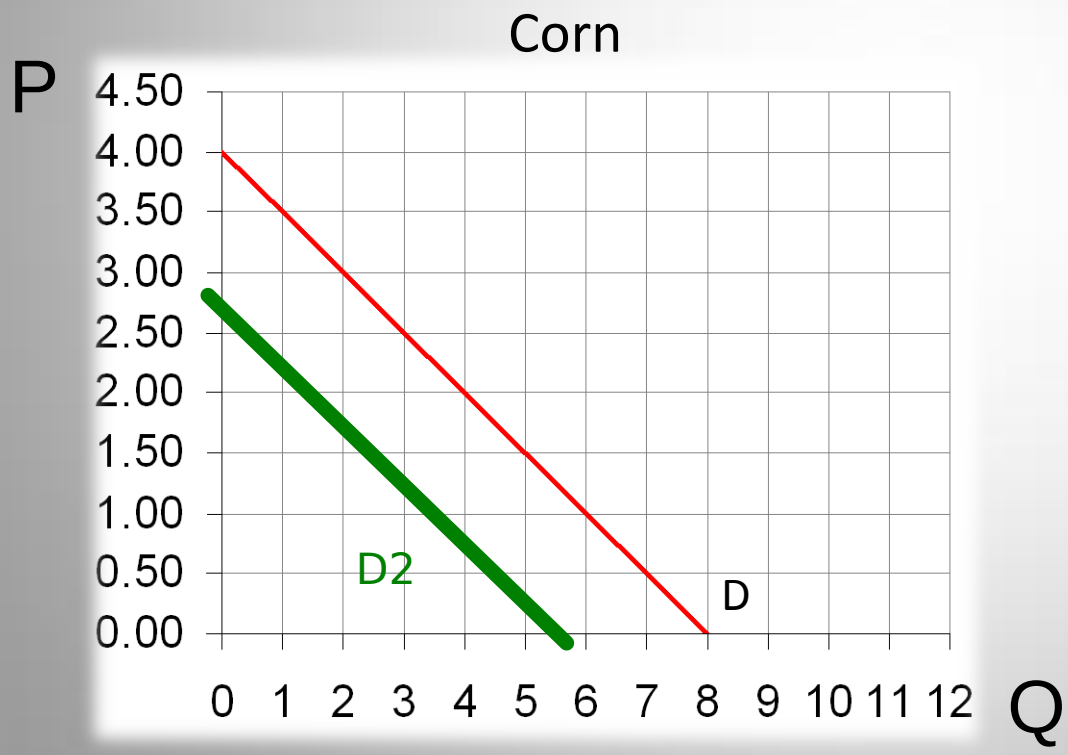
So let's say the price of Oil increases. What do you expect to happen to the demand for Corn?

First – Corn and Oil are: Substitute

Price of Oil going up causes people to buy more _____ Corn at every price level.

Related goods, cont'd

Quickly, let's just see what happens if the opposite occurred and the price of Oil went down.

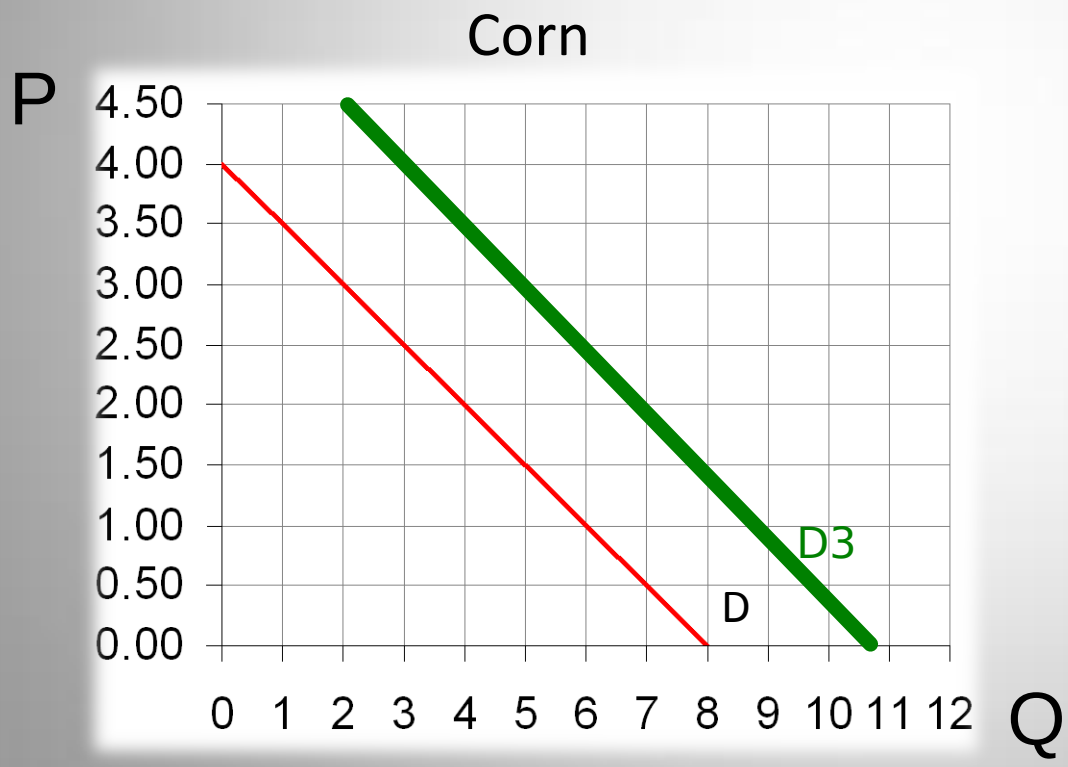


First – Corn and Oil are:

Price of Oil going down causes people to buy _less_____ Corn at every price level.

Related goods, cont'd

How about the price of a complimentary good? What's a complimentary good to corn? Maybe cars that run on ethanol.



First – Corn and cars that run on ethanol are: complements

Price of ethanol cars going up causes people to buy more corn at every price level.

Income

We just talked in depth about how the price of related goods can affect demand. Now let's look at the second shifter – Income.

When income goes up, do you think you'll buy more or less of something?

Income, cont'd

Let's look at different goods. What happens as income goes up?

Steak? UP

Electronics? UP

Ramen Noodles? DOWN

Diamonds? UP

Camping trips? usually down, but in Minnesota UP!

Spam? DOWN

Gasoline? UP

Income, cont'd

So we need to have two classes of goods. One where demand goes up when income goes up and one where demand goes down when income goes up.

Normal goods – When income goes up, demand goes up.

Inferior goods – When income goes up, demand goes down.

Income, cont'd

Quick example:

Let's look at canned pineapples.

assume they are inferior goods

Suppose Income goes up.

What happens to the demand?

down

Other shifters

We are not going to go over these in much detail, read the textbook for more info on these. But the same idea as the other two!

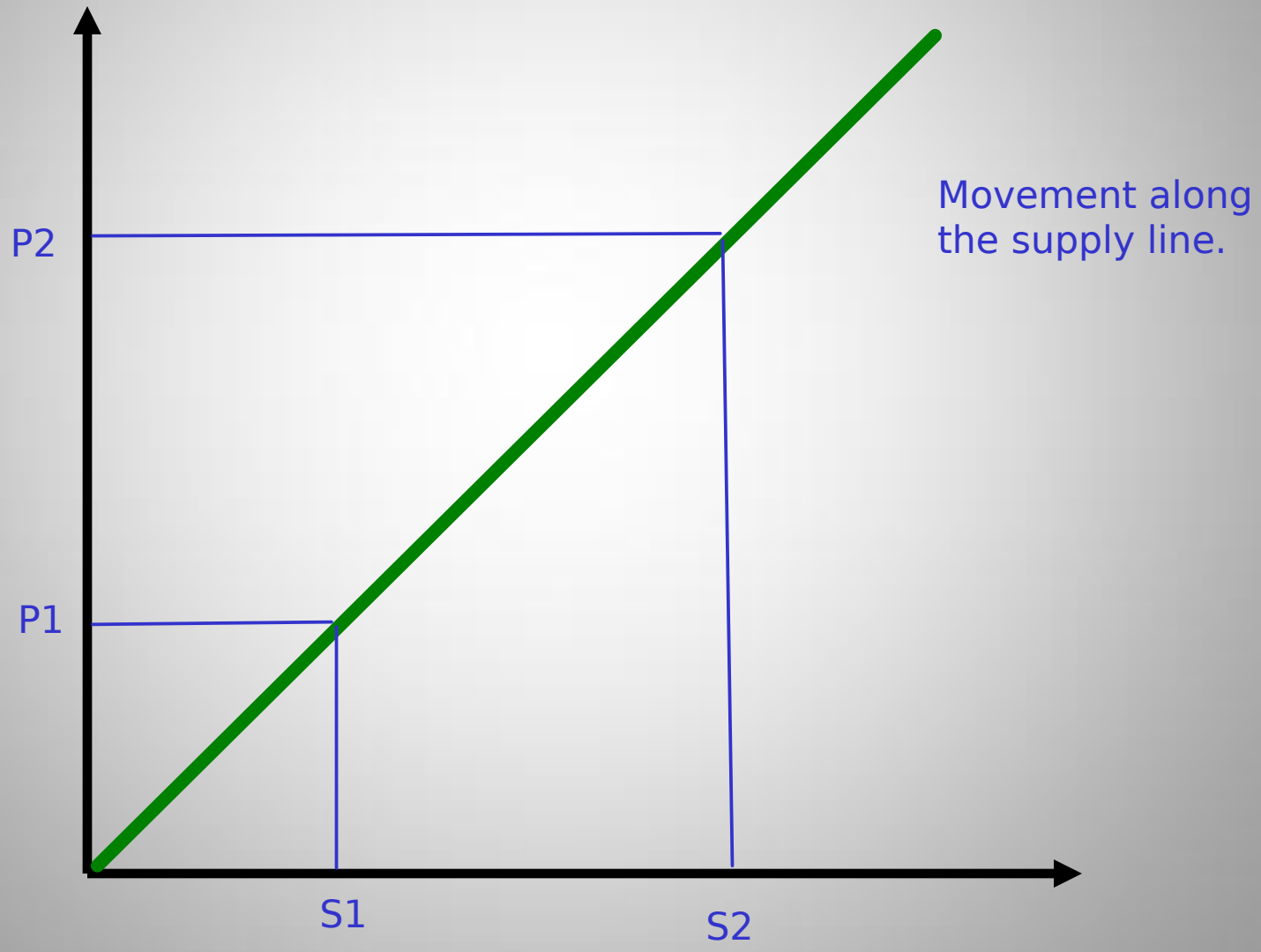
- Number of buyers
  - With more buyers in the market, the demand goes up. Think about maybe one day, everyone in the world became vegetarian. What happens to the demand for vegetables? What about meat?

- Consumer tastes
  - Usually something that changes the tastes and preferences of a consumer. What happens to the demand for spam if a report came out that said spam is the healthiest and most nutritious food you can eat?

Supply Curve

- As the price is higher, more suppliers are willing to sell. Perhaps some have higher costs than others. Think about your textbooks – maybe you won't sell it to someone for the same price you bought it at. Even if someone offered you $10 more, some of you may not sell because of inconvenience. But what if someone offered you $100 more?

Supply Curve



Law of Supply

P ↓ implies Q^S ↓ (which of course, also means P ↑ implies Q^S ↑)

basically saying that the supply curve is upward sloping.

Shifters

So just as with demand, if the price changes, we have a shift along the supply curve.

What causes a shift of the entire supply curve?

1. Prices of inputs
2. Technology
3. Number of sellers

Shifters, cont'd

- Price of inputs (such as labor, materials used to produce the good)
  - Example: wages increase.

    Q^s _____ at each price level.

    falls
- Number of sellers
  - Example: People who grew vegetables decide to switch over to making spam, maybe because a law passes that bans the selling of all food aside from spam.

    Q^s _____ at each price level.

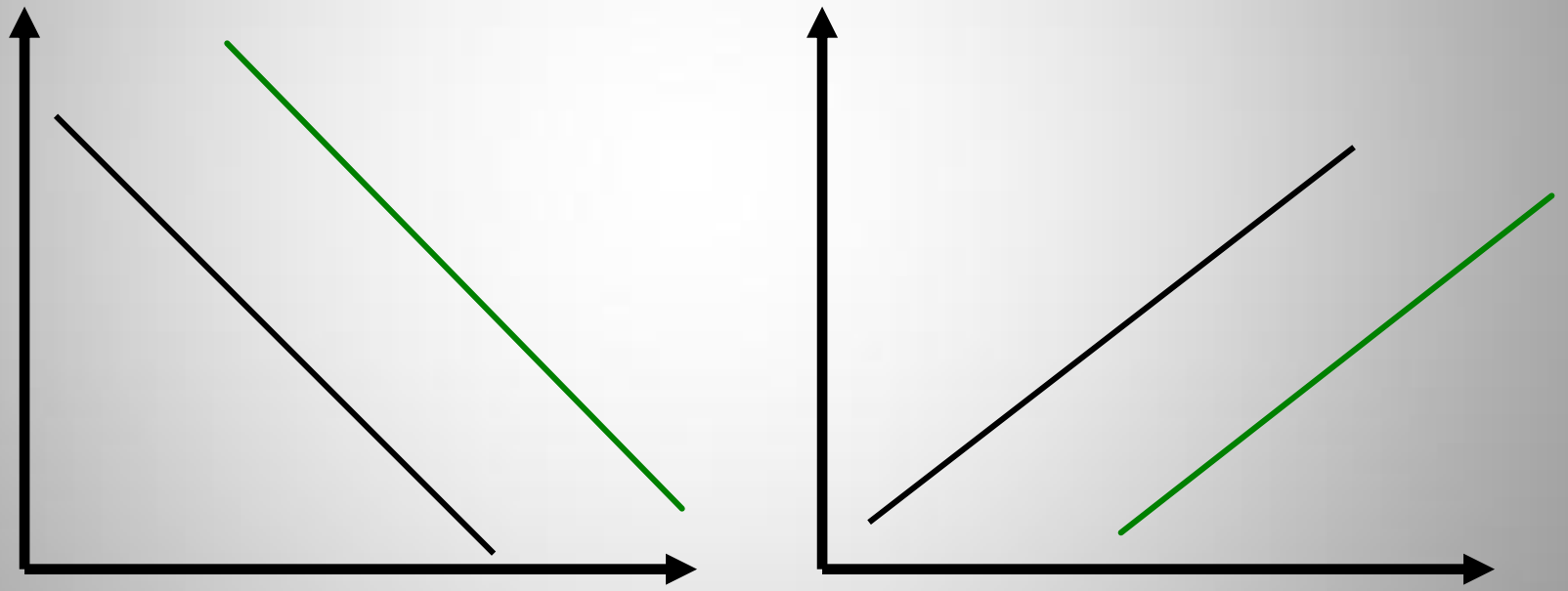
    increases
- Technology
  - Example: a new machine is introduced that makes the production of spam twice as efficient.

    Q^s _____ at each price level.

    increases

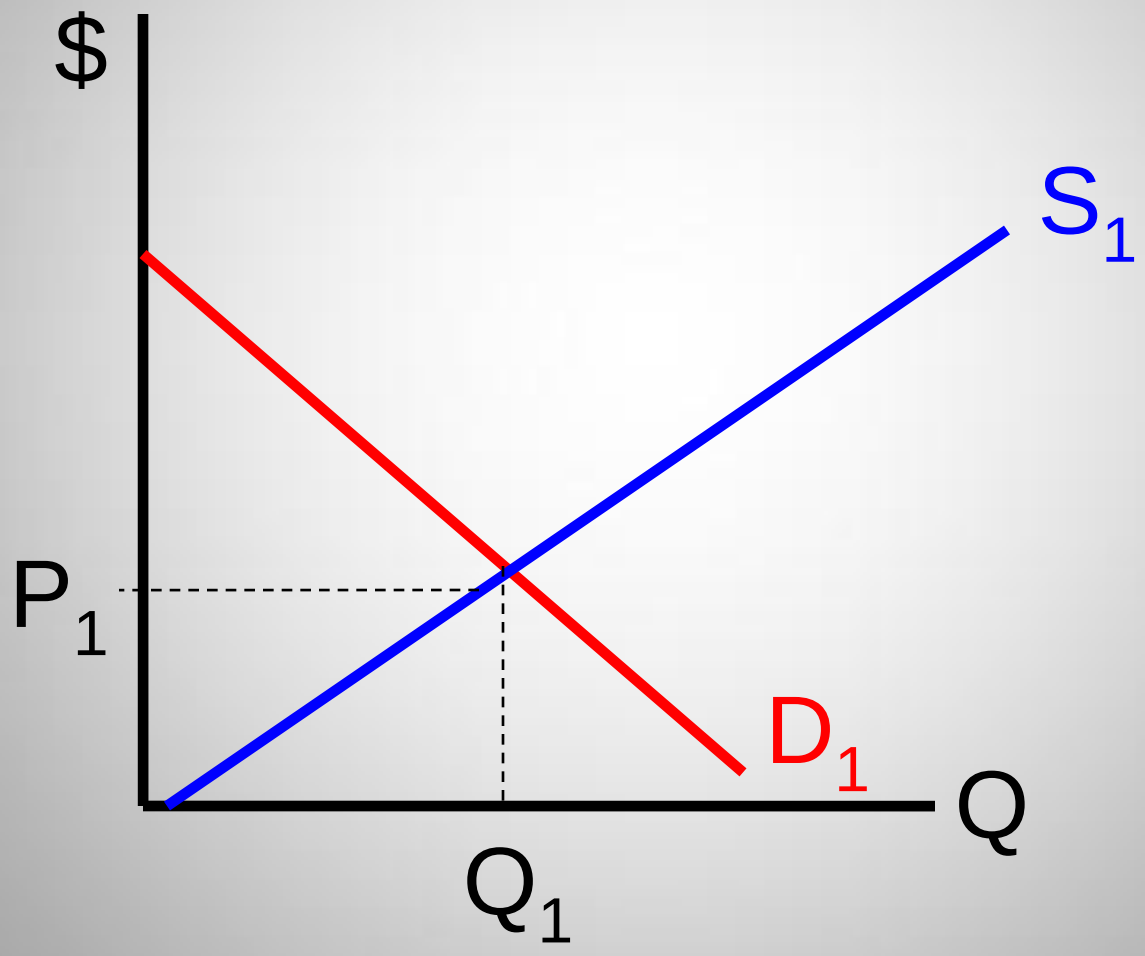
Shifters, cont'd

- Note that a supply shift is different from a demand shift.



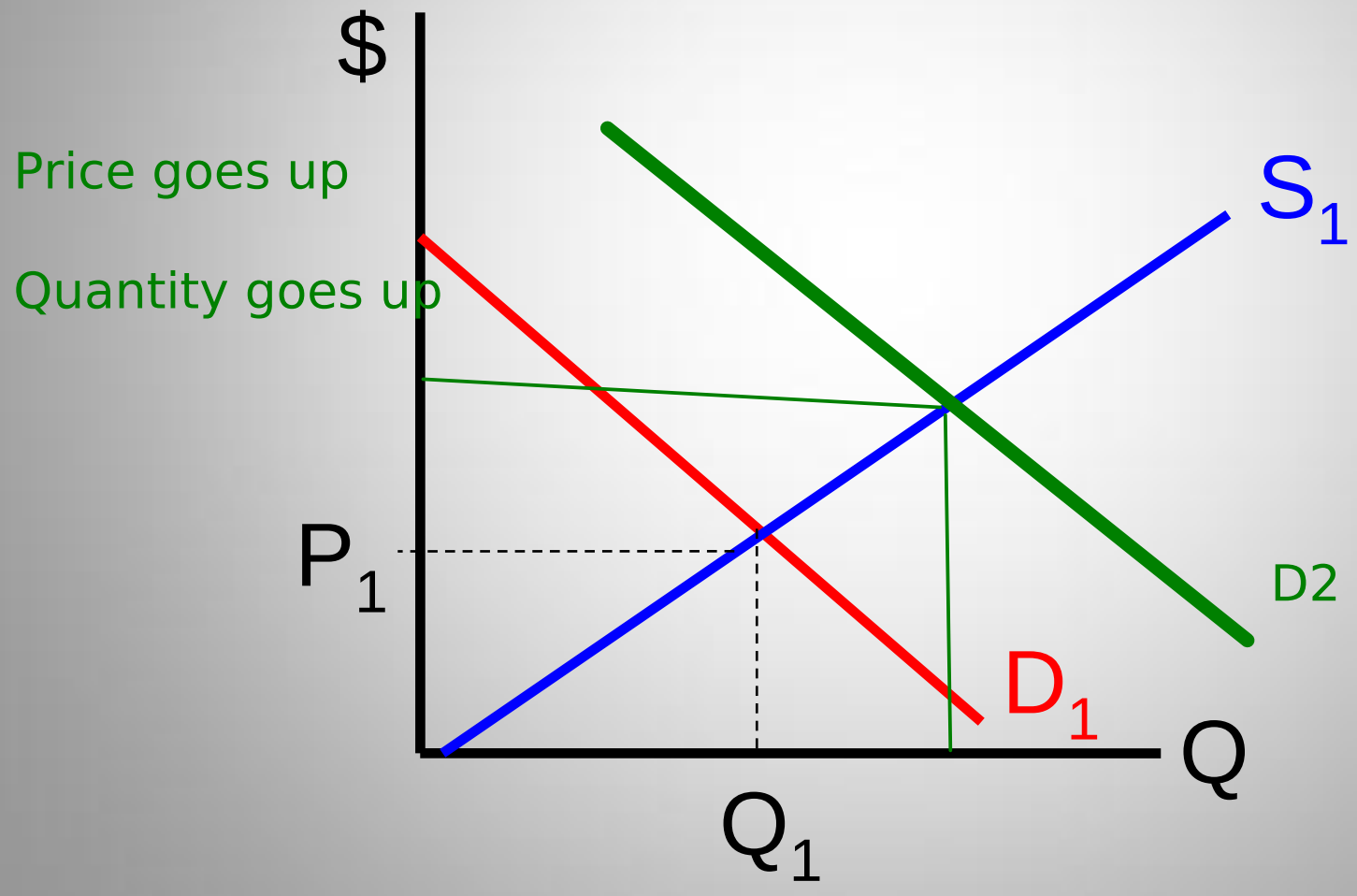
When demand increases and supply increases, both curves shift RIGHT. But it may be confusing to think of it shifting "up"

Supply and Demand



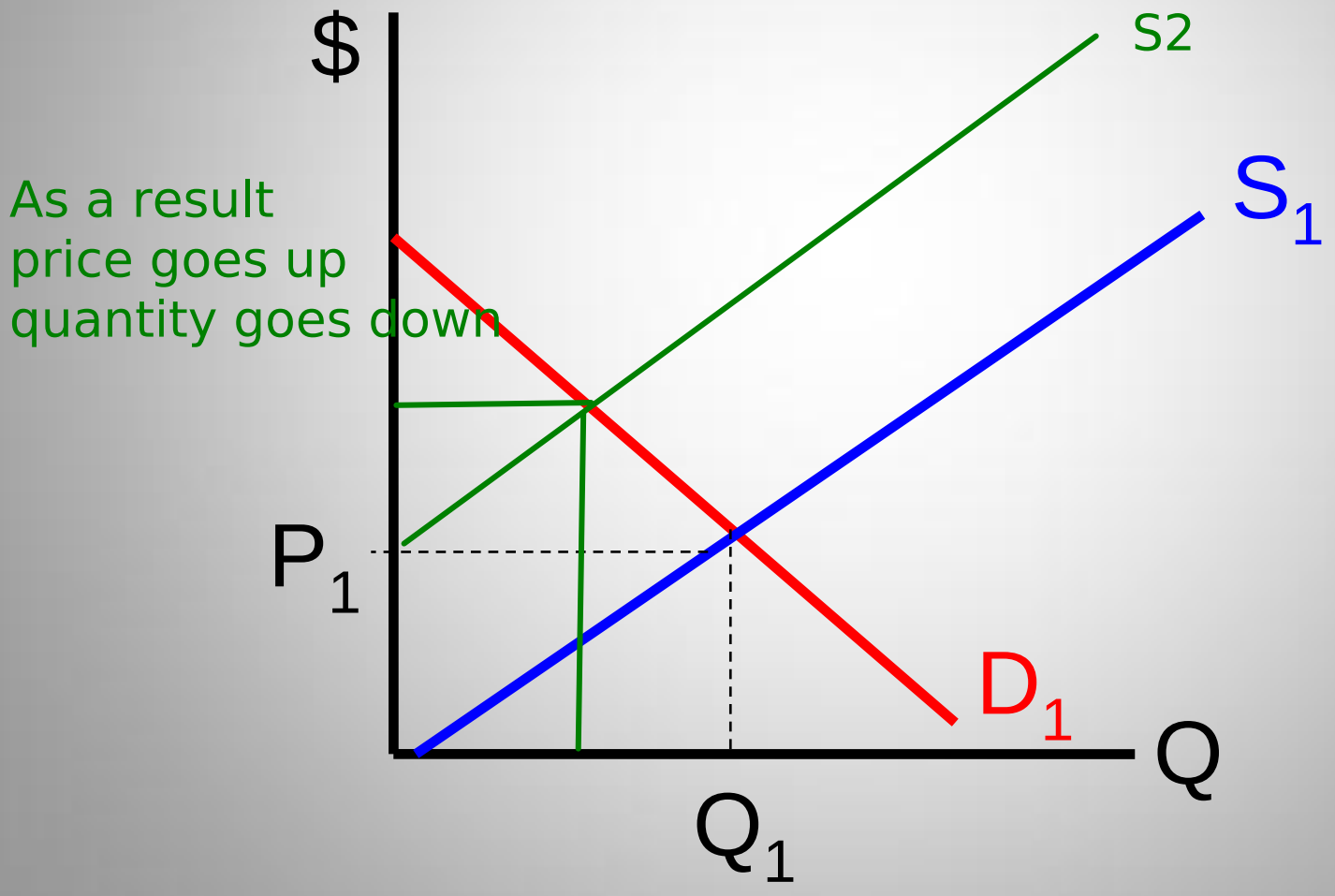
Supply and Demand, cont'd

If just the demand shifts (let's say price of a substitute increases):



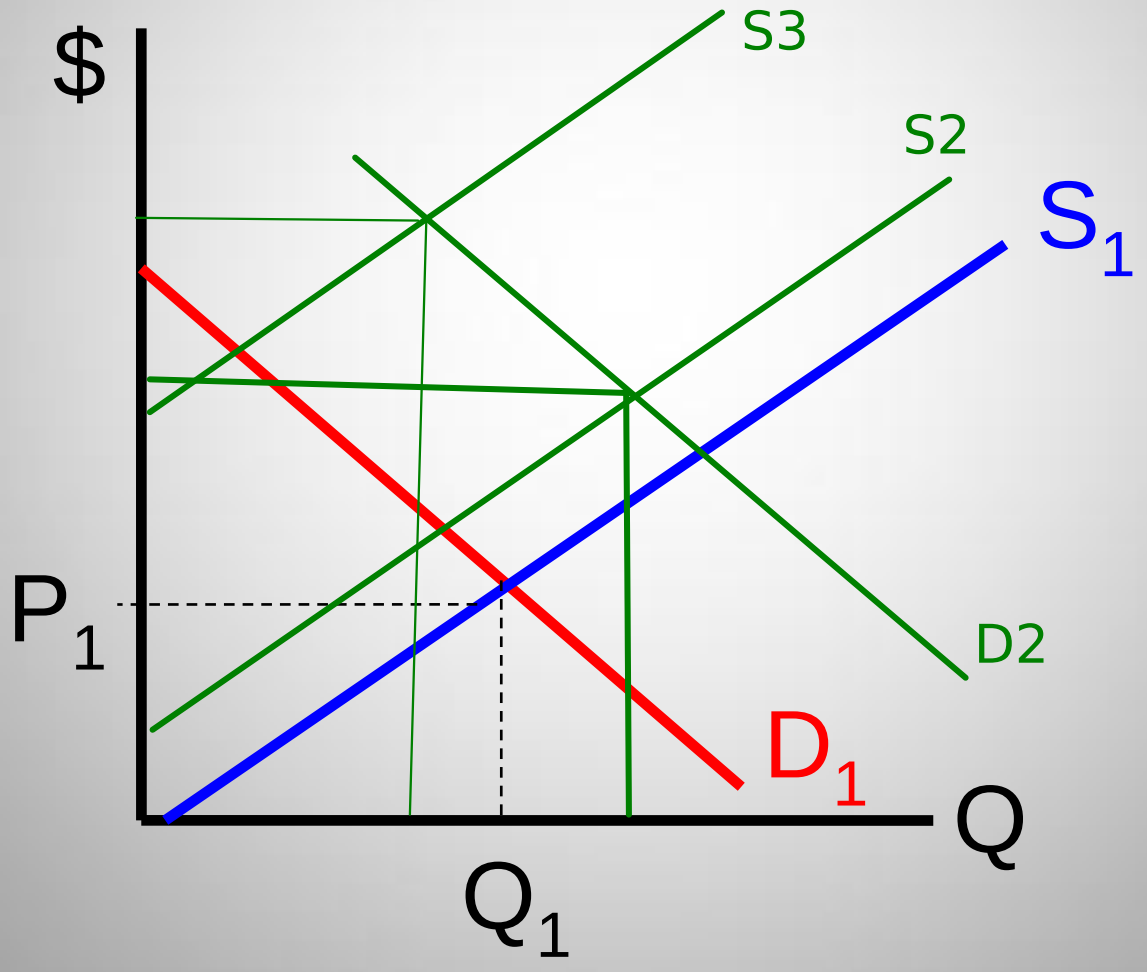
Supply and Demand, cont'd

If just the supply shifts (let's say price of an input increases):



Supply and Demand, cont'd

Both shifting (price of substitute went up, and input cost went up).



Supply and Demand, cont'd

- Putting it all together:

	Shifts	ΔP_{corn}	ΔQ_{corn}
Price of Substitute ↑	Q^D	UP	UP
Price of Input ↑	Q^S	UP	DOWN
Combined:	Q^D, Q^S	UP	ambiguous