

## Lesson 9 The Magic of Markets

Markets do not arise spontaneously in nature. Markets only arise atop certain legal, institutional and cultural foundations. To illustrate, for most of human history, to walk up to a large group of people who you didn't know with valuable items would have been a recipe for robbery and perhaps murder. In many parts of the world today, this is still the case. Therefore, wherever there are functioning markets, there also exist laws and cultural norms respecting property rights and contracts. With these in place, and with confidence that they will be enforced by institutions like courts of law, people can trust one another enough to engage in trade and lending. Really, the genius of a modern market economy is that it does not require that we trust other people. What we trust instead are the laws and the institutions and what gives us the confidence to trade and to invest is the knowledge that if people do not respect our property rights (ie if they try to steal from us) that the state will enforce such respect on our behalf.

This legal/institutional foundation took a long time to develop, but the benefits have been immense, because free (uncontrolled by buyers, sellers or government) markets are unequalled at allocating scarce resources efficiently between competing uses. While we can also rely on tradition or upon the government to do this job, history has shown that neither is as effective as markets can be.

So, what is it about markets that make them so effective? In a word, prices. The real function of a market is to generate accurate price information. With accurate prices, millions of individual households and firms can make decisions as to which items to buy and which to produce. These decisions will in turn further influence prices in a rather neat feedback loop. The genius of a market economy is that it does not require any omniscient authority to decide the three basic economic questions. Instead, a market economy, by letting individuals make their own decisions, generates the prices that in turn further inform individual decision making (ie it is guided by an 'invisible hand').

**As an example, let's take water.** Water can be used for irrigation and for drinking, among other things. Now, some places allocate water according to government decree, and the results are usually that agriculture is allocated a lot of water and that a lot of this water is wasted by inefficient irrigation systems. In a market economy, though, it would be clear that people are willing to pay more for drinking water than farmers can afford to pay for irrigation water. So, the price of water will rise, and people who really need the

water the most for drinking will get it. This higher price for water will now act as a **signal** to farmers of water's relative scarcity, which should cause them to improve their irrigation systems so they don't waste this now-valuable resource. As well, the higher price may also act as an **incentive** for water utility companies to develop more aqueducts and canals to increase the quantity of water available to both households and farms

Generally, then, if the price for a good rises, those consumers who don't really need it or who can satisfy their need with a substitute will stop buying it, leaving it for those people who really do need it. At the same time, producers will notice the increase in price and devote more of their scarce resources to producing the good. Overall, the effect is that scarce resources are directed where they are needed most, as expressed by the prices that people demonstrate they are willing to pay.

The other great thing about markets is that everyone who uses them is made happier. The reason is that a price set by a market is always less than or equal to what the purchasers of the good were willing to pay. On the other side, the market price is always greater than or

equal to the price the producers were willing to accept. For instance, consider a drinks seller at the beach. Most of the people who buy drinks from him would probably be willing to pay more than the \$2 per drink that he charges as the drink gives them more than \$2 of satisfaction. This extra satisfaction that people enjoy and would be willing to pay for over and above the market price is called **consumer surplus**. Those who are not thirsty and therefore not willing to pay \$2 simply do not buy drinks. For the drinks seller as well, the \$2 per drink is probably more than the minimum he would require to stay in business. This extra money over and above the minimum he would require to stay in business is called **producer surplus**. If he needed more than \$2, he would simply go out of business. Generally, as transactions in markets occur without coercion, almost by definition they must make both parties happy, other

wise why would they deal with one another?

Following on from this is the idea of allocative efficiency. **Allocative efficiency** occurs when resources are sent where they are most needed, as indicated by prices. If markets are allowed to operate freely, prices accurately reflect the relative scarcity of resources and desirability of goods. These accurate prices in turn permit buyers and sellers to maximize their overall satisfaction (ie the sum of producer and consumer surplus or what economists call **welfare**). If for whatever reason markets are manipulated and not allowed to operate freely (whether by government intervention or other manipulation), then some potential consumer and/or producer happiness will be lost, thus limiting total welfare and resulting in allocative inefficiency.

## Lesson 10 Modelling the Consumer: Demand

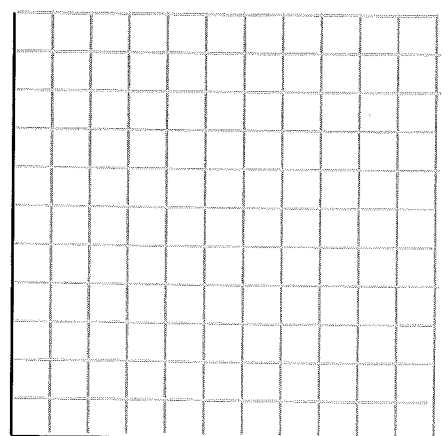
**Demand** is the quantity of a product that buyers are willing and able to purchase per time period at a specific price, ceteris paribus. How can we arrive at a model to explain demand?

Well, first we must construct a model of the consumer, based upon the following assumptions:

1. The individual consumer wants happiness (or, in economics-speak, **utility**).
2. Happiness comes from buying and consuming goods and services (we are aware that there are many other sources of happiness, but goods and services are measurable).
3. The more goods and services we get, the happier we are, and the fewer we get, the less happy we are.
4. However, additional units of a good will give you increasingly less additional happiness. For instance, your first can of Coke may make you very happy, your second can will make you somewhat more happy, your third can will make you a little bit more happy, and so on. This assumption is called diminishing marginal utility.

These assumptions have their flaws, but we can see that # 1 and # 3 agree with common sense. # 2 is very limited, as we have stated, and # 4, while probably true in most cases, may not be true in others (for instance, when collecting sets of things, the final unit that completes the set may make you most happy).

Now, how can we express these assumptions in such a way as will allow us to gain some further insights about our model consumer? Draw a graph below. Label the vertical axis 'chips' and the horizontal axis 'chocolate bars'. Each axis should go to '10'.



Now, imagine I gave you 3 chocolate bars and 3 bags of chips. Mark in this point on your graph. Now, imagine that I wanted to take one of your chocolate bars away from you, but that I did not want this to affect your happiness. What would it take in terms of bags of chips to keep you as happy as you were before? Now continue this all the way down to '0' in terms of chocolate bars. Mark your results on the table and plot the points on the graph.

Chips	Chocolate
3	3
	2
	1
	0

(show how the assumptions 1 through 4 are expressed on the graph)

What we have plotted is an indifference curve, so called because at every point on the curve you are equally happy - ie you are indifferent as to what point of the curve you are on. What the indifference curve shows are your preferences. The shape of the indifference curve for every individual person in the class could very well be different, depending upon what they like more.

Of course, we have drawn only one indifference curve. Could I be happier than with 3 chocolate bars and 3 bags of chips? Of course! If you gave me 4 of each that would make me happier. This point could then be extended to construct a second indifference curve. Clearly, I would prefer to be as far to the top right as possible, with an infinite quantity of chocolate and chips. Why then don't I consume to that point?

The reason is that I don't have an infinite quantity of money with which to buy snacks. I have a budget. My budget, combined with my preferences, determines what I actually go ahead and buy.

So, for our budget, assume you have 6 dollars, and that chips and chocolate bars cost a dollar apiece. Draw in a budget line on your graph above by joining all the combinations of chips and chocolate you can afford with 6 dollars {ie (0,6), (1,5), (2,4), (3,3)...}. What is the happiest you can be with 6 bucks? Or, in other words, what combination of chips and chocolate bars will allow

### Personal Demand Schedule

Price of Chips	Quantity Demanded
10	10
9	15
8	20
7	25
6	30
5	35
4	40
3	45
2	50
1	55
0	60

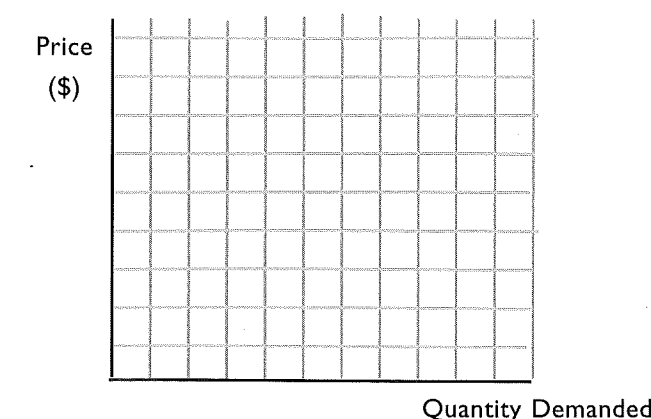
me to just touch (ie be tangent with) the highest possible indifference curve?

Now, let's change things a bit. Let's keep our budget 6 dollars, and let's keep the price of chocolate bars at a dollar, but let's change the price of chips to 2 dollars, and see how our happiest point changes as the budget line changes to a line passing through  $(0,3)$  and  $(6,0)$ .

Lastly, if chip prices went to 3 dollars a pack {implying a budget line going through  $(0,2)$  and  $(6,0)$ }, at what combination would I be happiest? In each case, the number of bags of chips you bought likely decreased. This makes common sense - as the price of something rises, you will probably buy less of it. The fact that the result obtained from the use of our model of the consumer accords with other observations lends credibility to the model.

To this result itself we give a name - **The Law of Demand**. This states that as the price per unit of a product rises, quantity demanded per time period decreases, *ceteris paribus*. We can express the Law of Demand using the **Demand Curve**, which is generally downward sloping. Record your own personal demand schedule and draw your personal demand curve for chips below. Note that if I were to add up everyone's individual demand for chips at each price, I would arrive at the market demand for chips.

### Personal Demand Curve



## Lesson 11 Understanding Demand

So, we have arrived at the law of demand, and expressed it as a demand curve. Carrying on from the last exercise, while the effect of a change in price on the quantity demanded can be expressed by simply moving along the demand curve, sometimes other changes can lead to a change in the quantity demanded. For instance, even if ice cream cone prices were held constant year-round, it is certain that more ice cream cones would be sold in hot weather than in cold weather.

The factors other than price which can lead to changes in the quantity demanded are:

### 1. Income

In the case of normal goods (ie steak, foreign holidays), if incomes rise, *ceteris paribus*, the quantity demanded will rise as well. For inferior goods (ie hot dogs, camping holidays), the opposite will happen (for more on normal/inferior goods, see lesson 18).

### 2. Tastes

If a good suddenly becomes popular, then even if the price remains the same, the quantity demanded will rise. For instance, if flared trousers suddenly became fashionable again, more would be bought even if the price were unchanged.

### 3. The prices and availability of related products

If goods that are used with your good (these are called **complements**, for instance, hot dogs and mustard), or goods that are used instead of your good (these are called **substitutes**, for instance, hot dogs and sausages) change in price or availability, this will affect the quantity demanded of your good even if the price of your good is unchanged.

### 4. Changes in population size and composition

If the population is growing, generally more of all goods will be demanded. If the population, say, is getting older, then the demand for products used by the elderly will rise, while the demand for products used by younger people may decline.

### 5. Changes in the seasons

Goods that are needed in hot weather will sell well in summer, but poorly in winter, despite having the same price all year long.

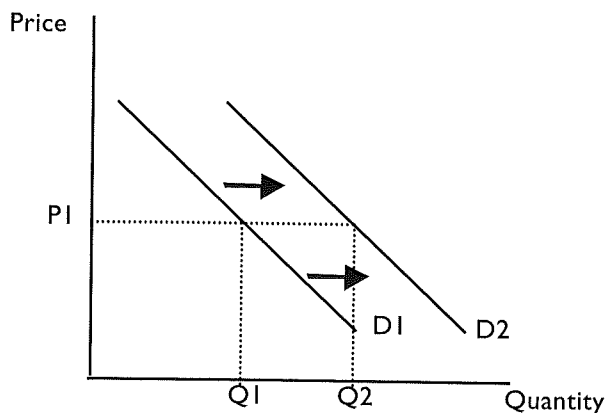
### 6. Changes in income distribution

If a society is becoming more unequal (ie the number of poor and rich is growing but the middle class is shrinking), then this will affect the demand for a number of goods.

### 7. Government policies and taxes

Regulations that either ban (ie smoking) or make compulsory (helmets) the use of certain goods will reduce or increase their demand.

So, if anything happens other than a price change which could cause the quantity demanded for a good or service to increase or decrease, we need to **shift the demand curve in or out**. A simple price change, though, will result in a movement along the existing demand curve, and will change the quantity demanded as well.



This diagram shows a shift in the demand curve to the right from D1 to D2 (shifting OUT). This could be due to an increase in income or any of the other factors listed above.

Notice that even if the price remained at P1, the shift in the demand curve would lead to an increase in the quantity demanded from Q1 to Q2.

## Lesson 12 Modelling the Producer: Supply

**Supply** is the quantity of output that producers are willing and able to provide at a given price in a given time period, *ceteris paribus*. How can we arrive at a model to explain supply?

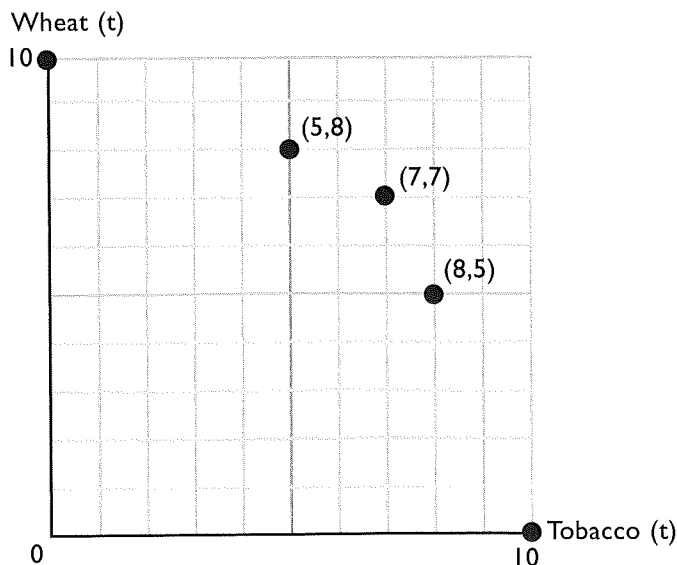
Well, first we must construct a model of the producer, based upon the following assumptions:

1. The producer wants to earn profits.
2. Profits come from producing and selling goods and services using limited factors of production.
3. If more goods and services are sold, greater profits are earned. If fewer are sold, less profit is earned. Producers generally are thought to want to maximize profits.
4. Factors of production are best suited to the production of certain goods.

For instance, on a farm, certain soils are best suited to tobacco, while other soils are suited to cereal cultivation. Thus, if you try to grow cereals on land suited to tobacco, you will find that the opportunity cost of each additional bushel of wheat in terms of tobacco will be greater than the last. This assumption of diminishing returns is what gives the standard PPC its curved shape.

These assumptions have their flaws, but we can see that #1 through to #3 are sensible. Number 4 is the most questionable. Generally, it accords well with larger productive units like entire countries, but less well to smaller productive units like firms. In fact, while diminishing returns implies increasing opportunity costs to specialization, most firms do specialize, which would imply the opposite.

Now we can express these assumptions using the following Production Possibility Curve.



Recall that the PPC shows combinations that are possible inside the curve. Combinations outside the curve are impossible. The shape of the curve is due to diminishing returns. If the soil were equally well suited to either crop, what would be the shape of the PPC?

Now, the PPC simply shows what the producer (farmer in this case) can do. What he in fact will do (ie how he will allocate his productive resources of land, labour and capital towards the production of tobacco and wheat) depends upon the prices offered for his produce. This is the mirror situation of the consumer. With the consumer, given his preferences, what he in fact will buy (ie how he will allocate the money in his budget) similarly depends upon prices. It is interesting to note that it is prices that bring together consumer and producer decision making.



## Lesson 13 Understanding Supply

So, we have arrived at the law of supply and expressed it as a supply curve. Carrying on from the last exercise, while the effect of a change in price on the quantity supplied can be expressed by simply moving along the supply curve, sometimes other changes can lead to a change in the quantity supplied. For instance, even if tobacco prices were unchanged, a drought or flood in the tobacco growing regions could result in less tobacco being offered for sale.

The factors other than price which can lead to changes in the quantity supplied are:

### 1. Changes in technology

If more efficient production technology is adopted, then more could be supplied at the same price.

### 2. Changes in the costs of factor inputs

If factors of production, say labour, get more expensive, then the firm will not be able to supply as much as before at the same price. If inputs get cheaper, on the other hand, suppliers will be able to provide more than before at the same price.

### 3. Changes in the prices of related goods

For instance, if a garment maker could make either shirts or pants (ie **competitive supply**), if the price of pants went up, I would expect the garment maker to switch resources from making shirts to pants. Thus, he would likely supply fewer shirts, even though the price of shirts did not change. On the other hand, if goods are generally produced together (ie **joint supply**), an increase in price for one of them will cause an increase in the quantity supplied for both, even though the price of the second good may not have changed. For instance, skim milk and cream both come from cow's milk. If there is an increase in the price of cream which causes farmers to produce more whole milk, there will also be an increase in the supply

of skim milk even though its price did not change (remember that whole milk contains a portion of cream and a portion of skim milk).

### 4. Government intervention

Indirect taxes will tend to reduce the quantity supplied of a good at each price, while subsidies to producers are intended to increase the quantity supplied of a good at each price.

### 5. Changes in government regulation

Sometimes, government regulations can restrict the quantity supplied of a good. If these regulations are reduced often the result is an increase in the quantity supplied at each price. For instance, when the airline industry was deregulated in the 1980s and supply shifted out, the quantity of airline flights rose even as ticket prices fell.

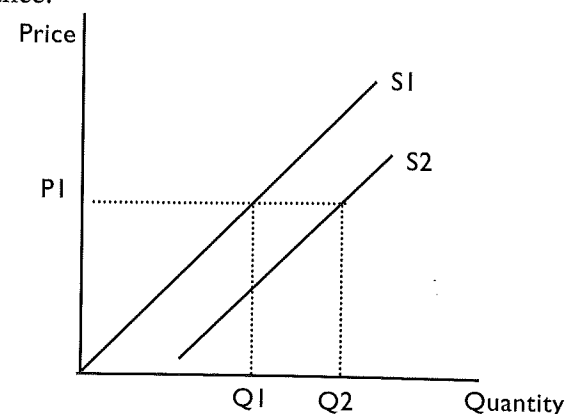
### 6. Other factors matter too

As mentioned above, the weather may have a big impact. As well, improvements in the quality of the workforce (ie more training) or of management may also improve productivity and allow firms to supply more at the same price. Changes in expectations and in the number of firms operating in an industry may also affect market supply.

If anything happens other than a price change which could cause the quantity supplied for a good or service to increase or decrease, we need to shift the supply curve in or out. By contrast, simple changes in price result in movements along the existing supply curve, changing the quantity supplied as well.

This diagram shows a shift in the supply curve to the right from S1 to S2. This could be due to an improvement in technology or any of the other factors listed above. Even if the price remained at P1, the shift in the supply curve would result in an increase in the quantity supplied from Q1 to Q2.

For instance:



## Exercise 13

Use the following decision tree to help you either move the supply curve or move along the supply curve in the examples below. The good being supplied is beef.

Is it a simple price change?

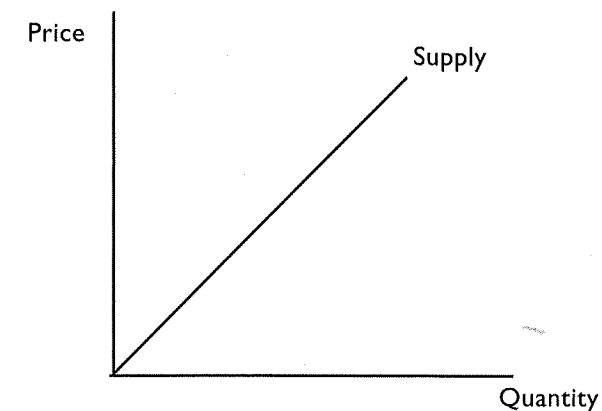
YES - then just move along the supply curve to the new price

NO - then you need to shift the curve

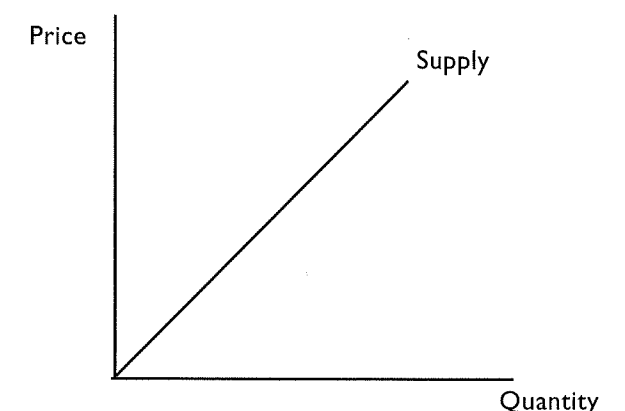
Are producers likely to provide MORE? Shift the curve OUT.

Are producers likely to provide LESS? Shift the curve IN.

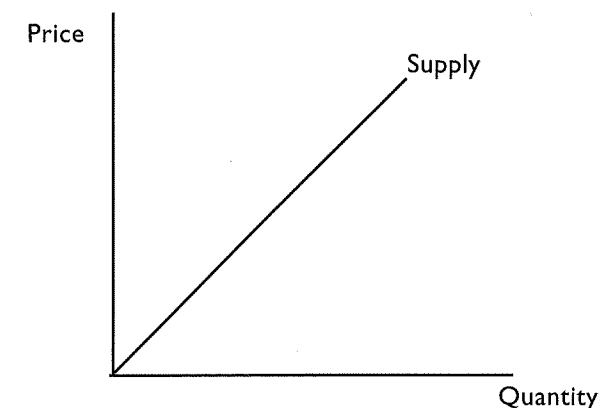
**REMEMBER:** It is very important to get into the habit of moving curves IN or OUT. Using terms like UP and DOWN will cause you grief in the end. As well, be sure to focus only on the FIRST thing that is likely to happen from a change. Don't over think things!



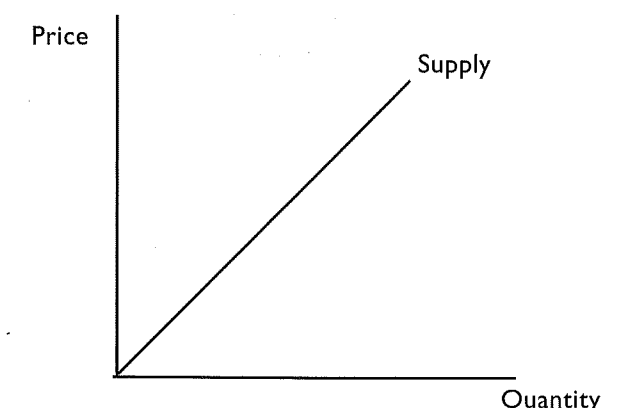
Grain and other cattle feed becomes more expensive



Pork and mutton prices drop sharply



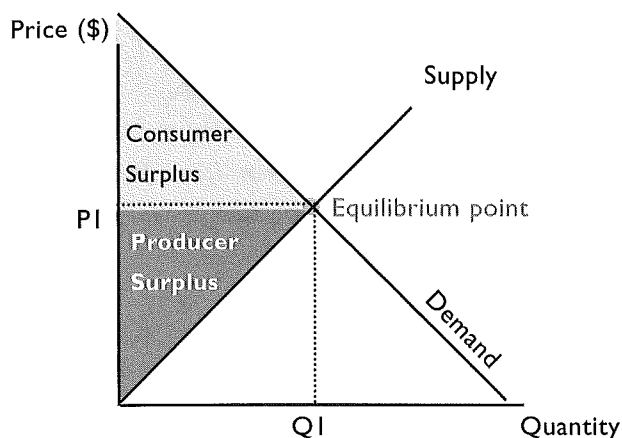
There is a big jump in the price for cowhide used for leather shoes and jackets



Summer BBQ season means higher prices for choice cuts of beef

## Lesson 14 Bringing Consumers and Producers Together Market Equilibrium

Now that we have derived demand and supply curves, let's put them together to create a market diagram. Note how consumer and producer surplus (from lesson 9) can be represented as triangles. The triangle below the demand curve and above the equilibrium price, to the left of the equilibrium quantity, is consumer surplus, while the triangle above the supply curve and below the equilibrium price to the left of the equilibrium quantity is producer surplus.



### TOP TIP

When drawing a market diagram, label all lines, and mark the equilibrium price and quantity by drawing lines to the axes and identifying them as 'P1' and 'Q1'

A **market** is simply a place or a process where buyers can interact with sellers. The diagram above is an idealized market, because we have shown it at equilibrium, or at rest, at P1 and Q1. The equilibrium point is the point where the quantity supplied of a good is equal to the quantity demanded of a good in a given time period. **The equilibrium price** is the price at which this condition holds. If the price were to be higher than P1, the quantity supplied would be greater than the quantity demanded, giving us a situation of excess supply. Conversely, if the price were lower than P1, the quantity demanded at that price would be higher than the quantity supplied, resulting in a situation of excess demand.

So, again looking above, at the equilibrium price P1 we can see that the quantity supplied is equal to Q1, and the quantity demanded is also Q1. Thus, there are no unsold units lying about, nor are there any dissatisfied customers waiting to get goods that have sold out. This

market-clearing equilibrium maximizes the amount of trade as in situations of either excess supply or excess demand it is the lower of the two quantities (quantity supplied or quantity demanded) that actually changes hands.

Generally, we can show changes to markets by combining what we learned about supply and demand curves in previous lessons. Again, a decision tree is helpful.

1. Is the change a simple price change?

If yes, don't move S or D, just move along them

If no, be prepared to move Supply or Demand

2. Is the change one that will affect mainly producers or buyers?

If mainly producers, look at the supply curve

If mainly buyers, look at the demand curve

3. Are they going to be producing or buying more or less?

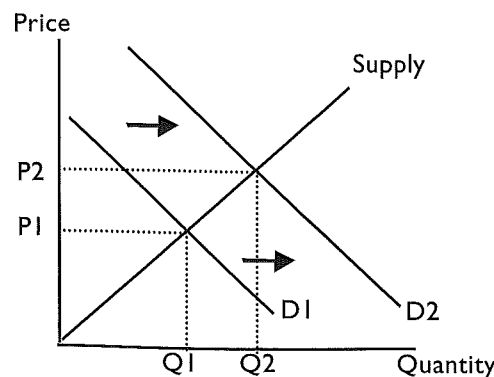
If more, move the curve to the right

If less, move the curve to the left

Generally, if a shift is required, shift **EITHER** supply or demand, not both. Focus on the **FIRST** impact of the event only.

Let's practice with an example, looking at the market for lemonade as the heat of summer approaches:

Is it a simple price change? No, so I must be prepared to shift a curve. Is the change directly affecting producers or buyers? Buyers, so I must look to shift demand. Will it lead to them buying more or less? More, so I must shift demand to the right.



## Questions for Review and Extension

Lessons 9 through 15 (Demand, Supply and Markets)

1. Looking at the preconditions for markets, how does political development lay the groundwork for economic development? Without political development (or in a corrupted political system) what fears may prevent people from establishing businesses or developing existing productive enterprises?

d) Shade in the total amount of consumer and producer surplus (in different shadings) if the market is allowed to operate at its equilibrium point  $(P, Q)$ .

e) If, for whatever reason, shortages or government restrictions (or suppliers limiting output) resulted in only  $Q_1$  units being produced (instead of  $Q$ ), what would be the impact on total consumer and producer surplus and thus on allocative efficiency if prices were held at  $P$ ? Explain, thinking especially of the producers and consumers who would have produced and consumer units to the right of  $Q_1$ .

3. Looking at the diagram in question 2, if you were the sole supplier of the product in the question, and thus able to restrict output to  $Q_1$ :

What price could you charge those  $Q_1$  customers? What would be the likely impact on your profits (and producer surplus) of charging this price? What would be the impact on consumer surplus and allocative efficiency of such a decision? Is welfare merely transferred or is some lost through this action?

2. When a market is operating without manipulation and is allowed to perform its price discovery function to find the market-clearing (or equilibrium) price, both the consumers and the producers who take part are made happier. Looking at the diagram below:

a) Mark in the equilibrium price and quantity  $(P, Q)$ .

b) Looking at the  $Q_1$ st unit, what price were consumers willing to pay to acquire  $Q_1$  units?

c) What price were producers willing to accept in order to produce  $Q_1$  units?

