

## Chapter Five

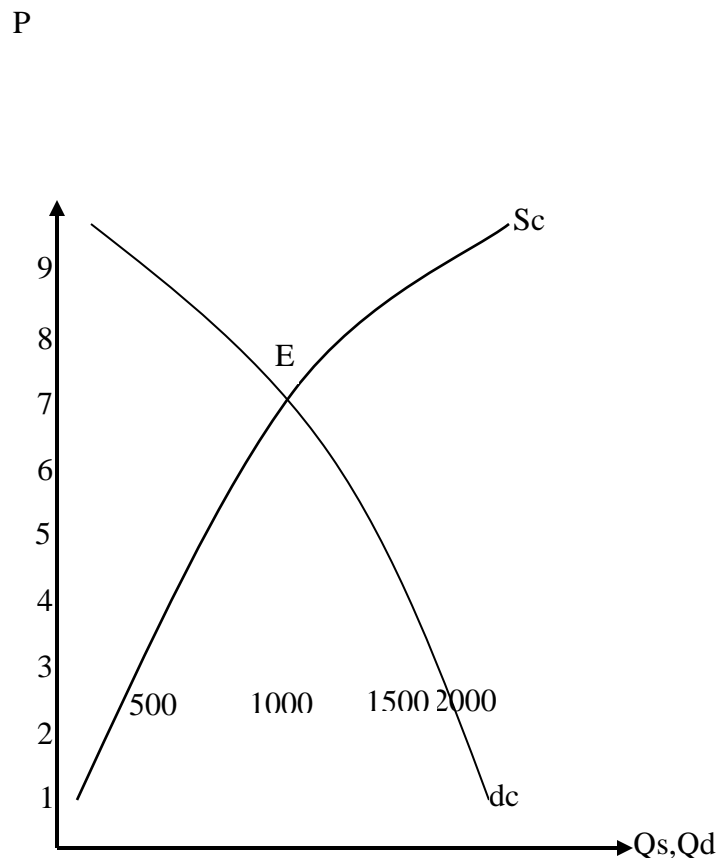
### Market Equilibrium

The demand curve shows the inverse relationship between price (P) and quantity demanded (Qd), while the supply curve shows the direct relationship between price (P) and quantity supplied (Qs). When the demand curve intersects with the supply curve, the market equilibrium is determined. In the case of market equilibrium, we get the equilibrium price on the price axis (the vertical axis), and we get the equilibrium quantity on the horizontal axis, and the point of intersection between the supply curve and the supply curve. Demand is called the equilibrium point (E), as in the following example:

P	Qd	Qs
1	2000	100
2	1850	200
3	1700	350
4	1550	500
5	1400	750
6	1200	800
7	1000	1000
8	700	1200
9	400	1450

$\uparrow P \Rightarrow \downarrow \bar{P} \Rightarrow \uparrow Q_s$

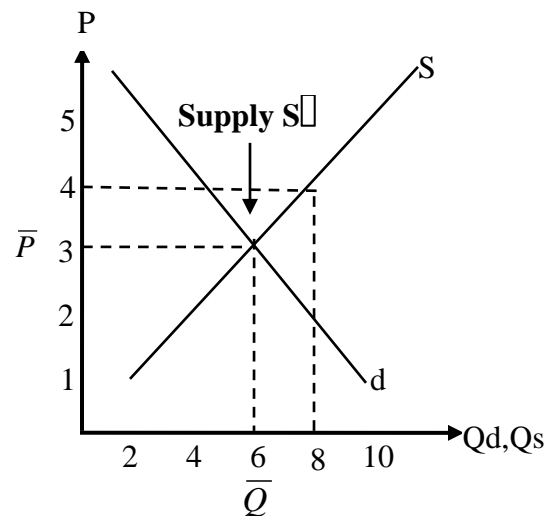
$\downarrow P \Rightarrow \uparrow \bar{P} \Rightarrow \uparrow Q_d$



## Supply surplus

When the price is greater than the equilibrium price in the market, the quantity supplied is greater than the quantity demanded. This case is called excess supply. The producer thinks of lowering the price again to exchange and sell his commodity in the market, as in the following example:

P	Qd	Qs
1	10	2
2	8	4
3	6	6
4	4	8
5	2	10

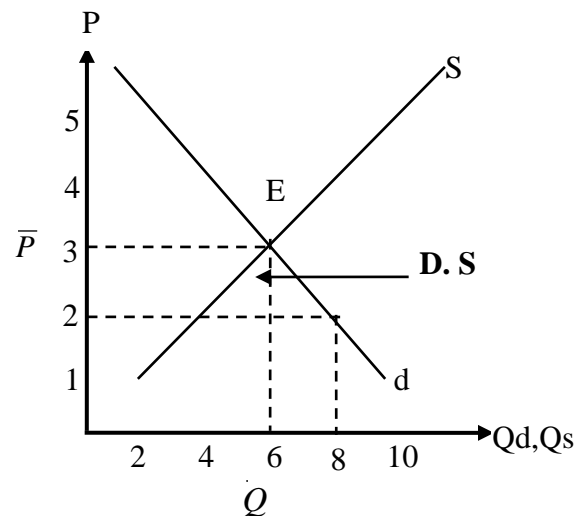


In this example, when the price is (\$4), the (Qs) is greater than (Qd), the seller considers the price to drop again to reach the equilibrium price.

## Demand surplus

When the price is less than the equilibrium price in the market, and the quantity demanded is greater than the quantity supplied, the buyer thinks about increasing the price that he is willing to pay in order to obtain the desired price, and this is called excess demand, as in the following example:

P	Qd	Qs
1	10	2
2	8	4
3	6	6
4	4	8
5	2	10



When the price is (\$2), then (Qd) is equal to (8) units greater than (Qs) which is equal to (4) units. In this case, there is the equilibrium price (Qd = Qs), and the market equilibrium can be obtained in a mathematical way, as in the following example:

If you have two demand and supply equations:

$$Qd = 50 - 6P$$

$$Qs = 4P$$

**Required:-**

- 1- Find the equilibrium price ( $\bar{P}$ ).
- 2- Find the equilibrium quantity ( $\bar{Q}$ ).

3- Draw the supply curve (Sc) and the demand curve (dc) and determine the equilibrium price ( $\bar{P}$ ) and the equilibrium quantity ( $\bar{Q}$ ) in this figure.

**Answer:-**

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$$\bar{P} \Rightarrow Qd = Qs$$

$$50 - 6P = 4P$$

$$50 = 4P + 6P$$

$$50 = 10P$$

$$\bar{P} = \frac{50}{10} = 5$$

We get the equilibrium price when both ( $Qd$ ) and ( $Qs$ ) are equal, and by substituting the equation we get the equilibrium price.

1-The equilibrium quantity ( $Q$ ) is obtained by substituting the value of ( $P$ ) in one .of the two equations of supply and demand

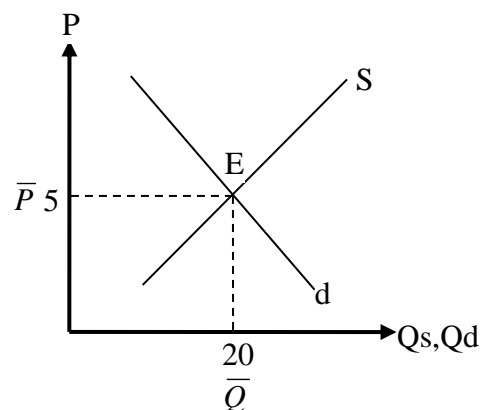
$$Qd = 50 - 6P$$

$$Qd = 50 - 6(5)$$

$$Qd = 50 - 30$$

$$Qd = 20$$

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**Example:** If you have the following data:

$$Q_d = 100 - 6P$$

$$Q_s = 4P$$

<u>P (\$)</u>	<u>Q<sub>d</sub></u>	<u>Q<sub>s</sub></u>
16	4	64
14	16	56
12	28	48
10	40	40
8	52	32
6	64	24
4	76	16
2	88	8
0	100	0

□

**Required:**

1- Find the equilibrium price ( $\bar{P}$ ).

2- Find the equilibrium quantity ( $\bar{Q}$ ).

3- At what price is the surplus in supply?

4- At what price is there excess demand?

5- At the price of (\$12), what is the surplus supply?

6- At the price of (\$14), what is the surplus supply?

7- At the price of (\$6), what is the excess demand?

8- At the price of (\$4), what is the amount of surplus demand?

Q2- If you have two demand and supply equations:

$$Q_d = 200 - 24P$$

$$Q_s = 16P$$

**Required:-**

**Required:**

1- Find the equilibrium price ( $\bar{P}$ ).

2- Find the equilibrium quantity ( $\bar{Q}$ ).

3- Draw the supply curve ( $S_c$ ) and the demand curve ( $d_c$ ) and determine the equilibrium price ( $\bar{P}$ ) and the equilibrium quantity ( $\bar{Q}$ ) in this figure

Q3- If you have two demand and supply equations:

$$Q_d = 10 - 2P$$

$$Q_s = -5 + 3P$$

**Required:-**

**Required:**

1- Find the equilibrium price ( $\bar{P}$ ).

2- Find the equilibrium quantity ( $\bar{Q}$ ).

3- Draw the supply curve ( $S_c$ ) and the demand curve ( $d_c$ ) and determine the equilibrium price ( $\bar{P}$ ) and the equilibrium quantity ( $\bar{Q}$ ) in this figure

