

Applied Economics For Managers
Recitation 1
Tuesday, June 8th 2004

Outline

1. Demand/Supply/Eqm

2. Using Demand/Supply – shocks, minimum wage, rent control, policy evaluation

1 BASIC ECONOMIC CONCEPTS – SUPPLY, DEMAND AND EQUILIBRIUM

Microeconomics is study of individual choices and how those choices are reconciled with each other to produce coherent economic and social outcomes.

Thus to describe any particular economic situation we need to find a language to describe these things – the choices of individuals and how those choices fit together.

We do that with some of the most basic concepts in economics:

Demand curves

Supply curves

Equilibrium

Example:

Demand Side

Let's think about a simple example – How many of you stop off in Starbucks in the morning to pick up a coffee?

Most important thing this is going to depend on is the **PRICE OF COFFEE**. For example, suppose the price of a coffee was \$5 how many of you would stop off to pick up a coffee? Probably nobody...

There's going to be some reservation price which is the maximum price the most ardent coffee drinker would be willing to pay...

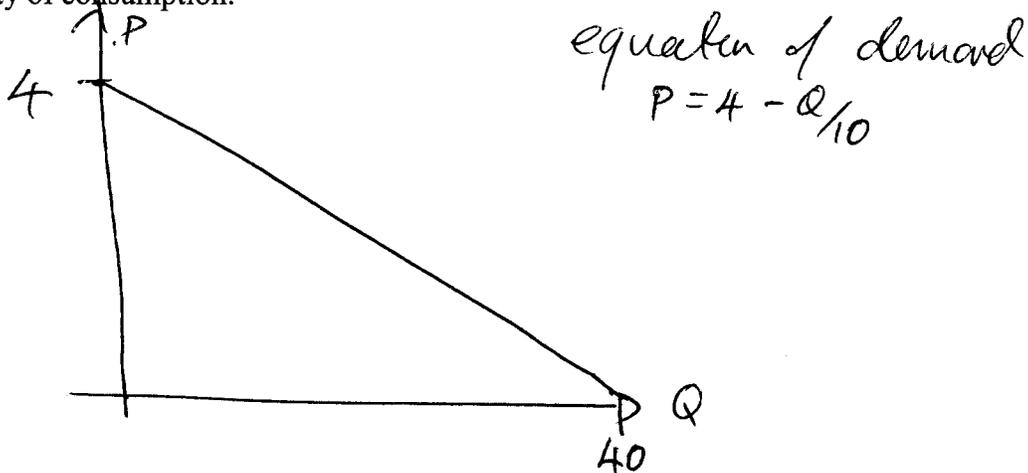
Below that other people are going to start entering the market...

Until at some price everyone who is going to buy a coffee would be willing to consume.

What have we derived? This is what we call the **DEMAND CURVE** – it is the relationship which tells us for **EVERY PRICE, HOW MUCH DO CONSUMERS WANT TO CONSUME**.

P	Q
4	0
3	10
2	20
1	30
0	40

We can represent this information graphically. We draw price on the vertical axis and quantity on the horizontal axis and draw a curve which represents for every price the quantity of consumption.



If we think of each point along the demand curve as corresponding to a consumer then each point represents the value of consumer to that particular consumer – in particular different consumers will have different personal valuations for most goods depending how desirable they find them (this is a bit of an oversimplification as you'll see later...)

KEY PROPERTY – DEMAND CURVE IS DOWNWARD SLOPING.

This is a general property of demand curves and just represents geometrically the fact that as you lower the price more consumers are going to be persuaded to buy.

Supply side

Is this enough to tell us what is going to happen in the coffee market?

Clearly not, we know what consumers would do for every hypothetical price, but what is the actual price in the market?

To answer that question we need to think about the **SUPPLY SIDE OF THE MARKET.**

Where does the coffee actually come from? Firms decide whether or not they want to be in the business of selling coffee.

Just like on the demand side we have a SUPPLY CURVE.

This describes for every price, how much firms decide to supply

IMPORTANT POINT: Note at the moment we are assuming that neither firms nor consumers actually set the price – we will see where the market price comes from in a moment. Instead for both of them they take the market price as given and then they decide how to respond – in terms of the quantity that they demand or supply.

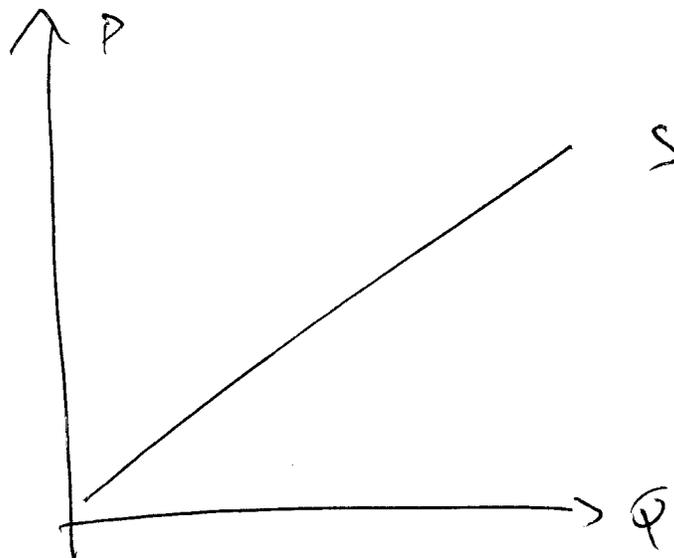
This particular assumption is called **PRICE TAKING** and is a component of **PERFECT COMPETITION** which is an important simplifying assumption in much of economics.

Loosely speaking just as we can think of the demand curve as representing the value of consumption for the consumer we can think of the supply curve as representing the cost of production – just like for every price the demand side of the market is made up of those consumers that value the good above the price – the supply side is made up of those firms that can make a profit, so those with costs below the price – again this is a simplification. Later on we are going to make precise the exact relationship between the supply curve and costs, but for now it's sufficient to think of it as representing costs.

What would happen if the price of coffee rose to \$10 a cup? Probably Kendall Square would be full of coffee shops trying to capitalize.

On the other hand if the price of coffee fell to 10 cents a cup, probably Starbucks would close down,

What does this tell us? The **SUPPLY CURVE IS UPWARD SLOPING**. Higher prices mean loosely that even higher cost firms could survive and make a profit so the total supply would be greater.



Equilibrium

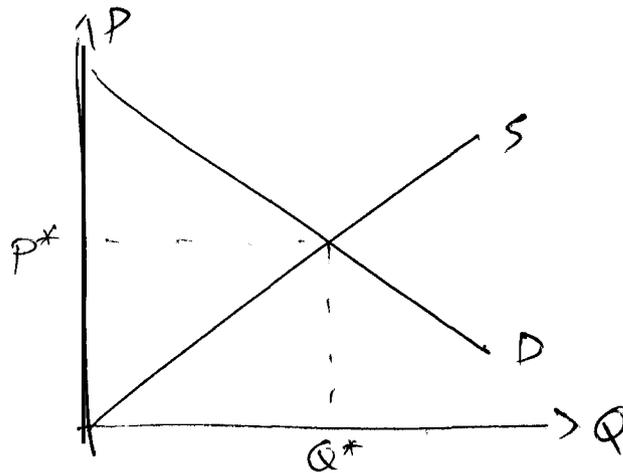
Now we are ready to introduce the final concept. Microeconomics is a discipline that takes the uncoordinated choices of individuals and argues from that that they fit together in a harmonious way to the benefit of society.

What is left is to describe how supply and demand come to be harmonized, and this is the concept of EQUILIBRIUM

The basic idea is that PRICES ADJUST IN THE ECONOMY UNTIL WHAT CONSUMERS WANT TO BUY IS EQUATED WITH WHAT PRODUCERS WANT TO PRODUCE.

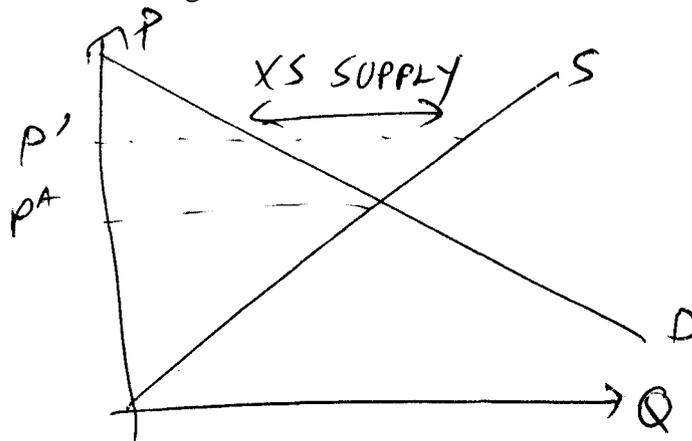
In our supply and demand model of the coffee market we can see that this principle is reflected graphically by the intersection of the supply and demand curves.

MARKET EQUILIBRIUM IS DETERMINED AS THE INTERSECTION OF SUPPLY AND DEMAND. AT THIS INTERSECTION POINT THE PRICE ADJUSTS SO THAT QUANTITIES SUPPLIED AND DEMANDED ARE EQUAL.

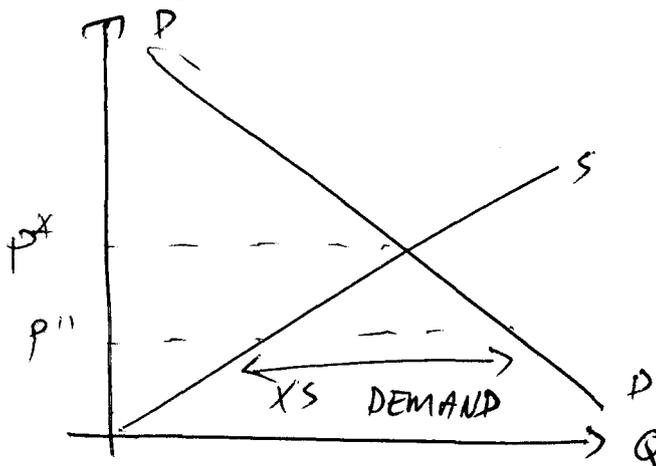


Let's think for a moment about why it makes sense to think of this as an equilibrium

Suppose price were higher – then there would be SURPLUS OR EXCESS SUPPLY. Firms would want to sell more goods than consumers demand – and would be willing to cut prices



Suppose the price were lower – there would be a **SHORTAGE OR EXCESS DEMAND**. Consumers would want to buy more of the good at that price than firms would want to sell and would be willing to bid prices up



The intersection is the only price at which both buyers and sellers are happy for the price not to change.

REMEMBER TO KEEP IN MIND FOR THE MOMENT THAT FIRMS ARE NOT CHOOSING THEIR PRICES. WE ARE ASSUMING THAT THE MARKET IS VERY COMPETITIVE WITH LOTS OF FIRMS SO IF ONE FIRM TRIED TO CHARGE ABOVE MARKET PRICE SOME OTHER FIRM WOULD JUST STEP IN AND TAKE THEIR PLACE.

Positive and Normative Analysis

This is what we call a **POSITIVE ANALYSIS** of an economic problem. Positive analysis is concerned with predicting the outcome of a set of economic interactions.

However there is a second sense in which we can judge economic outcomes, and this is the **NORMATIVE SENSE**. Are the outcomes efficient?

We measure efficiency with the concepts of **CONSUMER SURPLUS** and **PRODUCER SURPLUS**.

CONSUMER SURPLUS is the area above the price actually paid and below the demand curve – represents the difference between willingness to pay of the consumer and price actually paid – the difference is the surplus.

PRODUCER SURPLUS is the area above the supply curve and below the price – the supply curve represents costs, or more precisely **MARGINAL COSTS**, thus the producer surplus represents the difference between price and cost for that unit, i.e. the profits of the firm supplying it.

COMPETITIVE MARKETS ARE EFFICIENT IN THE SENSE THAT THE EQUILIBRIUM OUTCOME WHICH ACTUALLY OCCURS (POSITIVE STATEMENT) IS DESIRABLE (NORMATIVE STATEMENT)

Someone asked in class if Pareto improvements exist in the world. In some sense we should not expect to find them very often precisely because the market is in generally efficient – if there are any beneficial gains from trade the market will find them and the transaction will take place.

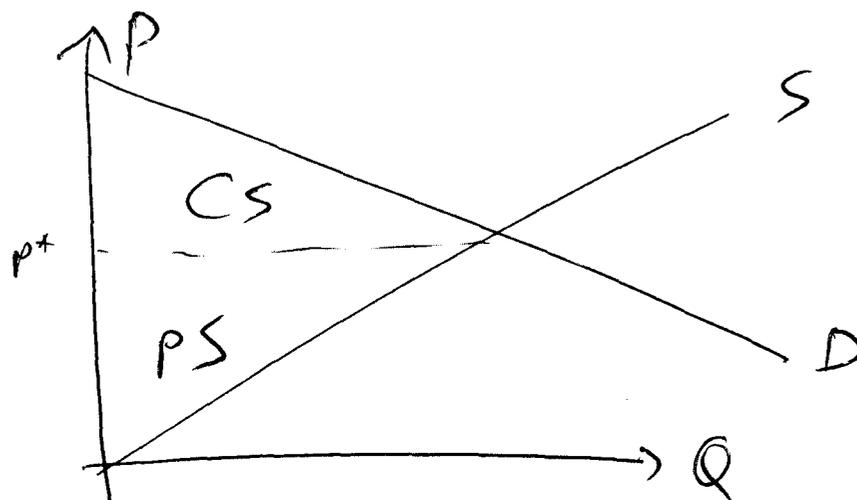
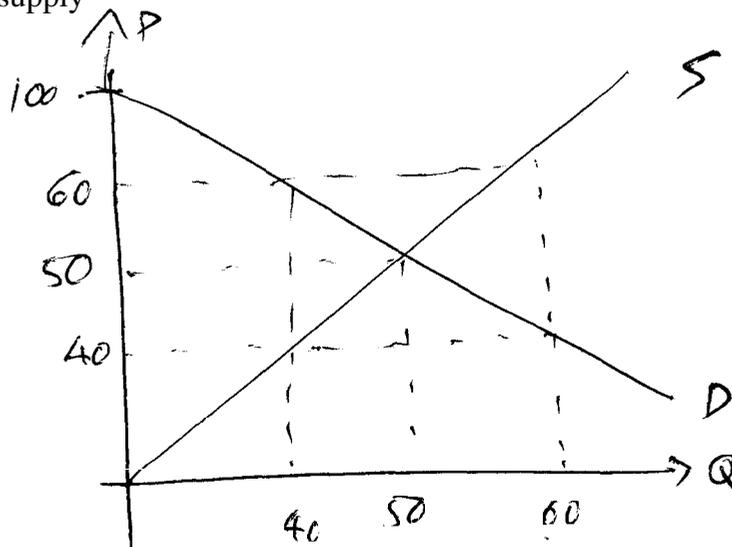
Numerical Example

Consider the market for textbooks

Demand: $Q=100-P$
Supply $Q=P$

Equilibrium: $D=S$. $P=50$ $Q=50$

What would happen at other prices: $P=40$, $D=60$, $S=40$ – Excess demand, $P=60$, $D=40$, $S=60$ – Excess supply



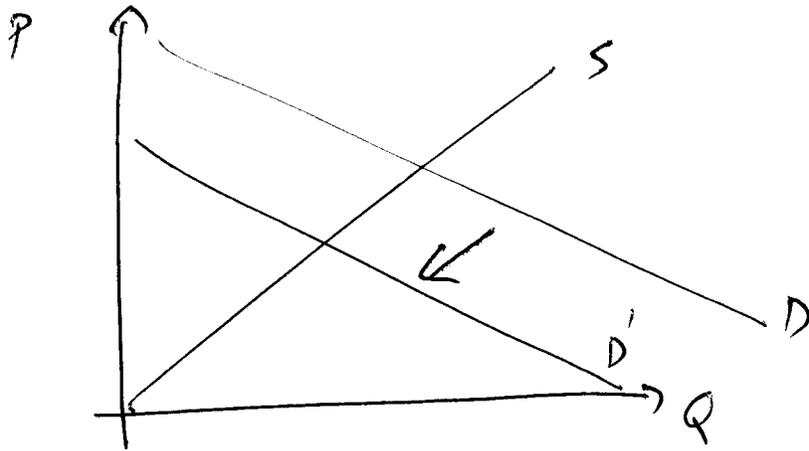
3 – APPLICATIONS

a) SHOCKS

So far we have just focused on the price as determining consumption. But how do we bring other factors into the analysis?

For example, return to the coffee market and suppose now that Sloan starts offering free coffee in the morning, but of a much lower quality than you can get in Kendall Square. What is likely to happen?

Some of you would stop going to Starbucks, but the real coffee lovers wouldn't be deterred. How do we represent this – would be an **INWARD SHIFT OF THE DEMAND CURVE**.

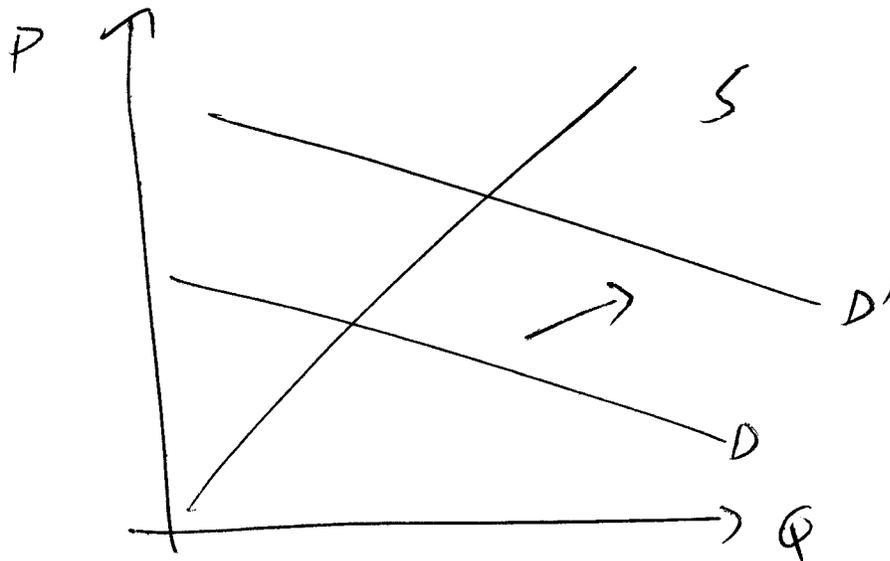


Why? Because the demand curve represents the relationship between price and quantity, and the whole relationship changes when other factors change.

Now we can think of the free coffee as knocking out of the market those consumers that were close to their thresholds of value, thus at every price those consumers will have disappeared so the total consumption in the market is going to fall for every price.

This type of shock is related to a **SUBSTITUTE GOOD** – the free coffee is a substitute, although not perfect for Starbucks coffee. Essentially the price of the substitute fell (it became free!) and some of the demand shifts towards that substitute and away from this market.

We can think of the opposite type of shock with a **COMPLEMENTARY GOOD**. Suppose for example that Starbucks started offering free cookies. This is a good that complements coffee. When the price of a complement falls this increases demand in the market – **DEMAND CURVE SHIFTS OUTWARDS** – people are more willing to consume.



Thus we have two types of effects to think about with supply and demand curves:

- i) effect of price – MOVEMENT ALONG A CURVE
- ii) effect of other variables – SHIFT THE WHOLE CURVE.

Once we have identified the shock we can then use the equilibrium analysis to predict what will happen – the market will move to the new intersection point.

We can think in terms of surpluses and shortages to see why the market has to move. Think about the free coffee example. If the price does not adjust what happens? At the old price demand has shifted inwards – firms are still trying to supply the old amount, but some consumers are lost – there is a surplus in this market and some firms won't make the sales they expected – they are going to make a loss. Pretty soon those firms are going to understand the new demand conditions and go out of business – only the lower cost firms will be able to survive in this smaller market and in this way supply shrinks ALONG THE SUPPLY CURVE until the price adjusts to the new conditions.

EXAMPLES

Although it's simple, supply/demand analysis can be very useful and allows you to think about the consequences of lots of economic changes. All you have to bear in mind is what channel does the shock operate through – is it changing demand conditions or supply conditions, and that's going to depend on the particular situation.

E.g How does an increase in the price of gasoline affect the market for automobile travel?

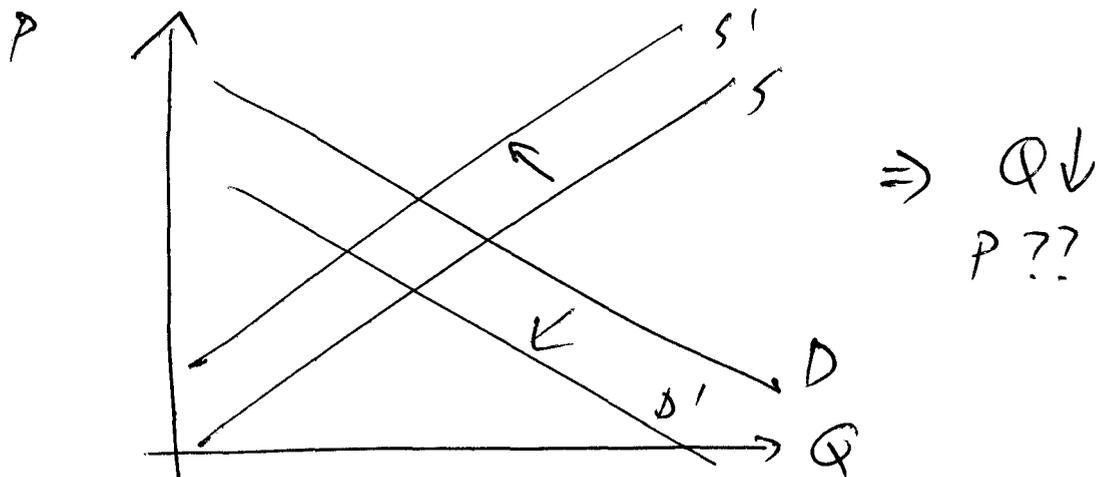
This is a shock to the price of a complementary good on the demand side. When the price of a complement rises demand is going to be adversely affected, so this is a negative shock to demand. If supply curve slopes upwards this is going to drive down the price of cars and restrict the total usage.

Sometimes shocks might operate through both sides of the market. For example suppose the oil shock also drives up the cost of energy. This is a negative shock to supply that drives up production costs. This inward shift of supply has 2 effects:

- i) counteracts the price shock
- ii) amplifies the quantity shock

So we can't predict whether the net effect on prices is positive or negative, but the effect on quantity is definitely negative

Finally we might think that the response to the shocks might also depend on the time horizon – for example the magnitude of the cost shock might be greater in the short run than the long run if alternative sources of energy can be developed.



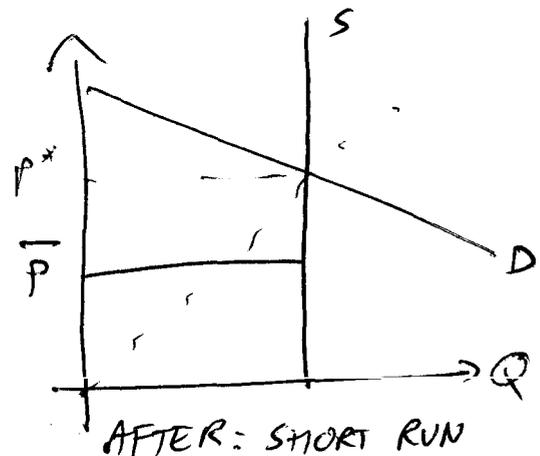
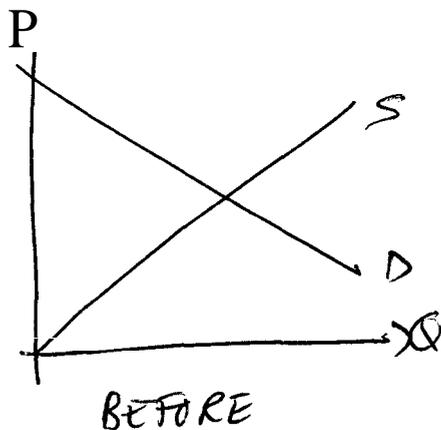
b) RENT CONTROL

Read the case study and try to interpret events in terms of the supply and demand model of the housing market.

Key points:

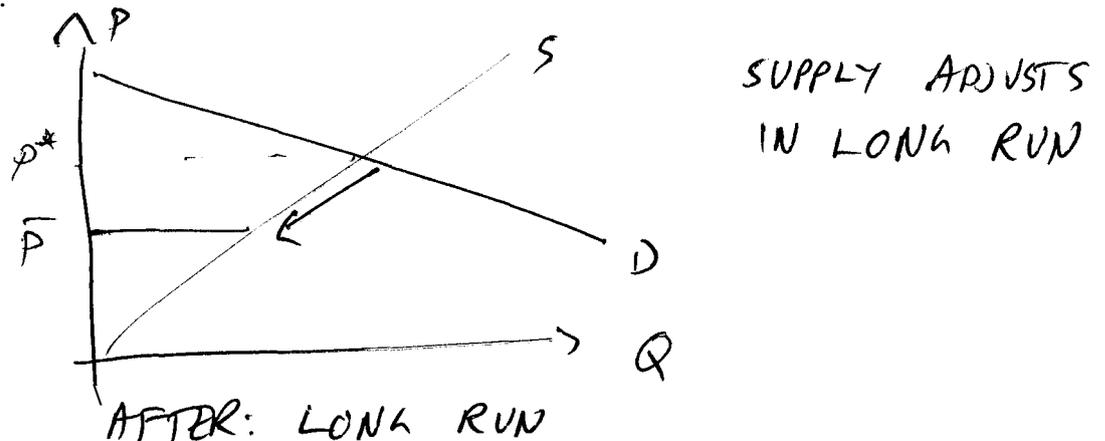
i) without rent controls market is likely to be efficient, but we know that efficiency and equity are not the same thing. Perhaps rent control is motivated by a well meaning desire to help poor tenants even if the cost of this is inefficiency.

ii) In the short run this is probably how it works – discuss short run and long run supply curves – in SR housing stock is fixed.

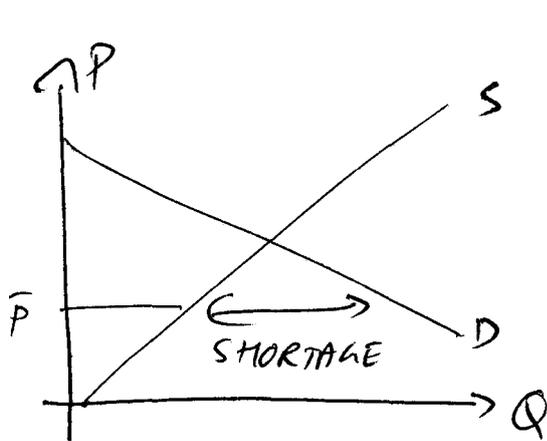


Supply inelastic in short run

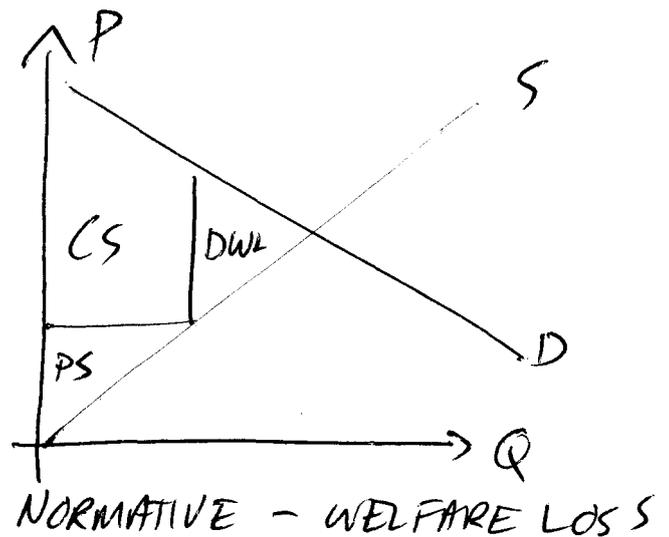
iii) In long run the housing stock is out of equilibrium with desired supply at the low level of rents, what is likely to happen – supply will dwindle – in relation to demand growth there'll be no new investment. Old rental units won't be renovated – capital will be transferred out of housing by allowing depreciation – supply will effectively travel down the supply curve.



iv) do tenants gain now? Well existing tenants still have cheap rents, but maybe the value of their apartments has fallen in line with rents. More importantly there are shortages – some poor tenants won't find housing at all – this is hardly benefiting them



POSITIVE



NORMATIVE - WELFARE LOSSES

v) Finally with a shortage we also have an ALLOCATION PROBLEM to deal with – usually the price mechanism decides who gets what, but with rationing we have to find some way to decide who gets the scarce supply – not everyone can. Indeed maybe we expect that the higher demand consumers will ultimately end up with the goods – they can make payments on the side, maybe invest more time in finding out how to work the rules and regulations or get someone to do it for them – the poor consumers might be the ones that are excluded.

vi) Undoing rent control – should expect the reversing of these effect – new investment, renovation and the end of shortages.

Basic point – just looking at price control is very partial view of the world – capital can be invested in many different places and if the government tries to reduce the returns it will just go somewhere else.

c) TAXES

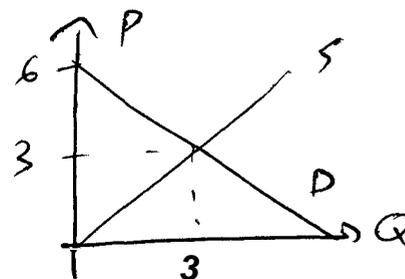
How do taxes affect equilibrium market outcomes? We can do a positive analysis – what is new equilibrium? And a normative analysis

Consider the market for cigarettes. Suppose

Demand: $P=6-Q$

Supply: $P=Q$

Setting these equal $6-Q=Q$ so that $2Q=6$ and $Q^*=3, P^*=3$



Now suppose govt puts a tax of \$2 per transaction to be paid by consumers.

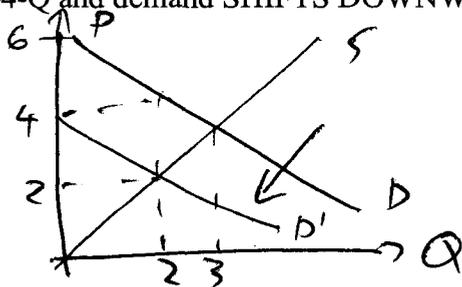
Need to be careful defining the price:

If P is price received by firms, consumers pay $P+2$

Thus supply curve is exactly the same, but we can think of the tax as **SHIFTING THE DEMAND CURVE**.

When producers receive P , consumers demand $Q=6-(P+2)$

So $P=4-Q$ and demand **SHIFTS DOWNWARD**.



Setting $P=4-Q$ and $P=Q$ equal we get

$2Q=4$ and eqm is now $Q^*=2, P^*=2$

So producers receive price 2 but consumers pay 4.

Note – **LEGAL INCIDENCE OF THE TAX IS NOT THE SAME AS ECONOMIC INCIDENCE.**

Who pays the tax? In this case it is shared between producers and consumers – relative to competitive market price has risen by \$1 for consumers and fallen by \$1 for producers.

Note that this outcome would be exactly the same if we thought about producers paying the tax.

Now the supply curve effectively shifts:

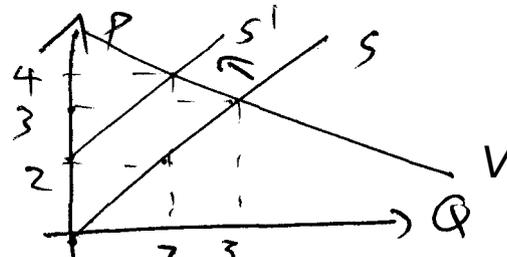
Consumers pay P , but producers only get $P-2$. When that is the price supply is $Q=P-2$ so that $P=Q+2$ but now demand is unchanged

What is the equilibrium?

$$Q+2=6-Q$$

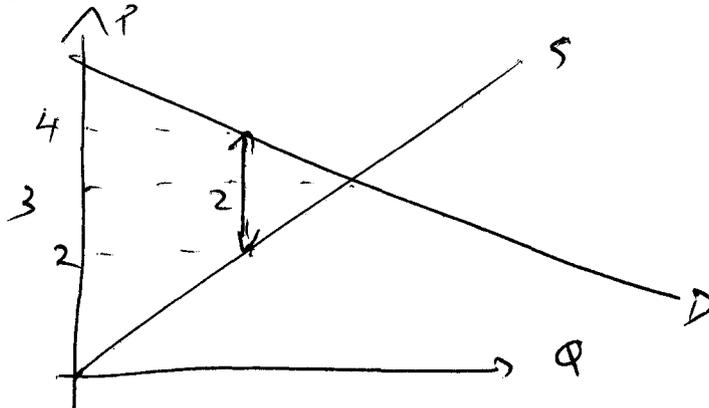
$$Q^*=2 \quad P^*=4$$

Exactly the same!

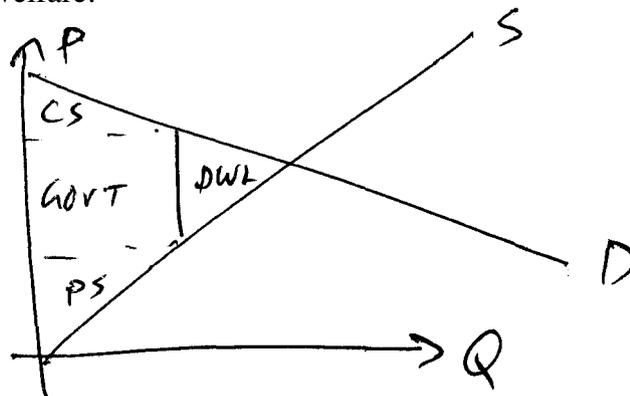


In other words in a competitive market producers can pass on some of the tax to consumers in the form of higher prices, but they also have to absorb part of the tax – we'll see below exactly what this depends on.

This tells us that instead of thinking of shifting the curves, we can actually think about the tax equivalently as just driving a wedge between the price paid by consumers and the price received by producers.



What about welfare:



Main points:

- i) Effect of tax does not depend on whether we think of it as being levied on producers or consumers.

ii) transfer of CS and PS to Govt, but also DWL – raising taxes is inherently costly in competitive markets since they necessarily distort economic decisions. That doesn't mean we shouldn't collect taxes – the marginal benefit to society of having a government is likely to exceed the marginal cost of the distortion, nevertheless an efficient government should still try to minimize the distortions it creates.