Market Equilibrium

RIDLEY COLLEGE
SINCE 1889

Assessment Objectives

Specific Expectations	
2.E	Define (using graphs as appropriate) market equilibrium.
2.F	Define a surplus and shortage.
2.F	Explain (using graphs as appropriate) how prices adjust to restore equilibrium in markets that are experiencing imbalances.
2.F	Calculate (using graphs as appropriate) the surplus or shortage in the market experience an imbalance.
2.G	Explain (using graphs as appropriate) how changes in demand and supply affect equilibrium price and equilibrium quantity.

Market equilibrium: Shortages & Surpluses

- **Surplus** is the extra supply that results when the quantity supplied is greater than the quantity demanded.
  - Surpluses occur when the price is above its equilibrium level.
  - When a surplus exists, producers have too much inventory building up. They have a glut of unsold goods.
  - The only way for them to get rid of their inventories is by reducing their price.
- **Shortage** is the extra demand that results when the quantity demanded is greater than the quantity supplied.
  - Shortages occur when the price is below the equilibrium level.
  - When a shortage exists, consumers "bid up" the prices of goods. their price.
  - At the same time, producers/retailers realize that the good they are selling is scarce and in demand. This allows them to raise their prices.

Competitive market equilibrium

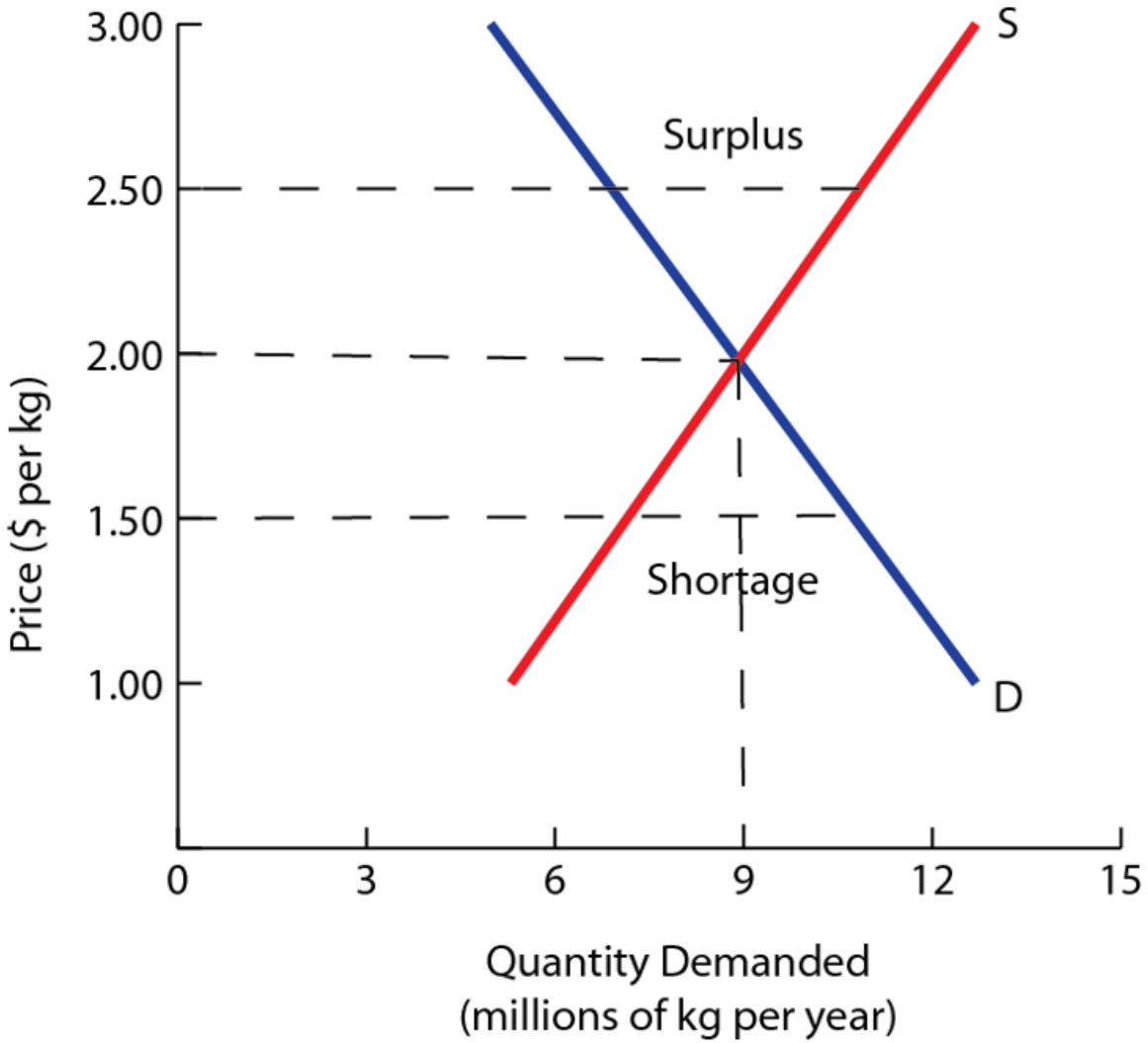
- The existence of excess demand (a shortage) or excess supply (a surplus) in a free market will cause price to change so that the quantity demanded will be made equal to the quantity supplied.
  - In the event of excess demand, price will rise.
  - In the event of excess supply, price will fall.
- **Competitive market equilibrium** occurs where quantity demanded equals quantity supplied, and there is no tendency for the price to change.
  - In a **market disequilibrium**, there is excess demand (shortage) or excess supply (surplus), and the forces of demand and supply cause the price to change until the market reaches equilibrium

Market equilibrium (Continued)

Price ($ per kg)	Quantity demanded (millions of kg)	Quantity supplied (millions of kg)	Surplus/Shortage (millions of kg)
3.00	5	13	+8
2.50	7	11	+4
2.00	9	9	0
1.50	11	7	-4
1.00	13	5	-8

- When price is \$2.00 the quantity demanded equals the quantity supplied. Thus, the equilibrium price is \$2 and the equilibrium quantity demanded is 9 million kg.
- For prices above \$2.00 there is a surplus where quantity supplied exceeds the quantity demanded ($Q_S > Q_D$).
- For price below \$2.00 there is a shortage where the quantity demanded exceeds the quantity supplied ($Q_D > Q_S$).

Market equilibrium (Continued)

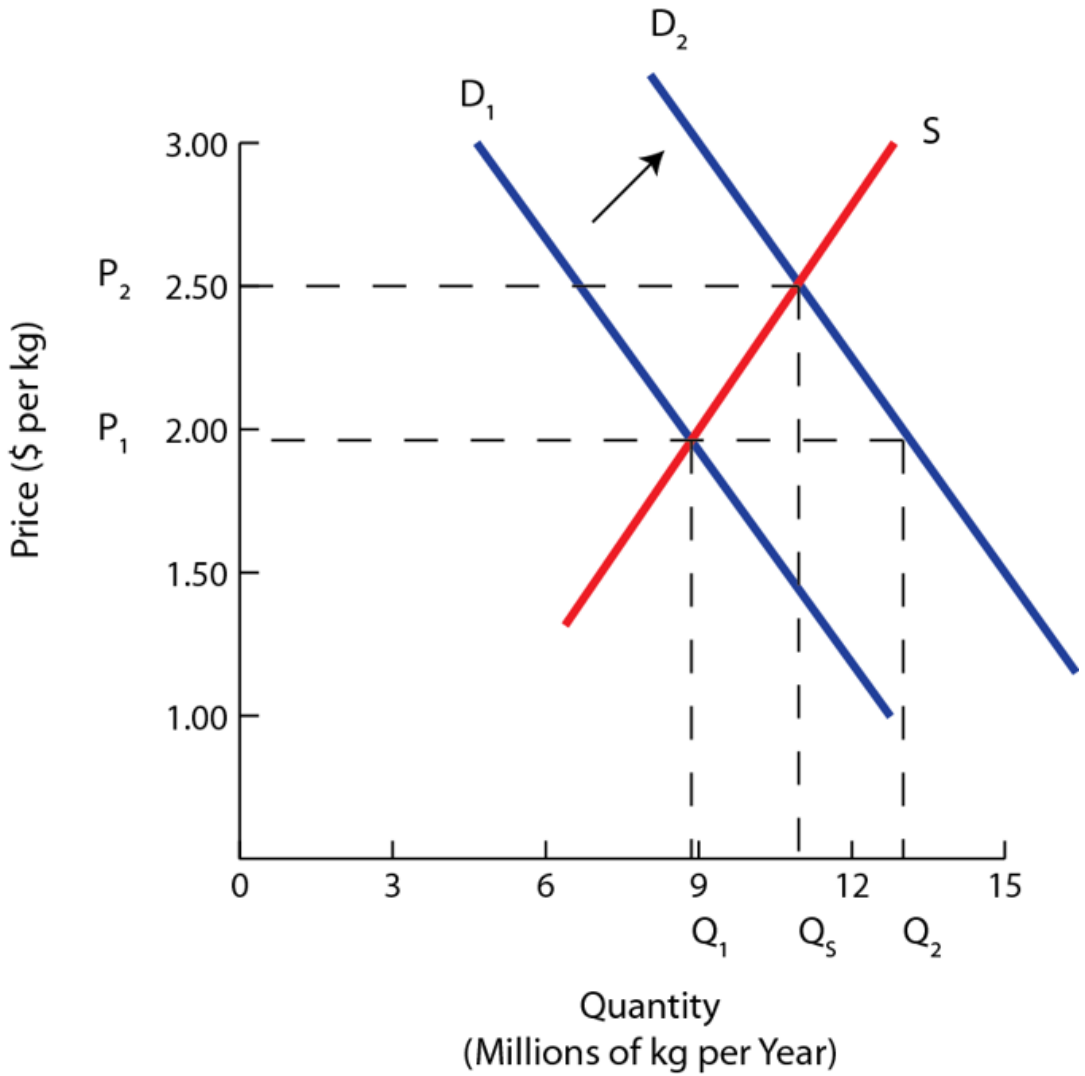


Market equilibrium: Increases in Demand (Example)

Price ($ per kg)	Quantity demanded (millions of kg)	Quantity demanded (millions of kg)	Quantity supplied (millions of kg)
	D_1	D_2	S
3.00	5	9	13
2.50	7	11	11
2.00	9	13	9
1.50	11	15	7
1.00	13	17	5

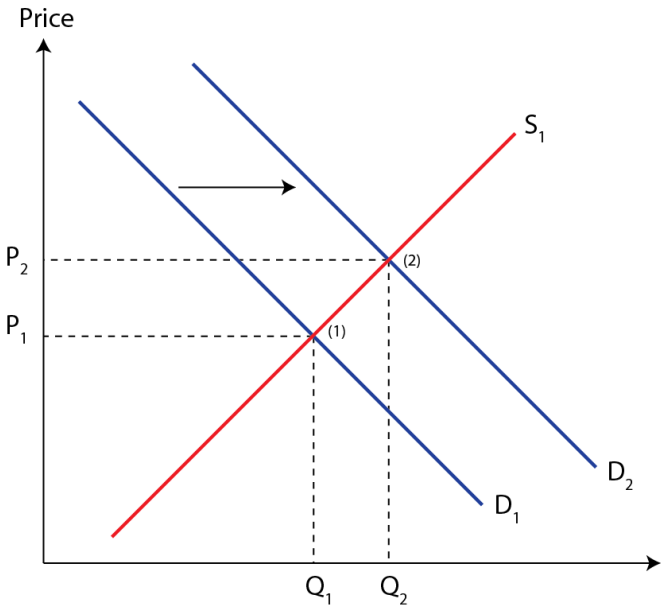
- An increase in demand implies the quantity demanded increases at every price.
- This leads to a rightward shift of the demand curve and an increase in the equilibrium quantity and price.

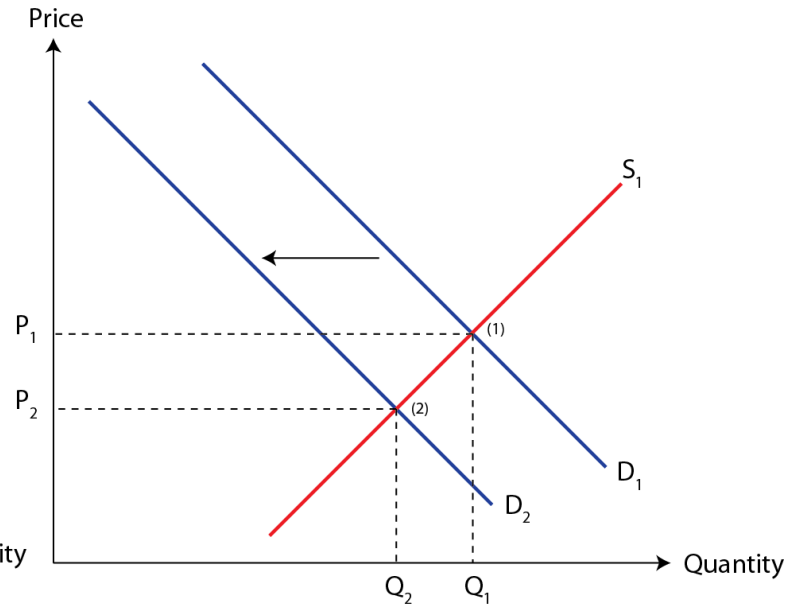
Market equilibrium: Increases in Demand (Example)



Market equilibrium: Changes in Demand

- Changes in demand cause the price and quantity to change in the same direction.
  - A decrease in demand causes the equilibrium price to decrease and the equilibrium quantity to decrease.
  - If demand increases, equilibrium price and equilibrium quantity both increase.



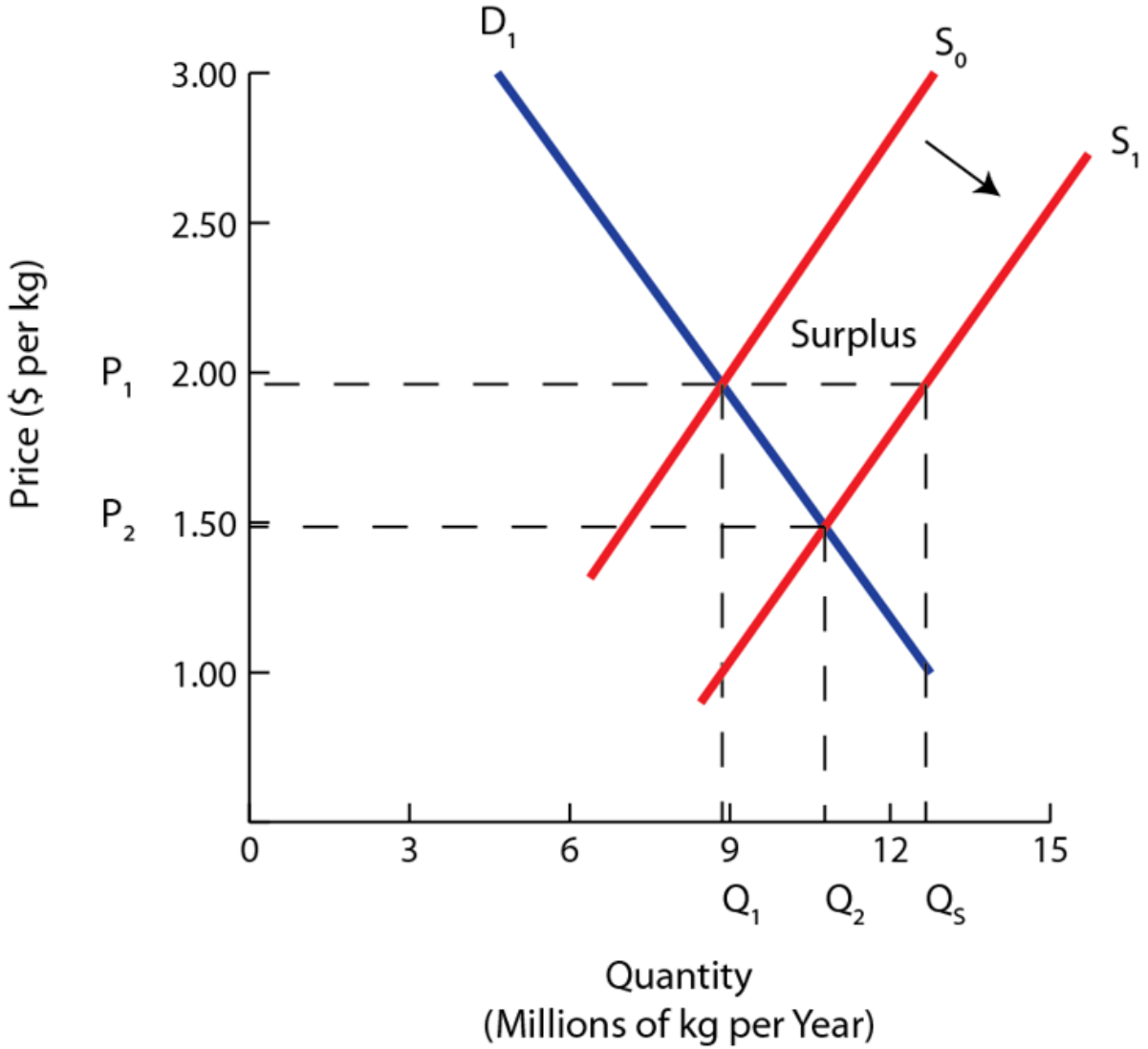


Market equilibrium: Increases in Supply (Example)

Price ($ per kg)	Quantity demanded (millions of kg)	Quantity supplied (millions of kg)	Quantity supplied (millions of kg)
	D_1	S_0	S_1
3.00	5	13	17
2.50	7	11	15
2.00	9	9	13
1.50	11	7	11
1.00	13	5	9

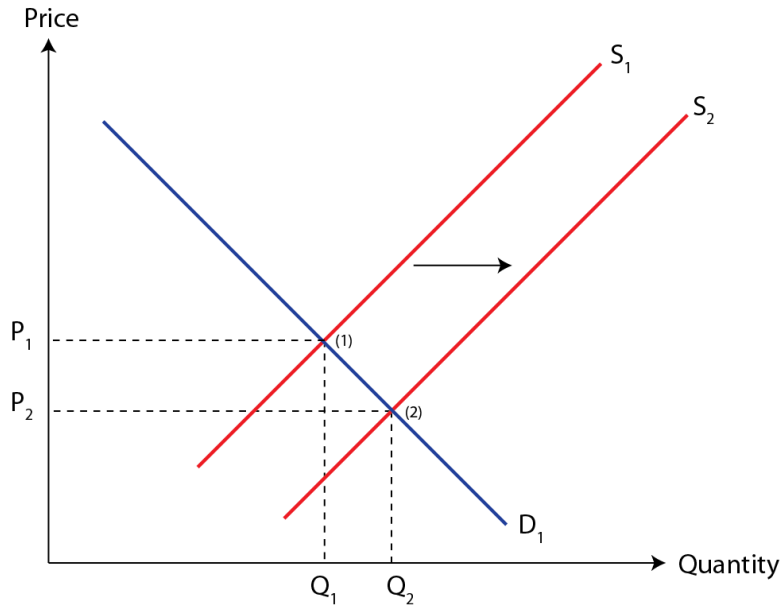
- An increase in supply implies the quantity supplied increases at every price.
- This leads to a rightward shift of the supply curve, an increase in the equilibrium quantity and a decrease in the equilibrium price.

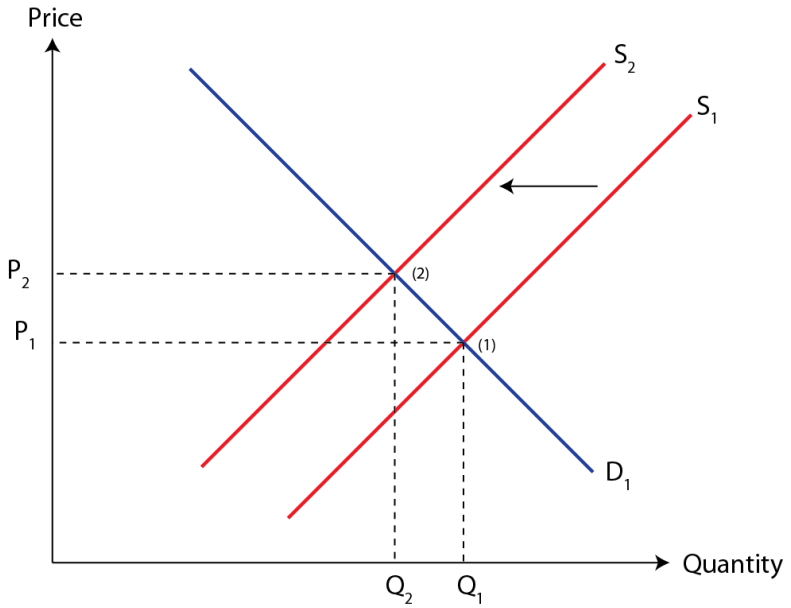
Market equilibrium: Increases in Supply (Example)



Market equilibrium: Changes in Supply

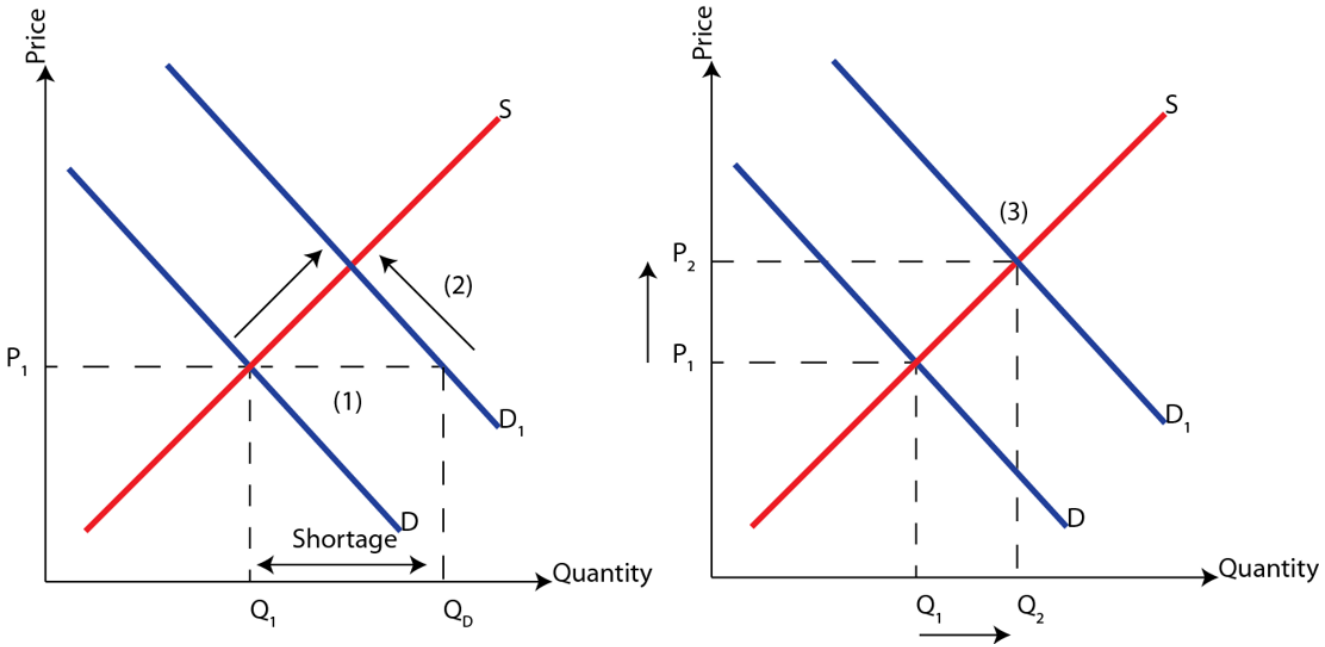
- Changes in supply cause the price and quantity to change in the opposite direction.
  - A decrease in supply causes the equilibrium price to increase and the equilibrium quantity to decrease.
  - If supply increases, equilibrium price decreases and equilibrium quantity increases.





Functions of the price mechanism

- The key to the market's ability to allocate resources can be found in the **signalling** and **incentive** functions of prices in resources allocation.
  - As signals, prices communicate information to decision makers.
  - As incentives, prices motivative decision-makers to respond to the information.



Market equilibrium: Summary

- When demand and supply both shift, the change in the price and quantity will depend on the relative magnitude of each curve's shift.
  - The impact of simultaneous shifts in demand and supply on the equilibrium price and equilibrium quantity may, therefore, be indeterminate.

	No change in supply	**Supply increases**	**Supply decreases**
No change in demand	No change in quantity or price	Quantity increases, price decreases	Quantity decreases, price increases
Demand increases	Quantity increases, price increases	Quantity increases, change in price is indeterminate	Price increases, change in quantity is indeterminate
Demand decreases	Quantity decreases, price decreases	Price decreases, change in quantity is indeterminate	Quantity decreases, change in price is indeterminate

Test your understanding

Question: Use supply and demand diagrams to illustrate the following events

1. Freezing weather destroys the orange crop and the price of oranges rises.
2. The mass media report on the fat content of cheese and the price of cheese falls.
3. A new technology of production for computers is developed and the price of computers falls.
4. Milk, an input for ice cream production, becomes more expensive and the price of ice cream increases.
5. The mass media report on the health benefits of olive oil and the price of olive oil increases.

Test your understanding

Question: Assuming a competitive market, use demand and supply diagrams to show in each of the following cases how the change in demand or supply for product A creates disequilibrium consisting of excess demand or excess supply, and how the change in price eliminates the disequilibrium

1. Consumer income increases (A is a normal goods).
2. Consumer income falls (A is an inferior good).
3. There is an increase in labour costs.
4. The price of substitute good B falls.
5. The number if firms in the industry producing product A increases.
6. A successful advertising campaign emphasises the health benefits of product A.

Allocative efficiency in competitive markets

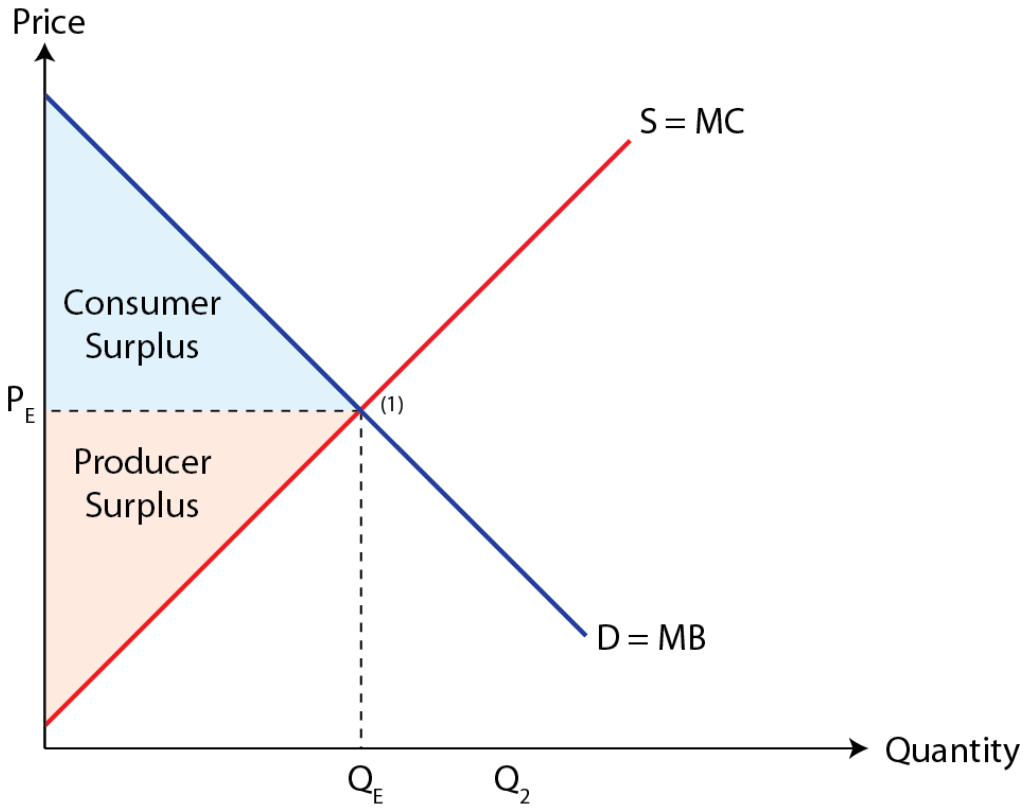
- **Allocative efficiency** refers to an allocation of resources that results in producing the combination and quantity of goods and services mostly preferred by consumers.
  - Allocative efficiency is achieved when the economy allocates its resources so that the society gets the most benefits from consumption.
  - The condition for allocative efficiency is given by MSB = MSC where the marginal social benefit (MSB) equals the marginal social cost. Alternatively, where P = MC
    - Since the marginal benefit decreases as the quantity of a good consumed increases, consumers will be willing to buy an extra unit of the good only if its price falls. The demand curve can therefore also be called a **marginal benefit (MB) curve**.

Allocative efficiency in competitive markets

- Since marginal cost increases as the quantity of a good produced increases, producers will be willing to produce and sell an extra unit of the good only if its price increases. The supply curve can therefore also be called a **marginal cost (MC)** curve.
- At the point of a competitive market equilibrium, where MB = MC, the economy achieves allocative efficiency.

- There is another way we can understand how allocative efficiency is achieved by the competitive market economy.
  - **Consumer surplus (CS)** refers to the difference between the highest price consumers are willing to pay for a good and the price actually paid. In a diagram, it is shown by the area under the demand curve and above the price paid by consumers up to quantity purchased.
  - **Producer surplus (PS)** refers to the difference between the price received by firms for selling their good and the lowest price they are willing to accept to produce the good. In a diagram, it is shown as the area under the price received by producers and above the supply curve up to the quantity sold.

Allocative efficiency in competitive markets



- At the point of competitive market equilibrium, social surplus, defined as the sum of consumer plus producer surplus, is maximum.

Allocative efficiency in competitive markets

- At the point of competitive market equilibrium, production of a good occurs where MB = MC, which is also where social surplus, or the sum of consumer plus producer surplus is maximum.
  - This means that markets are achieving allocative efficiency, producing the quantity of goods mostly wanted by society.
  - Society is making the best possible use of its scarce resource.
  - In competitive markets, when MB = MC, or when social surplus is maximum, social welfare is maximum.
- When markets fail to achieve allocative efficiency, this means that social surplus is reduced, resulting in what is shown as **welfare loss** (also called **deadweight loss**).
  - In other words, social welfare is no longer maximum on account of a portion of it being lost.

Summary

- **Enduring Understanding**
  - In a competitive market, demand for and supply of a good or service determine the equilibrium price.
- **Essential Knowledge**
  - Equilibrium is achieved at the price at which quantities demanded and supplied are equal.
  - Whenever markets experience imbalances–creating disequilibrium prices, surpluses, and shortages–market forces drive prices toward equilibrium.
  - Changes in the determinants of supply and/ or demand result in a new equilibrium price and quantity.