ECO101: Introduction to Microeconomics

Lectures 3-5

Markets

A system where consumers and producers meet to exchange goods and services

Competitive Markets: a market structure that allocates and distributes goods and services to their most efficient use.

To understand how markets work, we need to turn to our model of supply & demand.

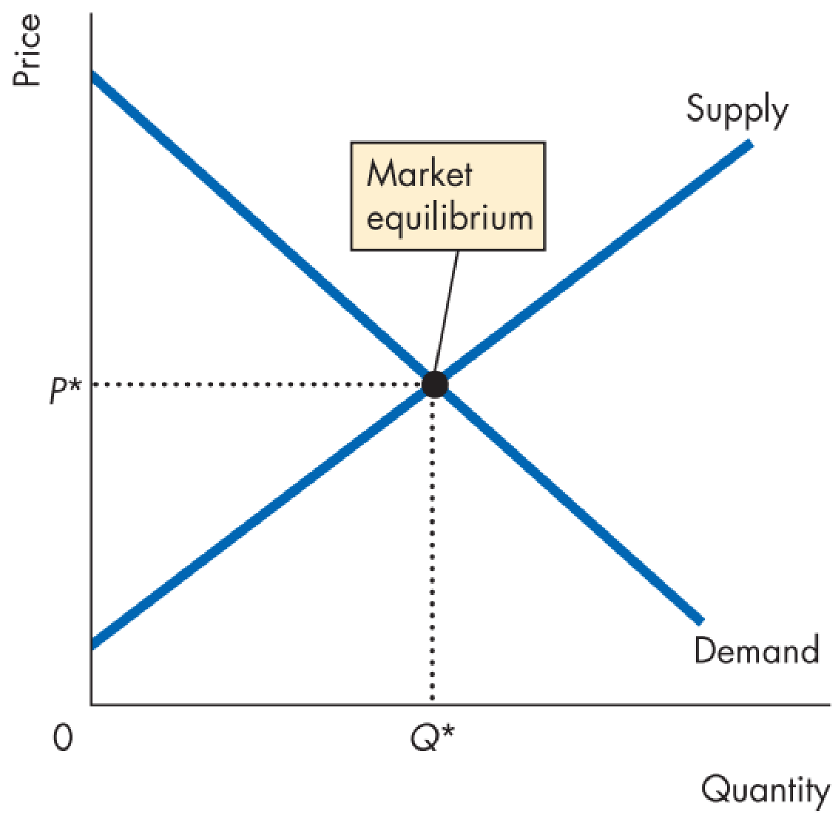
What is an economic model?

- An economic model is essentially a description of the relationship between two or more economic variables.
- Economic models rely on simplifying assumptions to help us get a simplified description of complex processes.

A model of supply & demand

- Variables: quantity, price

A Demand & Supply Model



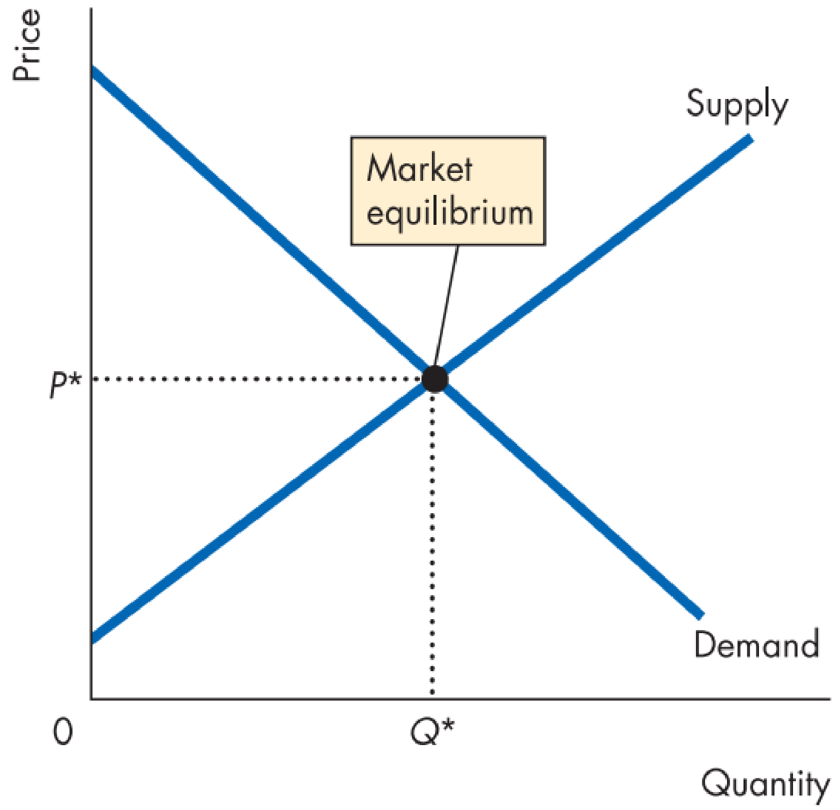
Explains and analyzes as a competitive market for a good/service.

Consider a market for cheeseburgers:

On the x-axis, we have the quantity of cheeseburgers and on the y-axis, we have the price for cheeseburgers.

The downward sloping line is the **demand curve** which shows the relationship between the price of cheeseburgers and the quantity demanded.
The upward sloping line is the **supply curve** which shows the relationship between the price of cheeseburgers and the quantity supplied.

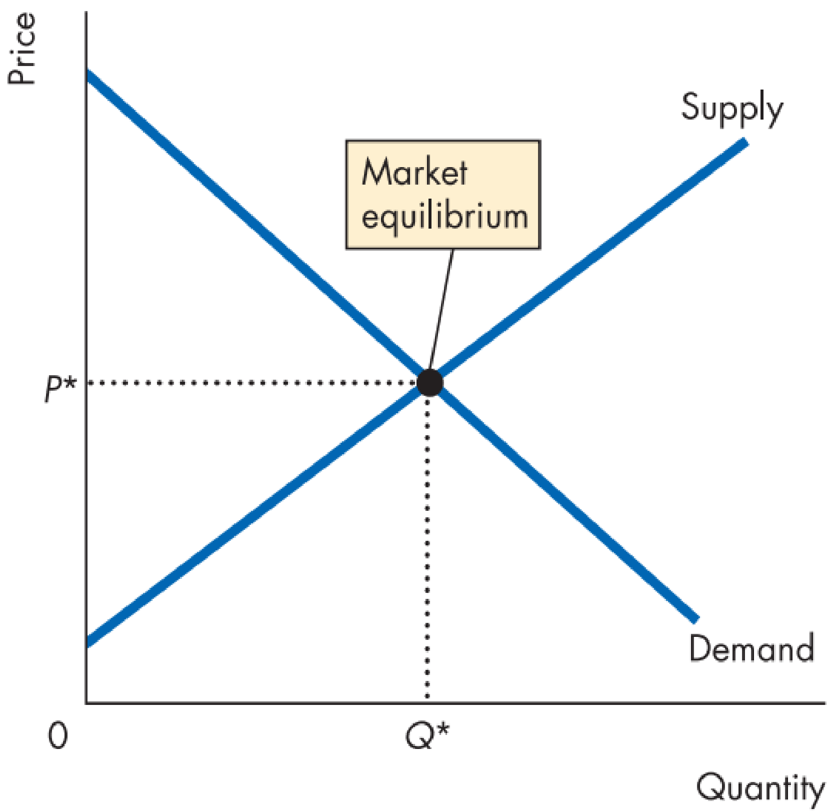
A Demand & Supply Model



Key Assumptions:

- Demand for a good/service declines as price increases
- Supply for a good/service increases as price increases
- Market clears i.e. reaches its equilibrium position at the price where demand equals supply

A Demand & Supply Model



- There is a new burger joint in town called Boss Burgers. What happens to the market for cheeseburgers?

- Price of pizzas across the country are on the rise. How do consumers of fast food react?

Demand

If you demand something, then you:

- Want it
- Can afford it
- Plan to buy it

The quantity demanded of a good or service is the amount that consumers plan to buy during a given time period at a particular price.

Law of demand:

Ceteris paribus, a rise in the price of a good or a service will lead to a fall in the quantity demanded of that good or service, vice versa.

Demand

Why does higher price lead to lower quantity demanded for a good?

Two reasons:

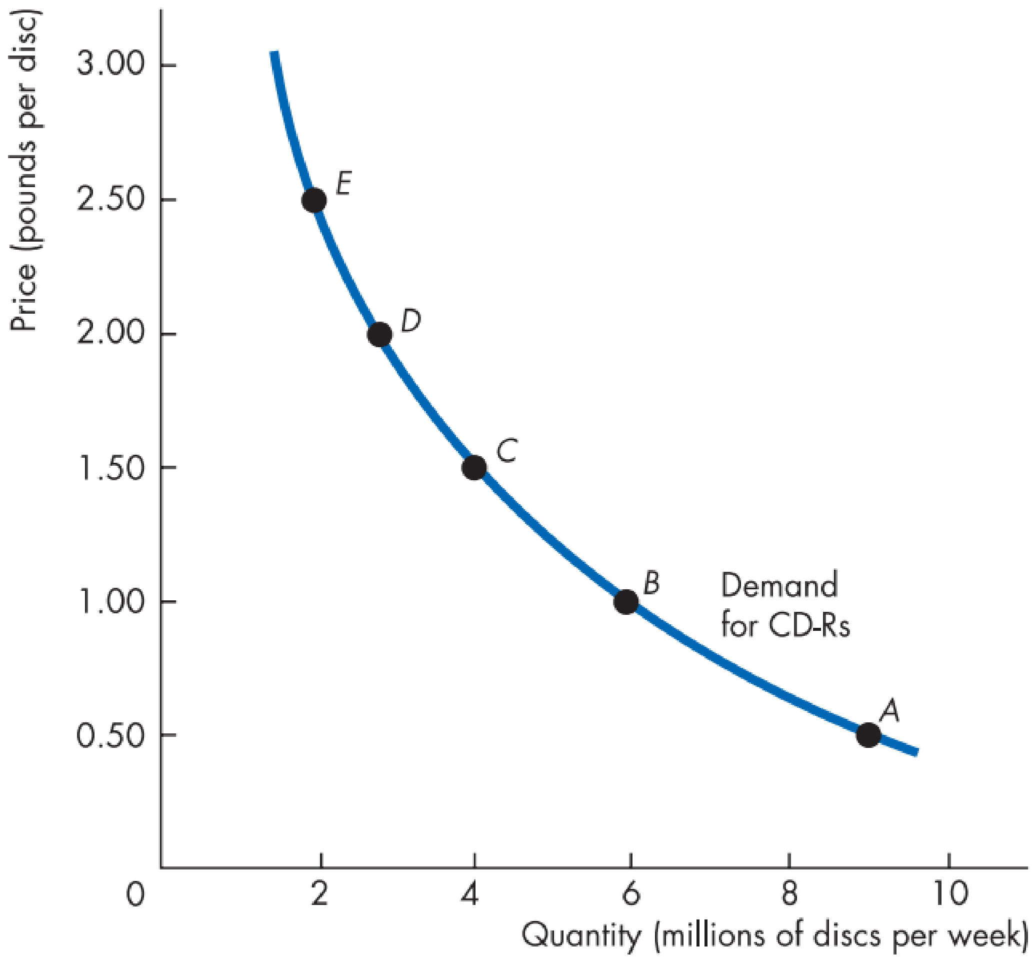
1. Substitution effect: All other things remaining the same, when the price of a good rises, its relative price or opportunity cost rises. The quantity demanded for the good falls as people seek substitutes for it.

e.g. if price of tea increases, people buy more coffee

2. Income effect: When price of a good rises relative to income, people can afford less of the goods they previously bought. So, quantity demanded of the good decreases.

Demand Schedule & Demand Curve

	Price (pounds per disc)	Quantity demanded (millions of discs per week)
A	0.50	9
B	1.00	6
C	1.50	4
D	2.00	3
E	2.50	2



Movements along the demand curve are only brought about by changes in price, all other things remaining the same.

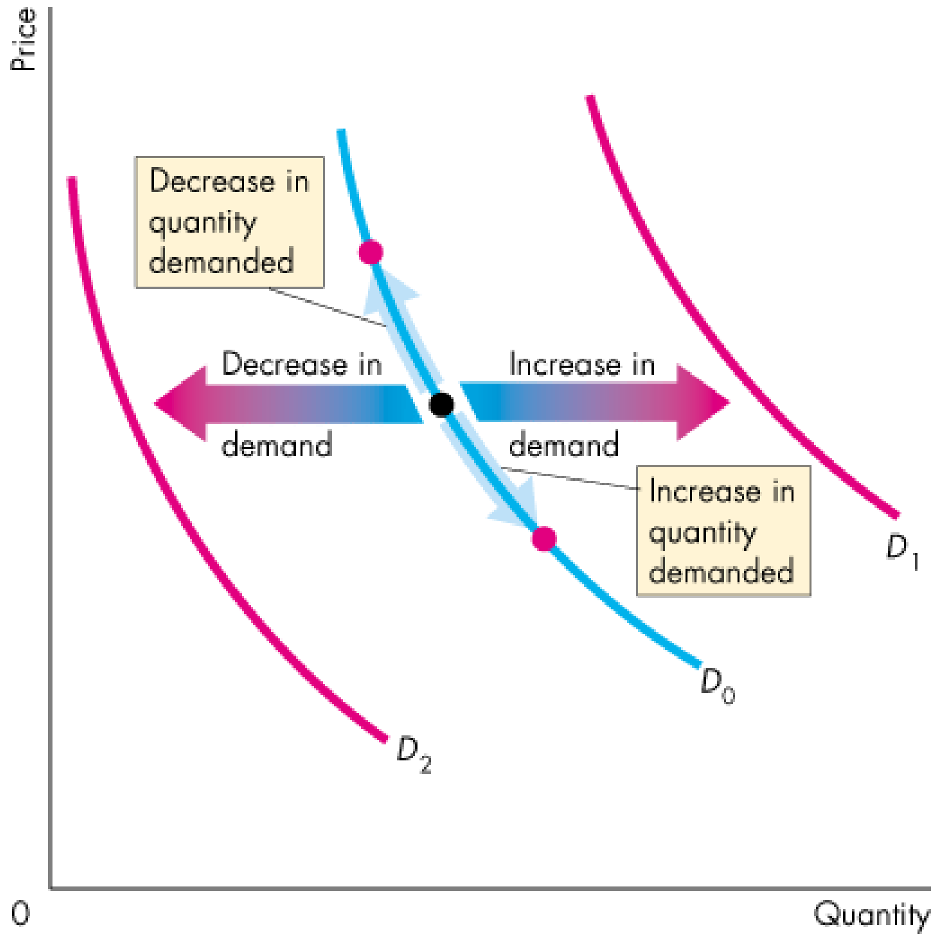
Factors affecting demand

When a factor other than price changes, there is a change in the demand i.e. shift of the demand curve.

What factors affect your demand for coffee?

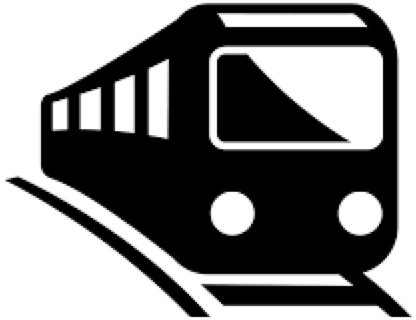
Factors affecting demand

1. Price of related goods
2. Expected future prices
3. Income
4. Expected future income
5. Population
6. Preferences

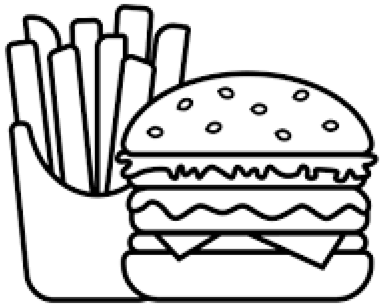


Factors affecting demand

1. Price of related goods



Substitutes: A substitute is a good that can be used in place of another good.



Complements: A complement is a good that is used in conjunction with another good.

Factors affecting demand

2. Expected future prices

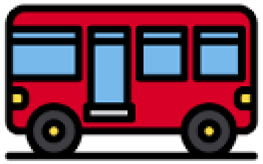
If the price of a good is expected to rise in the future, current demand for the good increases.

3. Income

When income increases, consumers buy more of most goods

Normal goods: A good for which demand increases as income increases.

Inferior goods: A good for which demand decreases as income increases.



Factors affecting demand

4. Expected future income

When income is expected to increase in the future, demand might increase today.

5. Population

When population size increases, demand for all goods and services increases.

6. Preferences

Preferences are an individual's attitude towards certain goods and services. If preferences change, demand changes.

Factors affecting demand

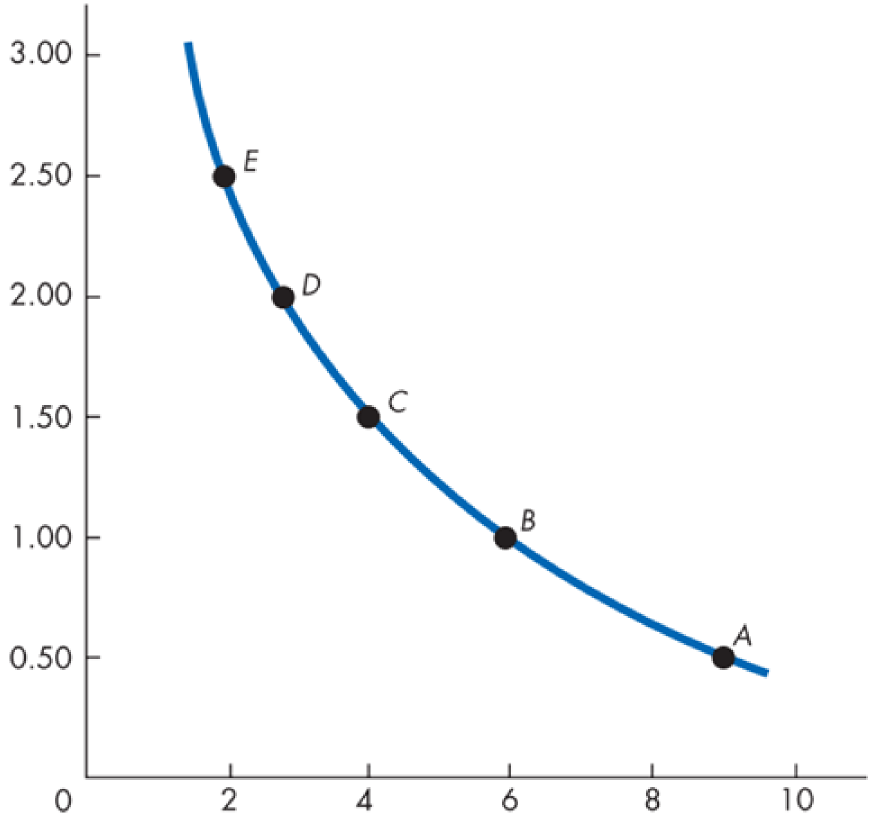
Example:

Sunsilk and Pantene are leading shampoo brands which are also great substitutes.

The curve on the right represents the demand for Sunsilk.

Suppose there is a BDT 5 increase in the price of a sachet of Pantene.

What happens to the demand for Sunsilk?



Factors affecting demand

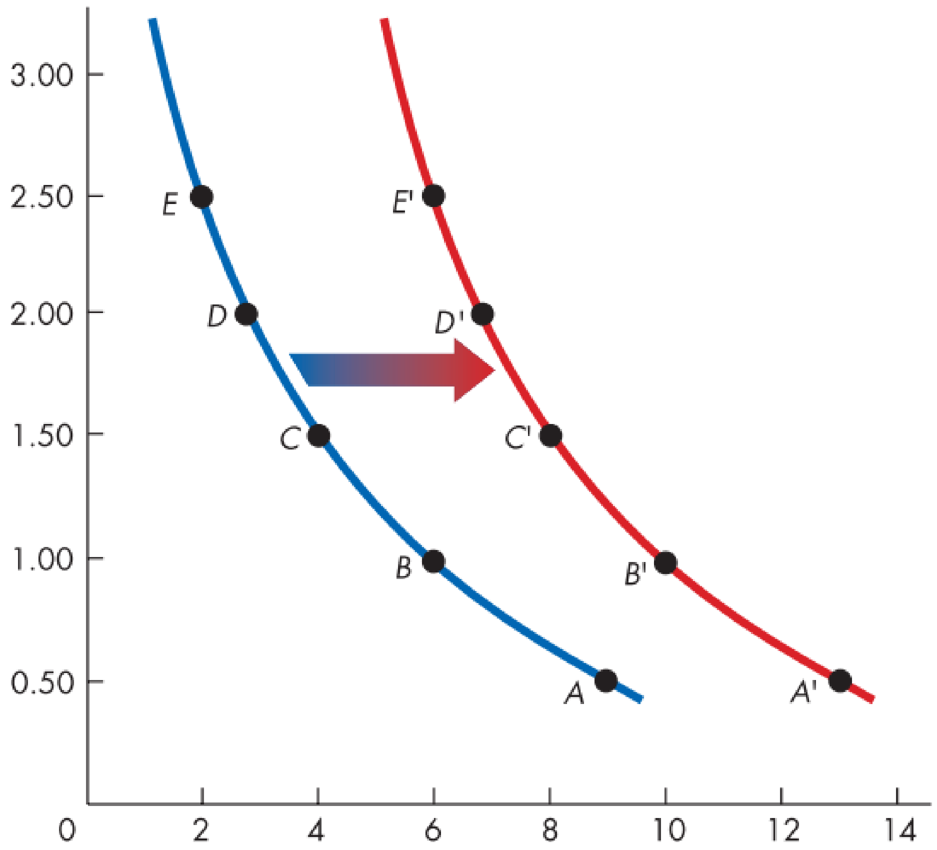
Example:

Demand for sunsilk increases, so the demand curve shifts rightwards.

At a price BDT 1.50, demand for sunsilk shampoo increases from 4 sachets (point C on the old demand curve) to 8 sachets (point C′ on the new demand curve)

At the same price level, the quantity demanded has increased.

An Increase in Demand



Supply

If a firm supplies a good/service, the firm:

- Has the resources and technology to produce it
- Can profit from producing it
- Plans to produce and sell it

The quantity supplied of a good or service is the amount that producers plan to sell during a given time period at a particular price.

Law of supply:

Ceteris paribus, a rise in the price of a good or a service will lead to an increase in the quantity supplied of that good or service, vice versa.

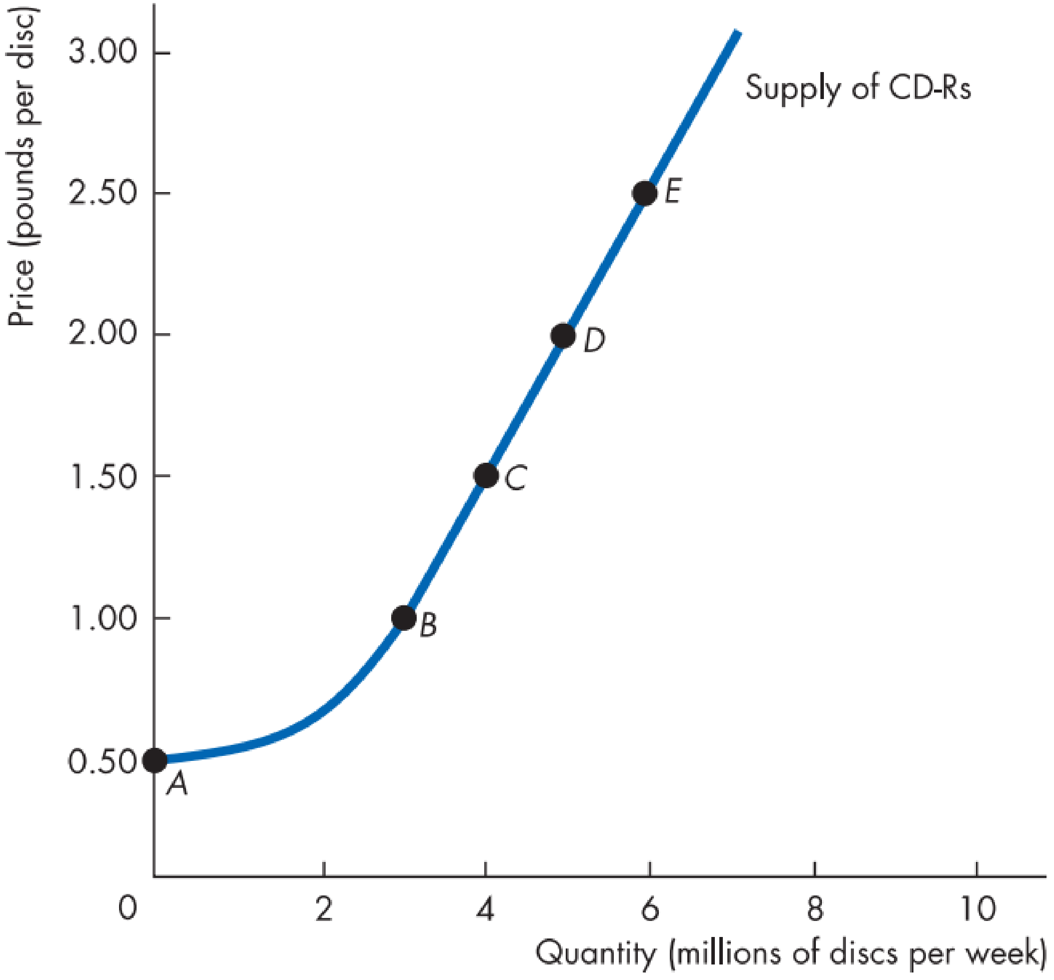
Supply

As price rises, consumers demand less (substitution and income effect), but producers produce more.

When price level changes, profit margin changes. Suppliers respond to increased profit margins through increasing their production.

Supply Schedule & Supply Curve

	Price (pounds per disc)	Quantity supplied (millions of discs per week)
A	0.50	0
B	1.00	3
C	1.50	4
D	2.00	5
E	2.50	6



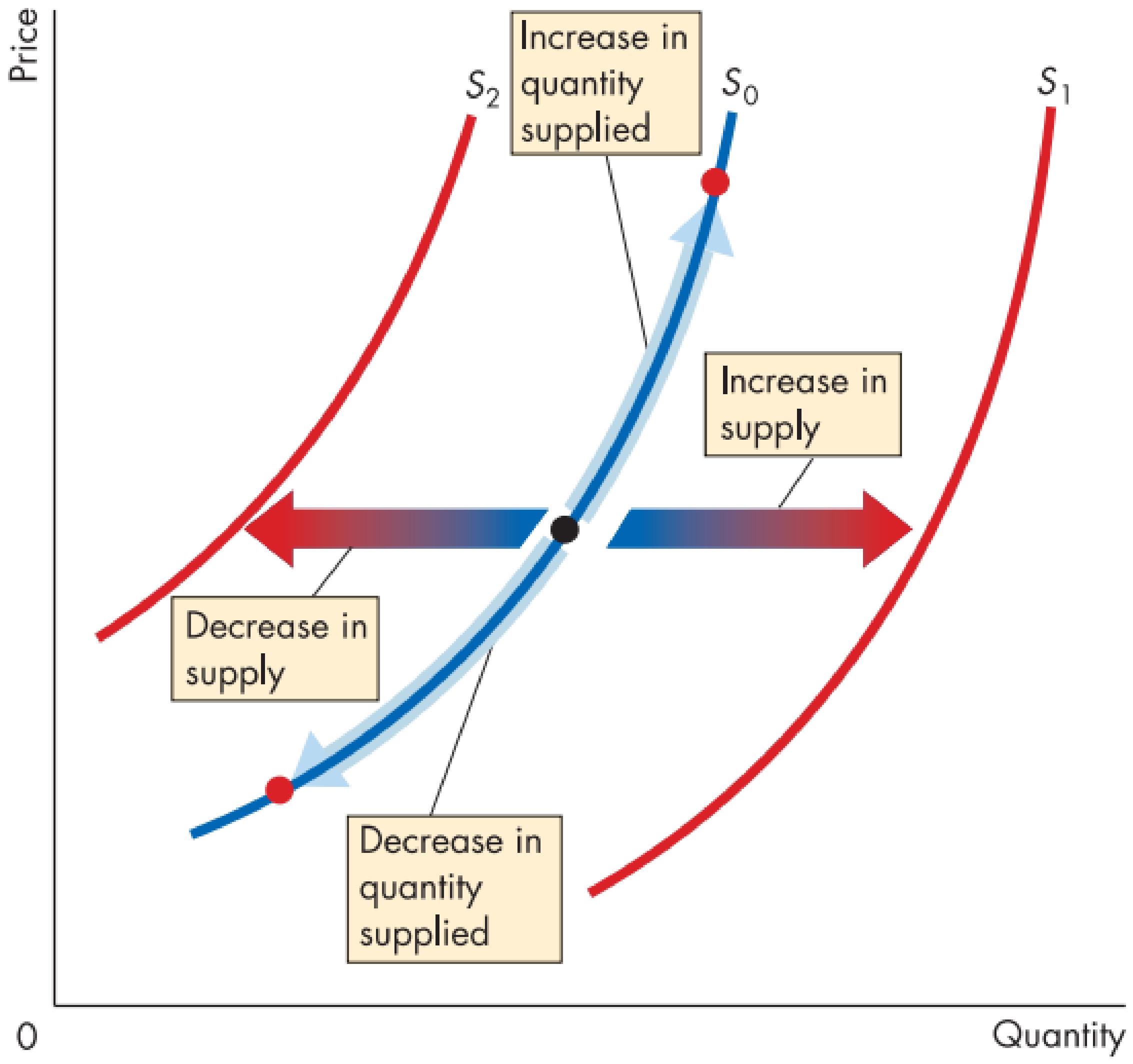
Movements along the supply curve are only brought about by changes in price, all other things remaining the same.

When the price of the good changes, there is a movement along the supply curve and a change in the quantity supplied, shown by the blue arrows on supply curve S0.

When there is any change in the factors affecting supply, there is a shift of the supply curve and a change in supply.

An increase in supply shifts the supply curve rightward (from S0 to S1), and a decrease in supply shifts the supply curve leftward (from S0 to S2)

A Change in the Quantity Supplied versus a Change in Supply



Factors affecting supply

When a factor other than price changes, there is a change in the supply i.e. shift of the supply curve.

Factors:

1. Price of factors of production
2. Price of related goods produced
3. Expected future prices
4. Number of suppliers
5. Technology

Factors affecting supply

1. Price of factors of production

What are the main factors of production?
Land – earns rent
Labor – earns wage
Capital - earns interest
Entrepreneurship – earns profits

When costs associated with these factors of production go up, it becomes costlier to produce the goods/services. Hence, supply decreases.

Factors affecting supply

Why are garment manufacturers unhappy about the rise in minimum wage for workers?

Garment workers' unions in Bangladesh have given a lukewarm reaction to the announcement of a new minimum wage for millions of workers.

On Thursday it was announced the new minimum wage would be 3,000 taka ($43), up from 1,662 taka, but far short of labour union demands of 5,000 taka.

Garment manufacturers are also unhappy about the deal.

They set conditions for agreeing to the higher wage, including suspending bonuses usually given during festivals.

The manufacturers say that the pay rise will cut into their profits and affect the country's competitiveness as a manufacturing hub.

"We would like to pay the higher wages as we are being pressed by the workers and the authorities," Abdus Salam Murshedy, president of the Bangladesh Garments Manufacturers and Exporters Association (BGMEA), said before the minister's announcement.

But he said that for this to be possible, the government should give them subsidies, cash incentives and lower taxes.

Factors affecting supply

2. Price of related goods produced

Substitutes: substitutes in production are goods that can be produced using the same raw materials

Rise in price of substitutes will lead to a fall in the supply for a good.

e.g. cookies and cupcakes at a bakery

Complements: complements in production are goods that must be produced together.

Rise in price of complements will lead to an increase in the supply for a good.

e.g. schools and training programs for teachers

Factors affecting supply

3. Expected future prices

If the price of a good is expected to rise in the future, suppliers will get higher returns from selling the good in the future than they get today.

Supply decreases today and increases in the future.

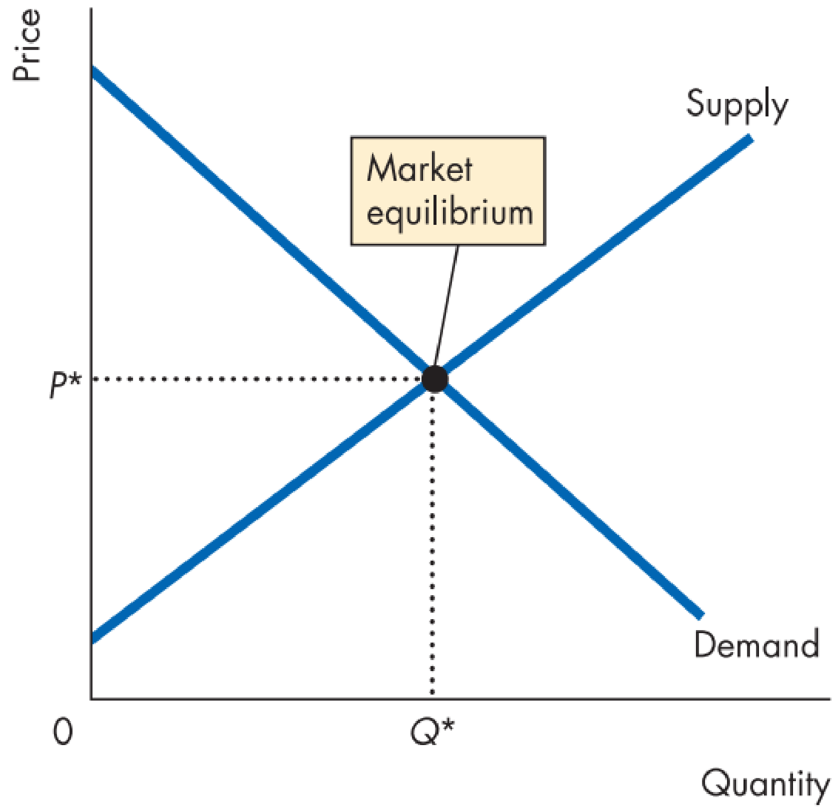
4. Number of suppliers

Larger the number of firms producing a good, the greater the supply for that good.

5. Technology

Advances in technology expand the production possibilities frontier for an economy. Thus, advancements in technology lead to increase in supply.

Recall, our Demand & Supply model

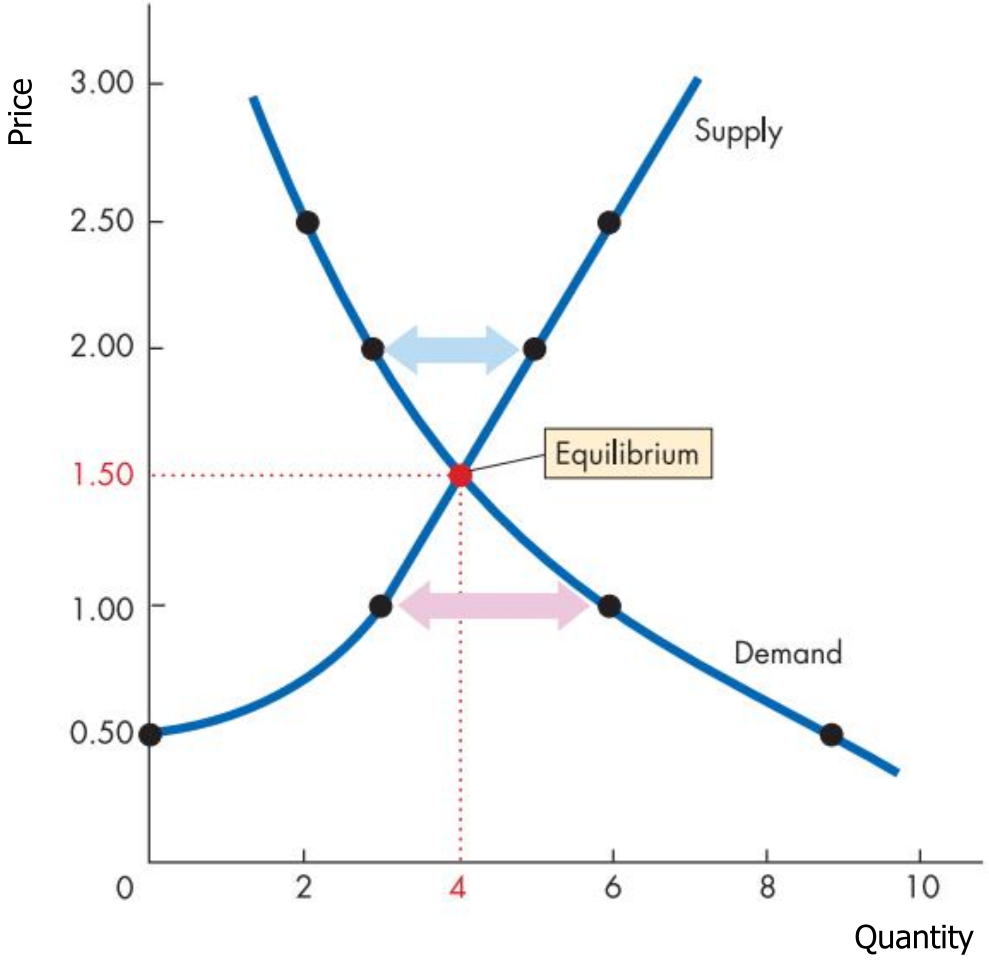


Market Equilibrium:

- Demand for a good/service declines as price increases
- Supply for a good/service increases as price increases
- Market clears i.e. reaches its equilibrium position at the price where demand equals supply
- The equilibrium price (P*) is the price at which the quantity demanded equals quantity supplied (Q*)
- Through interactions between the two economic agents i.e. producers and consumers, the market reaches a point where there is no tendency for prices to change further.

Market Equilibrium

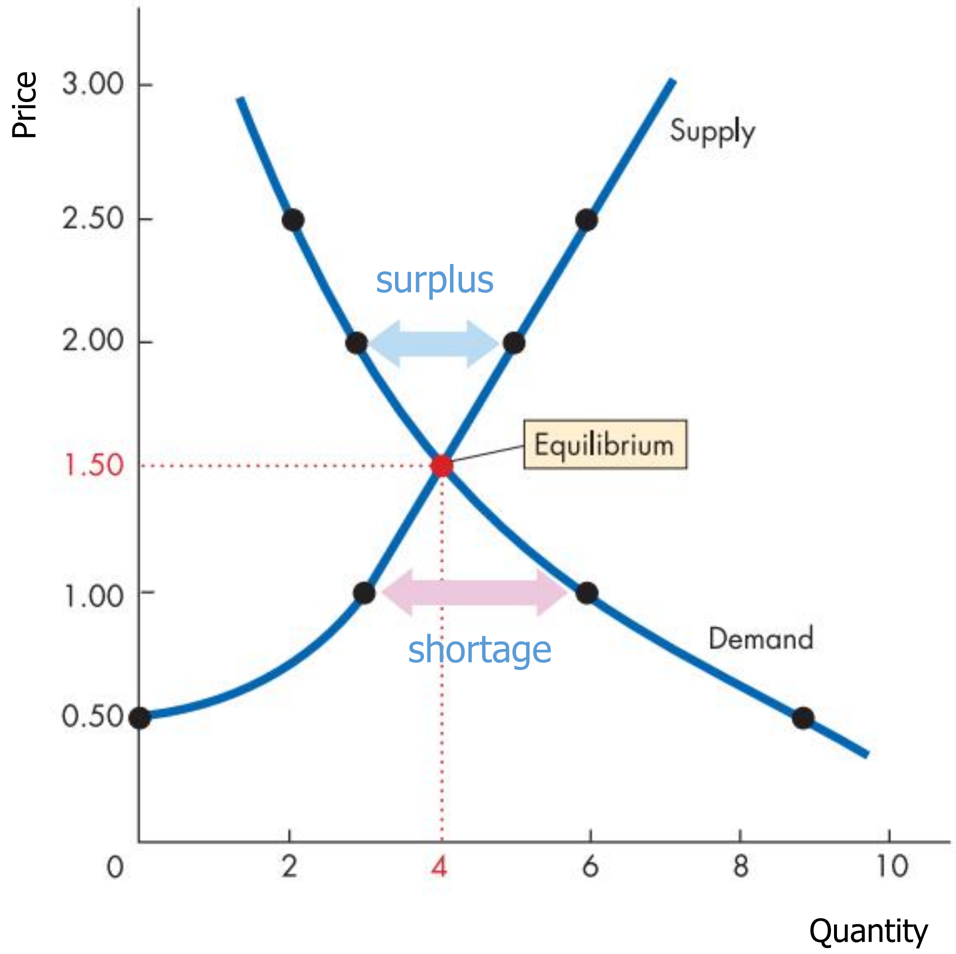
Price	Quantity demanded	Quantity supplied	Shortage (–) or surplus (+)
0.50	9	0	–9
1.00	6	3	–3
1.50	4	4	0
2.00	3	5	+2
2.50	2	6	+4



Consider a market for blue pens.
At equilibrium, Qd = Qs
What is P*? What is Q*?

Market Equilibrium

Price	Quantity demanded	Quantity supplied	Shortage (–) or surplus (+)
0.50	9	0	–9
1.00	6	3	–3
1.50	**4**	**4**	**0**
2.00	3	5	+2
2.50	2	6	+4



At a price of $1.00 per pen, there is a demand for 6 million pens, but quantity supplied is only 3 million. This creates a shortage of 3 million pens and pushes price upwards.

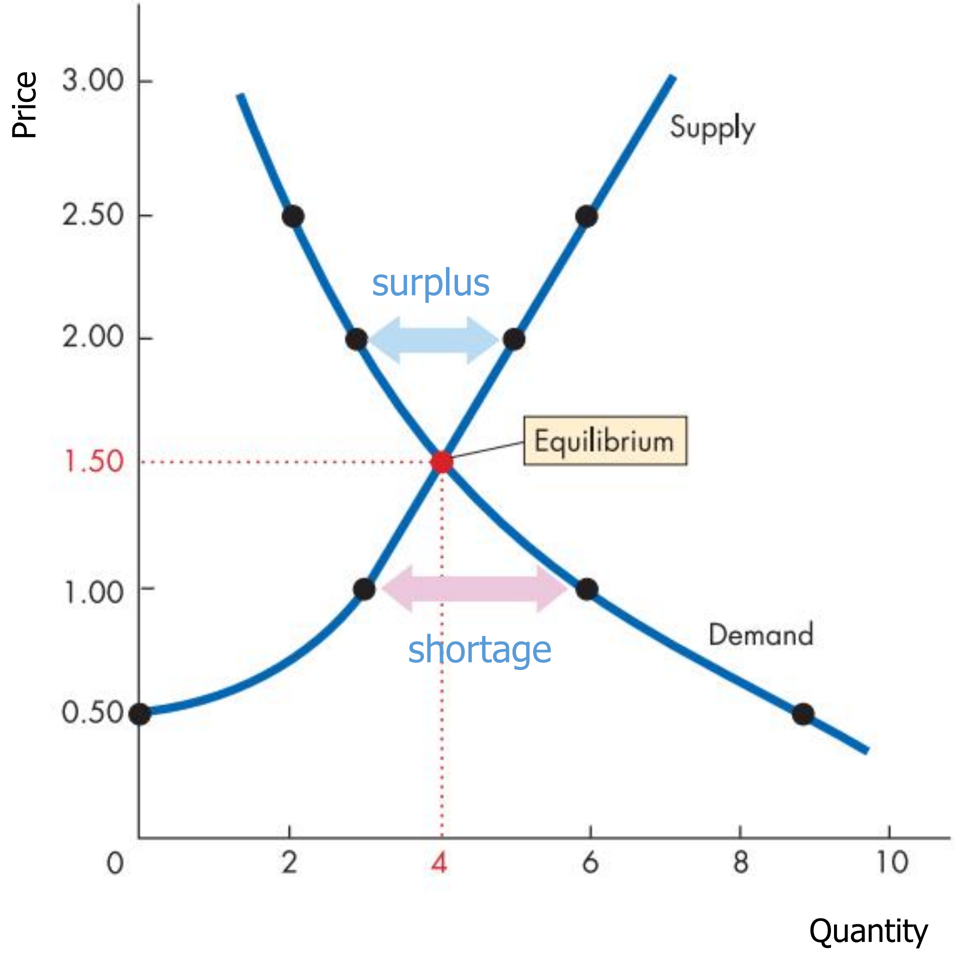
Similarly, at a price of $ 2.00 per pen, there is a demand for 3 million pens, but supply is 5 million. Therefore, there is a surplus of 2 million pens which pushes prices downwards.

Market Equilibrium

Price Adjustments

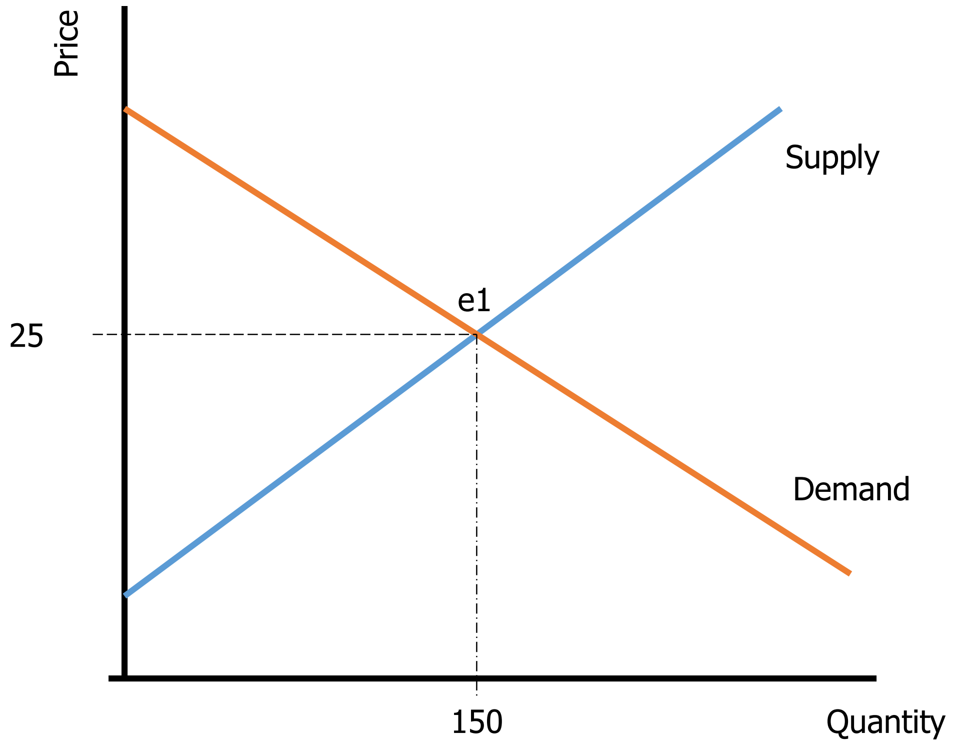
If price is below the equilibrium, there is a shortage and prices are forced upwards.
If price is above the equilibrium, there is a surplus and prices are bid down.

At the equilibrium price, quantity demanded equals quantity supplied and consumers and producers do not have any incentives to change prices.



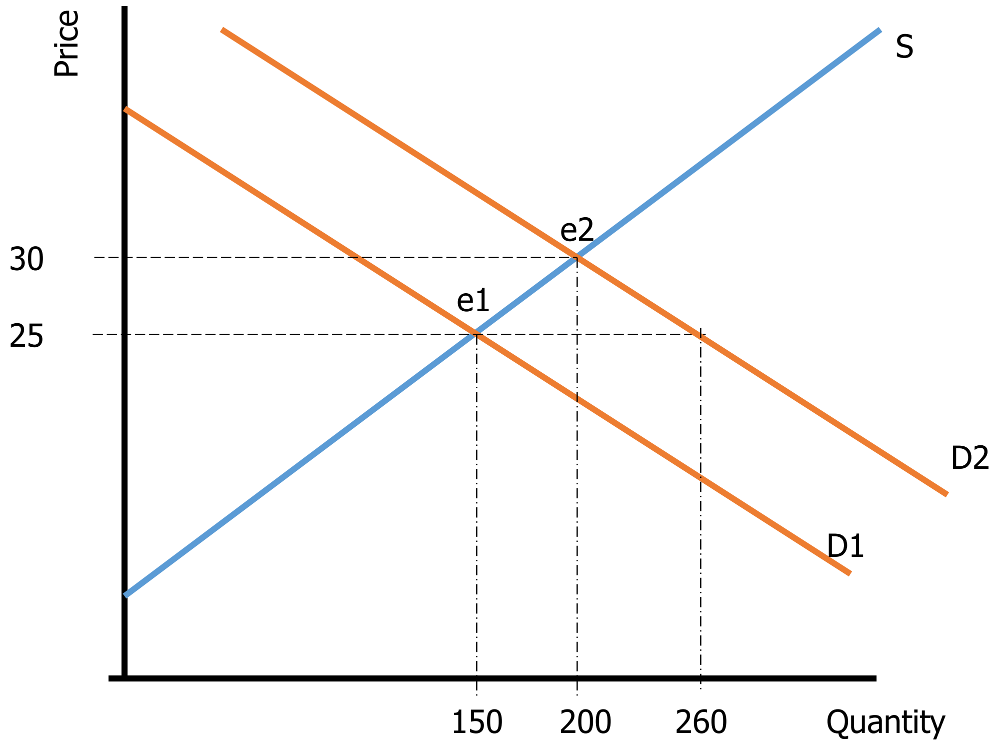
Predicting changes using the Model

- Suppose there is a market for cheeseburgers.
- At equilibrium, price of cheeseburgers is $ 25 and quantity is 150
- Price of pizzas increases.
- What happens to the market for cheeseburgers?



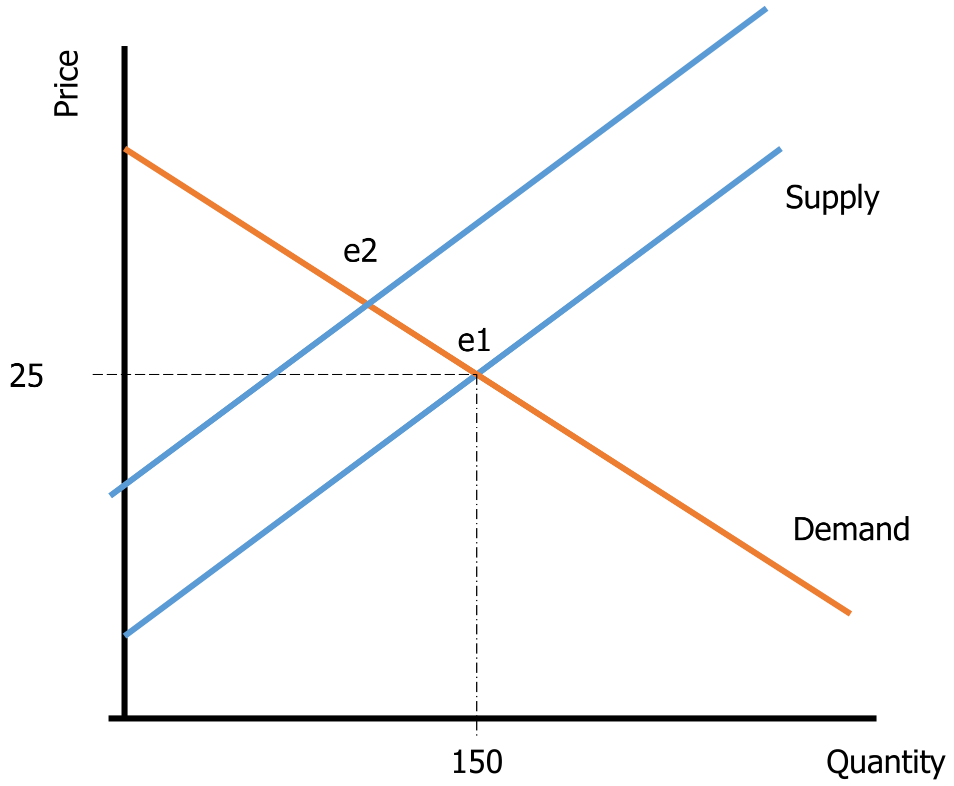
Predicting changes using the Model

- Since there is an increase in the price of its substitutes, demand for cheeseburgers increases.
- This causes demand curve to shift rightwards from D1 to D2
- At the original price $25, quantity supplied is 150 but quantity demanded is 260, so there is a shortage of 110 cheeseburgers.
- This shortage pushes price upwards.
- Suppliers are willing to produce more only at a higher price – therefore, there is a movement along the supply curve from e1 to e2. Consumers also want more cheeseburgers than they wanted before but not as much as they would have wanted if price remained unchanged.
- At the new equilibrium, price is $ 30 and quantity is 200 cheeseburgers.



Predicting changes using the Model

- At equilibrium, price of cheeseburgers is $ 25 and quantity is 150
- Suppose, there is a new tax imposed on cheese imports. Hence cheese becomes more expensive.
- What happens to the market for cheeseburgers?
- Represent the changes graphically
- How does this outcome differ from the outcome in the previous case?



Mathematical Equations for Demand & Supply

When the demand curve is a straight line, the following linear equation describes it:

$$P = a - bQ_D$$

where P is the price and Q_D is the quantity demanded. The a and b are positive constants.

When the supply curve is a straight line, the following linear equation describes it:

$$P = c + dQ_s$$

where P is the price and Q_s the quantity supplied. The c and d are positive constants.

At equilibrium, the two curves intersect and we get the equilibrium price P* and equilibrium quantity Q*. To find the equilibrium price and quantity, we set the two equations equal to each other.

$$a - bQ = c + dQ$$

At equilibrium $Q_s = Q_d = Q^*$

Solving the equations gives us:

$$Q^* = \frac{a-c}{b+d} \qquad P^* = \frac{ad+bc}{b+d}$$

Example

Suppose the demand and supply functions for ice-cream are given by:

$$P = 400 - 2Q_d$$
$$P = 100 + 1Q_s$$

1. What is the minimum price needed for suppliers to be willing to sell ice-cream?
2. Find the equilibrium price and quantity.
3. If government regulates the market for ice-cream and fixes price at TK 150, will there be a shortage or surplus in the market?
4. Calculate the amount of surplus/shortage

Example

Load shedding is back in Bangladesh, with its cascading effects. It is not a result of power- generation-capacity shortage. Bangladesh Power Development Board (BPDB) has power plants in the country with installed capacity to generate 25,500 megawatts. But the primary fuel (natural gas, oil and coal) shortages has compelled BPDB to restrict power generation and supply. The power plants are suffering from primary energy shortages as the Russia-Ukraine war pushed up energy prices on the international market. At the same time, the months of February through June see heightened demand for electricity given the summer heat.

Using a supply-demand diagram, show what happens to the equilibrium price and quantity of electricity in Bangladesh.