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10

SUPPLY

In the previous chapter we have studied about the meaning of demand for a commodity, determinants of demand and the law of demand. But the buyers will be able to buy a commodity only when it is available in the market. So the question arises, who supplies the commodities in the market? A commodity must be produced first, stored properly and transported to the market in order to be available for the buyers. Have you ever visited an agricultural farm? Since farmers produce food grains, fruits and vegetables etc. in their farms, they are the producers of these commodities. Similarly consumer goods such as garments, soaps, tooth paste, tooth brush, shoes, pens, etc are manufactured in the factories. Producers of such items are called manufacturers. Buyers buy these items from the sellers in the market. The original producer and the seller in the market could be the same person or different persons. If they are different, it simply means that the sellers in the market have procured these items from the original producers to sell them to the buyers in the market. So the farmers, manufactures and sellers supply the commodities in the market. They are all called producers. The production unit in which production of a commodity takes place is called a firm. Thus we can say that firms supply the commodities.

OBJECTIVES

After completing this lesson, you will be able to:

- *understand the meaning of stock and supply;*
- *understand the meaning of individual supply and market supply of a commodity;*
- *explain the determinants or factors affecting supply of a commodity;*
- *understand the relation between price of a commodity and its quantity supplied;*
- *explain how to construct an individual supply curve and know its shape.*

10.1 MEANING OF SUPPLY

We should not confuse between "availability of a commodity in the market" and "supply of that commodity. They are not the same. Even if a commodity is available, it does not mean that it has been supplied. The **definition** of supply is given as follows:

Supply of a commodity is the quantity of the commodity that a seller offers for sale at a given price at a given time.

The definition of supply includes the following three things:

1. The quantity of a commodity offered for sale by a seller.
2. The price of the commodity given in the market at which the seller is willing to sell that quantity of the commodity.
3. The time period during which the seller is willing to sell that quantity of the commodity.

Examples of Supply

- Ganga Singh sold 120 litres of milk at a price of Rs.25 per litre during last week from his dairy farm.
- The fruit seller sold 600 Kg of apples during past 15 days at Rs. 50 per Kg of apple.
- A firm called 'X' Ltd. sold 8 quintals of sugar at a price of Rs.2800 per quintal in one day.
- The grain merchant sold 300 quintals of rice at Rs.2300 per quintal in the month of August.

Note that the time period may vary. It may be a month, a week or two weeks and so on.

10.2 STOCK AND SUPPLY

The total quantity of a commodity available with a seller/firm at a particular point of time is called stock. On the other hand supply is that part of stock of the commodity that the seller is ready to sell at some given price during a given time period. So supply is a flow. Stock is measured at a particular point of time whereas supply is measured over a period of time. Take the example given above-"The grain merchant supplied 300 quintals of rice at Rs.2300 per quintal in the month of August." Let us say that the merchant procured 820 quintals of rice on the first day of August 2011. This was called the stock as on 1st August 2011. Here 1st August 2011 is the point of time at which the stock has been measured. The supply of 300 quintals at a price of Rs.2300 during August was the flow. Since there are 31 days in August, we term it as period of time during which the supply has been measured. Over these 31 days the merchant sold some amount every day which if added becomes 300 quintals at the end of that month at the given market price of Rs. 2300.

So, supply is a part of the stock of the Commodity.

INTEXT QUESTIONS 10.1

1. Define supply.
2. Name three elements included in the definition of supply.
3. Distinguish between stock and supply.

10.3 FACTORS AFFECTING INDIVIDUAL SUPPLY

What factors influence the individual supply of a commodity? The most important factors are the following:

- Price of the commodity
- Technology of production
- Price of inputs
- Price of other related goods
- Objective of the firm
- Government policy

(i) **Price of the commodity**: Price of the commodity is an important determinant of supply of a commodity. When a producer produces a commodity he incurs a lot of expenditure on factors of production and raw materials etc. which we call cost of production. He can recover these costs by selling the product at certain price in the market. Since price is also the average revenue, higher the price higher will be the average revenue and accordingly higher will be total revenue. So price is a very important determinant of supply.

(ii) **Technology of production**: An improvement in technology of production reduces the cost of production per unit of the commodity which increases the margin of profit of the firm. This induces the firm to supply more of the commodity with the use of improved technology On the other hand if a firm uses old and inferior technology; it increases the cost of production per unit of the commodity and reduces the margin of profit which leads to decrease in supply of the commodity.

(iii) **Price of inputs**: Suppose a firm is producing ice cream. If the price of milk falls, the cost of production per unit of ice creams will fall. It will lead to increase in margin of profit per unit. So, the firm will increase the supply of ice cream. On the other hand, if the price of milk increases, cost of production per unit of ice cream will increase. It will lead to decrease in margin of profit and firm will decrease the supply of ice cream. Thus, if price of any input used in production of a commodity falls, it leads to decrease in cost of the production per unit and as a result supply of the commodity will increase. On the other hand, an increase in price of any input used in production of a commodity increases cost of production per unit and decreases supply of the commodity.

(iv) **Price of other related goods**: Supply of a commodity is also influenced by the price of other related goods. Let us suppose that a farmer produces two goods wheat and rice with the help of given resources. If the price of rice increases, it will be more profitable for the farmer to produce more of rice. The farmer will divert his resources from production of wheat to production of rice. As a result the supply of rice will increase and that of wheat will decrease. On the other hand, a fall in price of rice will result in decrease in supply of rice and an increase in supply of wheat.

(v) **Objective of the firm**: Different firms have different objectives. Some firms have an objective to maximize their profits whereas some may have an objective of maximizing sales. Some other firms may have an objective to increase their goodwill/prestige and some may have an objective of increasing employment opportunities. A firm having an objective of increasing sales may supply more of a commodity even at a lower price. Thus supply of a commodity is influenced by the priority given to the objective by the firm and readiness to sacrifice the one for the other.

(vi) **Government policy**: Government policy also influences the supply of a commodity. For example if the government increases the rate of value added tax or sales tax on a commodity, it will increase the cost of production per unit which will decrease the supply of the commodity. On the other hand, a reduction in the tax on a commodity will decrease cost of production per unit and increase the supply of the commodity.

10.4 INDIVIDUAL SUPPLY SCHEDULE OF A COMMODITY

Supply of a commodity by an individual firm is called individual supply. In order to construct an individual supply schedule of a commodity, we need information on quantities supplied at different prices. In all the examples on supply given earlier in this lesson, we have only mentioned a particular quantity of the good supplied at a particular price over a given period. We know that in reality price of the commodity does change. Now let us ask the question- what happens if the price of the commodity changes? Accordingly it is expected that the quantity of the commodity will also change. Let us take an example of a firm X Ltd which sold 8 quintals of sugar in a day at the given price of Rs. 2800 per quintal. Suppose the price increased to Rs.2900 per quintal. It is found that X Ltd supplied 9 quintals sugar in a day at this price. Similarly when the price increased to Rs.3000 the quantity supplied increased to 10 quintals. Further at prices Rs.3100 and 3200 the quantity supplied increased to 12 and 15 quintals respectively. This information about the different quantities supplied at different prices is given in the Table 10.1 below.

Table 10.1 Supply of sugar of 'X' Ltd.

Price (Rs per quintal)	Quantity supplied of sugar per day (in quintal)
2800	8
2900	9
3000	10
3100	12
3200	15

Such a tabular presentation of different quantities of a commodity supplied by a firm at different prices is called individual supply schedule.

10.5 LAW OF SUPPLY

Just now we said that the six major factors determining supply of a commodity are – price of commodity, price of other related goods, price of inputs, technology of production, objective of the firm and government policy. A change in any one or all of these factors may lead to change in the quantity supplied of the commodity. Suppose we want to know the manner in which the quantity supplied of a commodity changes due to change in one of the factors. In other words, let us try to know the effect of change in any one factor on the quantity supplied. To know this we must keep all other factors unchanged or constant. To begin with, out of the six factors, let us only consider the effect of change in price of the commodity on its quantity supplied. To know this we must assume that all other factors such as price of other related goods, price of inputs, technology of production and government policy etc. remain constant or do not change at this time. The relationship between price and quantity supplied, when all factors other than price of the commodity remain constant, is given by the law of supply.

Consider table 10.1 again. It shows different quantities of sugar supplied by 'X' Ltd. at different prices. In the table you can only see two columns on price and quantity supplied. The absence of columns on other factors implies that they are held constant. You can see that when price of sugar is Rs 3000 per quintal, the firm offers 10 quintals

of sugar for sale per day. When price rises to Rs 3200 per quintal, it offers more i.e. 15 quintals of sugar for sale per day. On the other hand, when price of sugar falls to Rs 2800 per quintal it offers less, i.e. 8 quintals for sale per day. It means the firm supplies more quantity of a commodity at a higher price and less of it at a lower price. We can state it as a law in the following manner.

All other factors determining supply remaining constant, the price of a commodity and its quantity supplied are directly related.

The law of supply can be explained with the help of another example given in table 10.2.

Table 10.2 Supply of mangoes by Mohan

Price of mangoes (Rs per kg)	Quantity suppled of mangoes per day (in kgs)
20	100
30	200
40	300
50	400
60	500

The table 12.2 shows the different quantities of mangoes supplied by Mohan, a seller of mangoes, at different prices. Mohan supplied 100 kg of mangoes per day when the price is Rs 20 per kg, when price rises to Rs 40 per kg he is ready to supply 300 kg of mangoes per day, and so on. Thus the quantity supplied increases as the price of mangoes increases. This is in accordance of law of supply.

10.6 SUPPLY CURVE

The information given in table 10.2 can also be represented diagrammatically. The diagrammatic representation of law of supply is called the supply curve. Thus, supply curve shows different quantities of a commodity supplied at different prices per unit of time in diagrammatic form.

We can construct an individual supply curve with the help of the information given in table 10.2. The supply curve is drawn in Fig. 10.1

Take quantity supplied of mangoes on X-axis and price of mangoes on Y-axis. On the Y-axis (vertical) the prices starting from Rs 20 to 60 are plotted. On the X-axis (horizontal) the quantities of mangoes starting from 100 to 500 kg are plotted. Mohan has supplied 100 kg of mangoes at Rs 20. This combination is shown at point A in graph given in Fig. 10.1. Similarly, the other combinaitons of price and quantity of mangoes as given in table 10.2 are shown as points B, C, D, E and F. By joining these points Mohan's supply curve for mangoes has been derived.

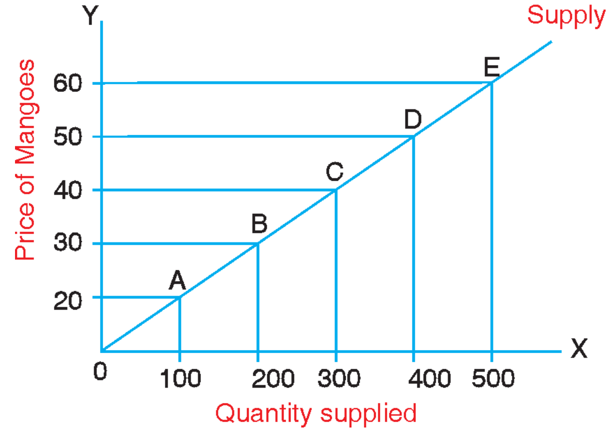

Fig. 10.1 *Individual supply curve*

10.7 SHAPE OF THE SUPPLY CURVE

According to the law of supply when other factors determining supply remain constant, a firm offers more quantity of a commodity for sale at a higher price and less of it at a lower price. Due to this direct relationship of price and quantity supplied of the commodity, the supply curve is upward sloping. This means that the supply curve which looks as a straight line in the diagram, starts from a point closer to the origin and then moves up towards right. Now, the question arises, why does a firm supply more quantity of a commodity at a higher price and less of it at a lower price i.e. why does the supply curve slope upwards? The following factors are responsible for upward slope of the supply curve:

(i) A rise in price of the commodity causes rise in profits, as a result firms are induced to supply more quantity of the commodity to increase profit.

(ii) A rise in price of the commodity induces the seller to dispose of at least a part of his stock. The reverse happens when there is a fall in price of the commodity.

(iii) An increase in the price of the commodity causing higher profit attracts the new firms to enter the market and this adds to the supply of the commodity leading to more quantity supplied at a higher price.

INTEXT QUESTION 10.2

1. Draw a supply curve with the help of data given below:

Price (Rs per unit)	1	2	3	4	5
Quantity supplied (in units)	50	100	150	200	250

2. Draw a supply curve by using Table 10.1.

10.8 MARKET SUPPLY OF A COMMODITY

'X' Ltd is not the only firm in the market supplying the sugar. There may be other firms also supplying sugar in the market. In order to know the total quantity of sugar supplied by all the firms taken together in the market we have to simply add the individual quantities at the prevailing price and time. The resultant quantity will be called the market supply of sugar.

Hence the total quantity of a commodity supplied by all the firms in the market at a given price at a given time is called the market supply of that commodity.

Example

Suppose, there are only three firms X, Y and Z who are supplying sugar in the market. At a price of Rs.2800 per quintal X, Y and Z supplied 8, 10 and 15 quintals of sugar respectively in a day. Adding these quantities, we get 33. So the market supply of sugar is 33 quintals per day at a price of Rs.2800.

10.9 MARKET SUPPLY SCHEDULE OF A COMMODITY

Like an individual supply schedule, the market supply schedule of a commodity is the sum of the quantities of the commodity supplied by all the firms in the market at different prices. We have seen that in case of individual firm/seller, when price of the commodity increases, the quantity of the same increases and when the price decreases the quantity decreases as per law of supply. Similarly all other firms/sellers in the market will also increase or decrease their respective quantities. Accordingly there will be different quantities supplied at different prices by all firms/sellers taken together in the market.

Continue with the example of supply of sugar. Study the market supply schedule of sugar as given in table 10.3.

Table 10.3 Market supply of sugar

Price (Rs per quintal)	Quantity supplied of sugar per day (in quintals)			Market supply of sugar (in quintal)
	Firm X	Firm Y	Firm Z	
2800	8	10	15	33
2900	9	11	16	36
3000	10	12	17	39
3100	12	14	20	46
3200	15	17	25	57

You can see in table 10.3 that when price of sugar is Rs 2800 per quintal, firm X supplies 8 quintals, firm Y supplies 10 quintals and firm Z supplies 15 quintals of sugar per day. Therefore market supply of sugar at a price of Rs. 2800 per quintal is 8 + 10 + 15 = 33 quintals per day. When the price changed to Rs.2900, the supply of X, Y and Z was 9, 11 and 16 quintals respectively which comes to 36 quintals. So at price Rs.2900 the market supply of sugar was 36 quintals. Similarly you can see the individual and the market supply of sugar at prices Rs.3000, 3100 and 3200 respectively in the table.

INTEXT QUESTIONS 10.3

1. If there are only three firms A, B and C in the market supplying a commodity, find out the market supply of the commodity with the help of their supply schedules as given below

Price (Rs/unit)	Quantity supplied (in unit)			Market supply (in unit)
	Firm A	Firm B	Firm C	
100	1000	1500	2000	–
200	2000	2000	3000	–
300	3000	2500	4000	–
400	4000	3000	5000	–
500	5000	3500	6000	–

2. Complete the following table (assuming that there are only three firms A, B and C in the market)

Price (Rs per unit)	Quantity supplied (in units)			Market supply (in units)
	Firm A	Firm B	Firm C	
10	150	–	200	650
11	200	–	300	1000
12	250	–	400	1350
13	300	–	500	1700
14	350	–	600	2050

10.10 FACTORS DETERMINING MARKET SUPPLY

All the factors which influence individual supply of a commodity also influence its market supply. In addition to these factors, the market supply of a commodity is also influenced by following two factors:

- Number of sellers/firms
- Expected future price

(i) **Number of sellers/firms**: Market supply is an aggregate of all individual supply schedules in the market. Consider table 10.2 showing market supply of sugar. There are three firms X, Y and Z supplying sugar in the market. Now suppose another firm 'W' comes into existence and starts supplying sugar. What will happen to the market supply of sugar? Market supply of sugar will increase. Therefore, it is clear that if the number of firms increases, market supply will also increase. On the other hand, if number of firms decreases, the market supply will also decrease.

(ii) **Expected future price**: If the price of a commodity is expected to rise in the near future, the firm will supply less quantity of the commodity at present in expectation of higher profit due to rise in price in future. But if the price of a commodity is expected to fall in near future, firms will offer more quantity of the commodity for sale at present in expectation of less profit in future.

INTEXT QUESTIONS 10.4

1. Fill in the blanks with appropriate words:
   (i) Supply of a commodity ...., when its price increases.
   (ii) A firm having an objective of maximization of profit will supply .... quantity of a commodity at a higher price.
   (iii) If a firm produces two goods X and Y with given resources and price of good Y falls, supply of good X will ....
   (iv) A fall in wage rate will lead to .... in supply of a commodity.
   (v) An increase in excise duty on production of T.V. sets will .... the supply of T.V. sets.
2. What will happen to the supply of a commodity, when
   (i) The price of raw material used in production of the commodity increases.
   (ii) A new firm supplying the commodity comes into existence.
   (iii) There is a technological progress.
3. What will happen to the supply of stainless steel utensils if the price of stainless steel falls?

WHAT YOU HAVE LEARNT

- Supply of a commodity is the quantity of a commodity that a seller/firm offers for sale at given price per unit of time.
- The total quantity available with a seller/firm at a particular point of time is called stock. Supply is that part of stock of the commodity that the seller is ready to sell at a given price during a given period of time.
- Individual supply schedule shows the quantities of a commodity offered for sale by an individual firm at different prices in a tabular form. Individual supply curve is derived from an individual supply schedule.
- Market supply is the total quantity of a commodity offered for sale by all the firms in the market at given price and given time.
- The determinants of individual supply are – price of the commodity, price of other related goods, change in technology of production, change in price of inputs, objective of the firm and government policy.
- The determinants of market supply are number of firms supplying the commodity, expected future price in addition to the determinants of individual supply.
- The law of supply states that other factors determining supply remaining constant, price of a commodity and quantity suppled are directly related.
- Supply curve is a diagrammatic representation of law of supply.
- The supply curve of a commodity slopes upwards as per law of supply.

TERMINAL EXERCISE

1. Define supply. Distinguish between individual supply and market supply.
2. Explain the factors which affect individual supply of a commodity.
3. Explain three determinants of market supply of a commodity in brief.
4. Distinguish between stock and supply with the help of a suitable example.
5. State and explain the law of supply using a suitable numerical example.
6. What is a supply curve? Draw an individual supply curve with the help of a hypothetical supply schedule.
7. Why does the supply curve slope upwards?
8. What are the reasons behind the law of supply?

ANSWERS TO INTEXT QUESTIONS

Intext Questions 10.1

1. Supply refers to the quantity of a commodity offered for sale at given price per unit of time.
2. Price of the commodity, quantity supplied and time period.
3. Stock is the total quantity of a commodity available with a firm at a particular point of time.

   Supply is that part of stock of a commodity that the seller is ready to sell at given price during a given period of time.

Intext Questions 10.3

1. 4500, 7000, 9500, 12000, 14,500
2. 300, 500, 700, 900, 1100

Intext Questions 10.4

1. (i) Increases

   (ii) More

   (iii) Increase

   (iv) Increase

   (v) decrease
2. (i) supply of the commodity will decrease

   (ii) supply of the commodity will increase

   (iii) supply of the commodity will increase
3. Supply of stainless steel utensils will increase.