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SUPPLY

We have already studied about the meaning of demand, factors determining demand and the law of demand etc. the demand for the commodities comes from the buyers of the commodities. But the buyers can purchase a commodity only when it is available in the market. The firms produce goods and services which are demanded by the households for the satisfaction of their wants. Firms have to incur some expenditure on the purchase of inputs required for producing the goods and services. They get revenue by selling these goods and services. In this process, the firms have an objective of earning maximum profit. The focus of this chapter is to understand why a firm or a seller is willing to sell its product in the market. We assume that there are no intermediaries in the market, so the firm is also the seller of the commodity.

OBJECTIVES

After completing this lesson, you will be able to:

- define supply;
- discuss the factors that affect the supply;
- know the meaning of supply function;
- prepare a supply schedules from supply function;
- state and explain the law of supply;
- differentiate between individual and market supply;
- prepare and individual and market supply schedule;
- draw an individual and market supply curves;
- distinguish between change in supply and change in quantity supplied; and
- differentiate between movement along a supply curve and shift of supply curve.

Notes

19.1 MEANING OF SUPPLY

supply a commodity by a firm or seller **may be defined as the quantity of a commodity that a firm or seller offers for sale at a given price during a given time period.** But the actual sale of the commodity may be different from its supply. For example a farmer (produced of wheat) is willing to sell 50 quintals of wheat at a price of ₹ 15 per kg but he is able to sell only 30 quintals at this price. So this case the supply of wheat is 50 quintals but the actual sale is 30 quintals. So these two concepts should not be confused with each other. Like demand supply also has three elements. The definition of supply include (i) the quantity of the commodity that a firm is willing to supply (ii) the price at which it is willing to supply that quantity and (iii) the time period during which it is willing to supply that quantity.

19.2 FACTORS DETERMINING SUPPLY OR DETERMINANTS OF SUPPLY OF A GOOD

The main determinant of supply is the price of the commodity. But the cost of production of a commodity is an important factor in determining profit maximized on output of a firm. The cost of production depends on the prices of various inputs, like raw material, wages of workers, interest of capital, rent of building etc. The supply of a commodity also depends on the technology used in the production of the commodity and many other factors. The main factors determining supply of a commodity are

(i) Price of the commodity

(ii) Price of other related good

(iii) Price of inputs/factors

(iv) Taxation policy of government

(v) Objective of the firm

(i) Price of the commodity: Other factors determining supply remaining constant, there is a direct relationship between price and quantity supplied of a commodity. It means the quantity supplied of a commodity increases with rise in price and decreases with fall in price of the commodity. More quantity of a commodity is supplied at a higher price and less quantity is supplied at a lower price. For example a seller of tomatoes is willing to sell 100 kgs of tomatoes at a price of ₹ 40 per keg and only 50 kgs at a price of ₹ 20 per kg. Due to this direct relationship between price and quantity supplied of a commodity the supply curve has a positive slope. Supply curve is upward sloping to the right.

(ii) Price of other related goods: Supply of a commodity is also influenced by the change in the price of other related goods. With the help of given resources we can produce several goods by using the same technology. This helps the firm to diversify and tide over fluctuations in demand. For example, a farmer can produce either pulses or food grains by using the resources. If the price of pulses increases it becomes more profitable for him to make more production of pulses. So he will divert some resources from the production of food grains to the production of pulses. The production of pulses will increase and that of food grains will decrease. So the supply of pulses will increase if the price of pulses increases and the supply of food grain will decrease at the same price reverse will happen if the price of food grains increases.

(iii) **Price of inputs/factors:** Change in the price of inputs like raw material, wage, rent or interest also influences the supply of a commodity. For example, in the production of cloth, cotton is the main raw material. If the price of cotton increases, the cost of production of cloth will increase. At the same price, the margin of profit will decrease. So the producer will decrease the supply of cloth at the same price. On the other hand if the price of cotton falls, the cost of production per unit of cloth will decrease and hence the supply of cloth will increase. The price of other inputs will also influence the supply of a good in the same manner.

(iv) **Technology of production:** an improvement in the technology of production of a commodity decreases the per unit cost of the commodity. The margin of profit will increase at the same price. So the supply of a commodity will increase, with improvement in technology of production, at the same price. On the other hand if a firm uses absolute technology of production, the cost of production per unit of the commodity will increase. The margin of profit will decrease, so the firm will decrease its supply at the same price. This is the main reason that the firms are trying to use better technology of production because it not only reduces the cost of production per unit but also improves the quality of the product.

(v) **Taxation policy of government:** If the government reduces the excise duty or the production of a commodity, the cost of production per unit of the commodity will decrease, the margin of profit will increase at the same price so the producer of the commodity will increase its supply. It happens when the government wants to increase the production of the commodity. On the other hand to discourage the production of some harmful goods, like cigarettes, liquor etc, the government increases the rate of excise duty on the production of such goods. So the cost of production per unit of the commodity increases and the supply of such commodities decreases.

(vi) **Objective of the firm:** The objective of the producer also influences the supply of a commodity. Generally, the objective of a producer is get maximize his profits. Profits are maximized at a higher price. So he increases the supply of a commodity at a higher price and decreases its supply at a lower price. But sometimes, the producer may be in maximizing his sales and not in maximizing his profits as he wants to capture the market. In that case, he goes on increasing the supply so long his target is not achieved can profit is not adversely affected. He may increase the supply at the same price to any extent.

INTEXT QUESTIONS 19.1

1. Define supply.
2. What is the meaning supply?
3. State any three determinants of supply.
4. How does technological progress influence the supply of a commodity?
5. What is the effect of change in price of inputs on the supply of a commodity?
6. How does change in the price of other related goods affect the supply of a commodity?

19.3 SUPPLY FUNCTION

When the relationship between quantity supplied and the determinants of supplied is expressed mathematically in an equation, it is called a supply function. So a supply function can be expressed as:

$$S_n = f(P_n, P_r, P_f, T, T_r, G)$$

where S_n = Supply of commodity n

Pn = Price of the commodity n

Pr = Price of other related goods

Pf = Price of inputs/factors

T = Technology of production

Tr = Government policy or tax rate

G = Goal or objective of the producer

Typically supply function shows the relationship between price and quantity supplied, keeping all other determinants of supply as constant. It shows the amount of a good that a seller supplies at different levels of price.

For example, a supply function can be

$$qs = -15 + 3P$$

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In the above equation quantity supplied qs is a function of price P. The sign before p is always positive which indicates that the price and quantity supplied are directly related and the supply curve is upward sloping to the right. Here +3 means that the every unit increase in price there is an increase of 3 units in supply. –15 in the supply function represents the point at which the supply cur e cuts x-axis.

We can derive a supply schedule with the help of supply function.

Table 19.1: Supply schedule of commodity x

Price of unit (₹)	Quantity supplied per unit of time (units)
5	0
6	3
7	6
8	9
9	12

The above table shows that for the price levels more that ₹ 5, there is a positive quantity supplied. But for ₹ 5, or less than ₹ 5, the supply of commodity x is zero because supply can not be negative.

19.4 LAW OF SUPPLY

The law of supply depicts the relationship between price and quantity supplied of a commodity when all other determinants of supply remain constant. This law states that there is a direct relationship between price and quantity supplied of a commodity, other factors determining supply remaining constant. It means quantity supplied of a commodity increases with increase in price and decreases with decrease in price.

19.4.1 Assumptions of the law of supply

The phrase other determinants of supply remaining constant in the law of supply shows the assumptions of the law of supply. The mains factors which influence the supply of a commodity one, price of the commodity, price of other related goods, price of inputs, technology of production, taxation policy of the government and objective of the firm etc. The law of supply is based on the assumptions that all these factors determining supply except price of the commodity should remain constant. The following are the main assumptions of the law of supply.

(i) Price of other related goods should remain the same

(ii) There should be no change in the price of inputs (factors)

(iii) Technology of production should not change.

(iv) There is no change in the taxation policy of the government.

(v) Objective of the firm should not change

The law of supply is based on the assumptions that the supply of commodity changes only due to change in price when all other determinant of supply remain constant.

19.4.2 Individual and Market Supply

Individual Supply

Individual supply refers to the quantity of a commodity which an individual firm is willing to sell at a given price during a given period of time. It is related with the supply of an individual firm.

Market Supply

Market supply is the collective supply of all the firms in the market of a commodity at a given price during a given period of time. Market supply tells us the told availability of a commodity which can be used to meet the total element of the commodity. **Market supply can be desired by summing up the supply of all the individual firms in the market.**

19.4.3 Supply Schedule

Supply schedule is a table showing different quantities of a commodity that a firm is willing to sell at different prices during a given period of time. Supply schedule can be of two types.

(i) *Individual supply schedule:* When we represent a single firm, willingness to sell different quantities of a commodity at different prices during a given time period, we get individual supply schedule.

(ii) *Market supply schedule:* **Market supply schedule is constructed by summing up the supplies of all the individual firm at different prices during a given period of time.** A market supply schedule is a table showing the total supply of a good by all the firms at different price during a given time period . Market supply schedule can be explained with the help of the following table.

Market supply schedule for sugar

Price per kg (₹)	Quantity supplied of sugar by firm A (kgs)	Quantity supplied by firm B (kgs)	Quantity supplied by firm C (kgs)	Market supply A + B + C (kg)
25	100	200	0	300
30	200	300	100	600
35	300	400	200	900
40	400	500	300	1200
45	500	600	400	1500

In the above table we see that at a price of ₹ 25 per kg the firms A, B and C willing to sell 100, 200 and 0 kgs of sugar respectively. So the market supply as ₹ 25 is 100 + 200 + 0 = 300 kgs of sugar. In the same way the market supply has been calculated at other prices also. The market supply is influenced by the number of firms in the market.

19.4.4 Supply Curve

Supply curve is the graphical presentation of a supply schedule. It shows the quantity that all the firms in the market are willing to supply at a given price during a given time period when all other factors influencing supply remain constant. Supply curve is also of two types.

(i) **Individual supply curve:** Graphical presentation of individual supply schedule is called individual supply curve. It shows the different quantities of a commodity, an individual firm is willing to sell at different prices during a given time period.

(ii) **Market supply curve: Market supply can be derived by horizontal summation of all individual supply curve:** It show the different quantities of a commodity that all the firms are willing to sell at different prices during a given time period.

Let us assume that these are only 3 firms supplying sugar in the market. The supply curves of these firms are represented by SA, SB and SC respectively. If a t ₹ 30 per kg each firm is willing to sell 200, 300 and 100 kgs of sugar respectively. The market supply at ₹ 30 per kg is the sum of a the supply of the three firms 200 + 300 +100 = 600 kgs of sugar. This gives us one point A on the market supply curve as shown in the figure given below.

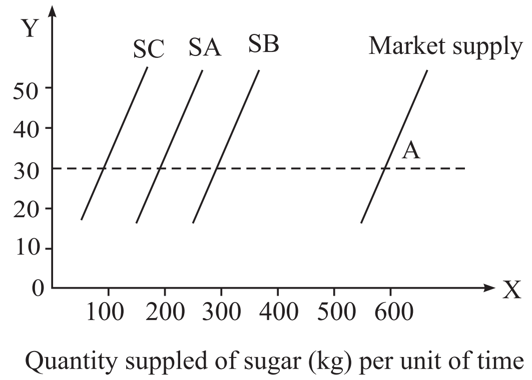

Fig. 19.1

INTEXT QUESTIONS 19.3

(i) State the law of supply.

(ii) Define market supply.

(iii) What is supply schedule?

(iv) How is market supply schedule deviated from individual supply schedule?

(v) What is supply curve?

(vi) How is market supply curve derived from individual supply curves?

(vii) Explain the law of supply with the help of a schedule and a diagram.

19.5 FACTORS DETERMINING SUPPLY

All the factors determining supply of a commodity can be classified into two parts.

(i) Price of the commodity

(ii) Other factors determining supply

This classification is based on the fact that the law of supply or the supply curve shows the relationship between price and quantity supplied of a commodity when all other determinants of supply remain constant.

(i) Price of the commodity: In the law of supply we have studied that the quantity supplied of a commodity increases with increase in priced and decrease with decrease in price all other determinants of supply remaining constant. These increase and decrease in supply are also termed as expansion and contraction of supply respectively. Expansion of supply is shown through

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an upward movement along the same supply curve on the other hand contraction of supply is shown through downward movement on the same supply curve.

Movement along the supply curve or expansion and contraction of supply can be explained with the help of the following diagram.

In the above figure initial price and quantity supplied are OP and OQ respectively. When the price increased from OP to OP1, the quantity supplied increases from OQ to OQ1. This is shown by upward movement from point A to point B on the same supply curve. This upward movement of the same supply curve shows the expansion of supply.

On the other hand wen the price falls from OP to OP2, the quantity supplied decreases from OQ to OQ2. This is shown by downward movement from point A to point C on the same supply curve. This downward movement on the same supply curve shows the contraction of supply.

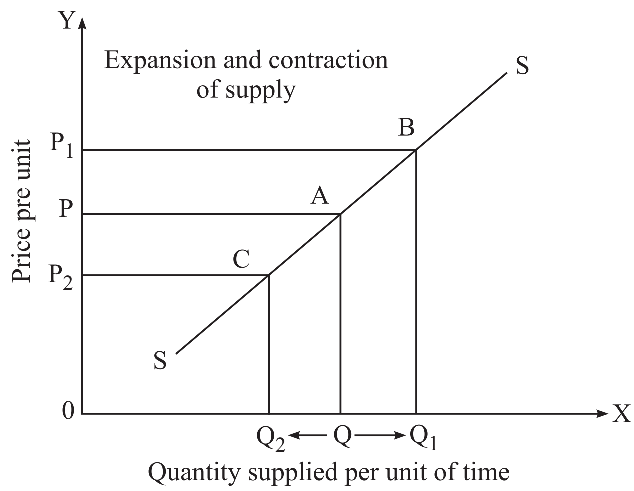

Fig. 19.2

We can say that change in price of the commodity leads to change in quantity supplied of the commodity. It is shown by movement on the same supply curve. Increase in quantity supplied reflects expansion of supply and decrease in quantity supplied reflects contraction of supply.

(ii) **Other factors determining supply:** But if there is change in factors other than the price of the commodity, then either more is supplied at the same price or less supplied at the same price. In such cases, the price of the commodity remains constant but there is a change in other factors like change in the price of inputs, change in technology of production, change in price of other related goods, change in taxation policy of the government etc.

For example, there is an improvement in the technology of production of the commodity in question. It leads to decrease in per unit of cost production of the commodity. The firm is willing to sell more quantity of the commodity at the same price. So the supply other commodity increases at the same price. This increase in supply is shown by rightward shift of supply curve.

On the other hand if the firm uses inferior technology of production, the cost of production per unit of the commodity increases. The firm is willing to sell less quantity at the same price. So the supply of the commodity decreases at the same price. This decrease in supply is shown by leftward shift of the supply curve.

The above cases of increase and decrease in supply can be shown with the help of the following figures.

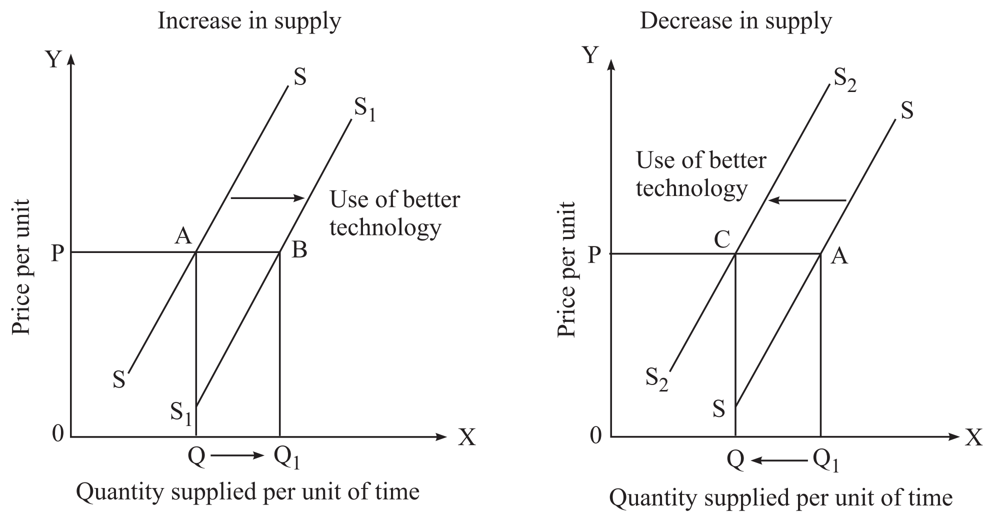

Fig. 19.3

19.5.1 Main factors causing increase in supply or rightward shift of supply Curve

(i) Fall in the price of other related goods

(ii) Fall in the price of inptus/factors

(iii) use of better technology in production

(iv) Decrease in the rate of excise duty by government

(v) If the objective of producer changes from profit maximization to sales maximization

19.5.2 Main factors causing decrease in supply or leftward shift of supply curve

(i) Increase in the price of other related goods

(ii) Rise in the price of inputs/factors

(iii) use of inferior technology in production

(iv) Increase in the rate of excise duty by the government

(v) If the objective of the producer changes from soles maximization to profit maximization.

INTEXT QUESTIONS 19.4

(i) If the quantity supplied of a commodity falls only due to rise in its price, what is that fall is supply called?

(ii) If the supply of a commodity rises due to improvement in technology, what is that rise in supply called?

(iii) State any three factors causing increase in supply of a commodity.

(iv) State any three factors causing decrease in supply of a commodity.

(v) State any three factors causing rightward shift of supply curve.

(vi) State any three factors causing leftward shift of supply curve.

(vii) Distinguish between expansion in supply and increase in supply.

(viii) Distinguish between decrease in supply and contraction in supply

(ix) Distinguish between movement along the same supply curve and shift of supply curve.

(x) Distinguish between change in quantity supplied and change in supply.

WHAT YOU HAVE LEARNT

- Supply of a commodity refers to the quantity of a commodity that a seller is willing to sell at a given price during a specific period of time.
- Supply of a commodity is influenced by the factors (i) price of the commodity (ii) price of other related good (iii) Price of inputs/factor (iv) Technology of production (v) Taxation policy of the government (vi) Objective of the firm
- When the relationship between quantity supplied and determinants of supply is represented in a mathematical equation, it is called a supply function.

- The law of supply states that other factors determining supply remaining constant, there is a direct relationship between price and quantity supplied of a commodity.
- Supply schedule is a table which shows the different quantities of acommodity supplied at different prices.
- Supply curve is graphical presentation of supply schedule.
- Market supply schedule can be obtained by summing up all individual supply schedules.
- Market supply curve can be obtained by horizontal summation of all individual supply curves.
- Change in quantity supplied takes place only due to change in the price of the commodity.
- Change in supply takes place due to change in factors other than the price of the commodity.
- Increase in supply leads to rightward shift of supply curve and decrease in supply leads to leftward shift supply curve.
- Expansion of supply leads to upward movement and contraction of supply leads to downward movement on the same supply curve.

TERMINAL EXERCISE

1. Give the meaning of the term supply.
2. Explain in brief the various determinants of supply.
3. Define supply function.
4. Explain the law of supply and point out the main assumptions behind this law.
5. Distinguish between a supply schedule and a supply curve.
6. How is market supply curve derived from individual supply curves?
7. State the curves of increase in supply
8. How is it possible that a seller is ready to sell less quantity of commodity even at the same price.
9. Distinguish between movement along the supply curve and shift of supply curve.
10. Distinguish between decrease in supply and contraction of supply.

ANSWERS TO INTEXT QUESTIONS

19.1

1. Read section 19.1
2 Read section 19.1
3. Read section 19.2
4. Read section 19.2 (iv)
5. Read section 19.2 (iii)
6. Read section 19.2 (ii)

19.2

(i) Price = 3
(ii) Price = 8
(iii) Quantity = 28

19.3

(i) Read section 19.4
(ii) Read section 19.4.2
(iii) Read section 19.4.3
(iv) Read section 19.4.3 (ii)
(v) Read section 19.4.4
(vi) Read section 19.4..4 (ii)
(vii) Read section 19.4

19.4

(i) Read section 19.5 (i)
(ii) Read section 19.5 (ii)
(iii) Read section 19.5.1
(iv) Read section 19.5.2
(v) Read section 19.5.1
(vi) Read section 19.5.2
(vii) Read section 19.5 (i) and 19.5 (ii)
(viii) Read section 19.5 (i) and 19.5 (ii)
(ix) Read section 19.5 (i) and 19.5 (ii)
(x) Read section 19.5 (i) and 19.5 (ii)