

Chapter -4
Law & Elasticity of supply

Supply is that quantity of a commodity which a producer is ready to sell in the market at a given price, at a given place & at a given point of time.

Differentiation between stock & supply:

Stock is that quantity of a commodity which a producer keeps at a particular point of time.

Supply is that part of stock which a producer is ready to sell in the market at a given price, at a given place & at a given point of time.

In this way, we can say that whole supply is stock but whole stock may not be supply.

Supply functions: - It expresses the functional relationship between supply of a commodity & factor affecting it. Symbolically it can be written

$$S_x = f [P_x, P_y, P_F, N_F, E_P, G, T_E, \text{Tax/ sub, } N]$$

Determinants of supply:-

- 1) Price of a commodity (P_x) :- when other things remaining the same & price of a commodity increases, then its supply also increases & vice-versa. Hence, it explains direct relationship between price & supply.

- 2) Price of related goods (P_y) :- when price of a commodity increases, then producers will increase the supply by decreasing the supply of substitute commodity. Hence both are inverses related.
For eg :- when price of tea increases, then supply of coffee decreases.

- 3) Price of factor input (P_F) :- when price of factors of production decreases, then it reduces the cost of production & increases the profitability. As a result producer will increase the supply & vice-versa.

4) No of firm (N_F) :- when no. Of firm are more than supply of the commodity would be high & vice –versa.

5) Expected price (E_P) :- When producers expect high price of a commodity in future then they decrease the supply at existing price & vice-versa.

6) Goal of the firm (G) :- A producer can have two alternative goals :-

- a) High sales revenue :- In this supply of the commodity will be high because of greater turn over.
- b) High profitability :- In this, if a firm keeps greater profit margin, then supply will be less.

7) Technique of production (T_E) :- Whenever a firm introduces the improved technology then it decreases cost of production & increases profitability. As a result firm will be ready to supply more.

8) Taxation policies (Tax/ subsidy) :- when govt. Imposes tax on production of commodity then supply will decrease. On other hand if govt. Gives subsidies, then supply will increase.

9) Natural factor (N) :- if nature factors are favorable then supply of a commodity will be high & vice-versa.

Law of supply :- when other things remaining the same & price of a commodity increases then supply also increases & vice-versa. It explains direct relationship between price & supply of the commodity.

Explanation of law of supply :- it can be explain with the help of supply schedule & supply curve.

- 1) Supply schedule :- it is a tabular presentation between P&S of the commodity. It can be discuss in two parts :-
 - a) Individual S.S :- It is the P&S of the individual firm

Px	Sx
1	100
2	200
3	300
4	400
5	500

- b) Market S.S.:- this is the P&S of the entire firm in a market.

Px	A	B	C	market
1	100	150	200	450
2	200	300	400	900
3	300	450	600	1350
4	400	600	800	1800
5	500	750	1000	2250

- 2) Supply curve:- It is a diagrammatic presentation of S.S. it can be discuss in two parts:-

- a) Individual S.C.:

- b) Market S.C.:

Assumption of law of supply:-

- 1) Price of substitute commodity should not change
- 2) No of firms should not change
- 3) Technique of production should not change
- 4) Taxation policies should not change
- 5) Natural condition should not change
- 6) Goal of the firm should not change
- 7) Expected price should not change
- 8) Price of affecting goods should not change.

Factors responsible for the application of law of supply:-

- 1) Change in stock:- when P of a commodity is increased then producer can increase the S by releasing the stock. On other hand, when P of a commodity is decreased the producers can decrease the S by increasing the stock. Hence, law of supply is applicable.
- 2) Product substitution :- When P of a commodity increases, then producers can increase its supply by decreasing the supply of its substitute commodity. For eg:- if a farmer can produce wheat & oil-seeds both. If P of wheat increases, then farmer has to reduce the area under the oil-seeds, which would increase the supply of wheat.
- 3) P&L :- when P of a commodity increases then, producer would increase the supply with a view of earn profit. On other hand, when P of a commodity falls, then producers would decrease its supply to avoid loss.
- 4) Entry & exit of the firm :- When P of a commodity increases, then its supply would increase due to the entry of new firm in the market. On other hand, when P of a commodity falls, then inefficient firm would exit from the market. As a result supply would decrease.

Exceptions of law of supply:-

- Perishable goods:- supply of these goods cannot be change with the change in P because of law storing capacity. These goods are to be supplied when these are produced for eg:- vegetable, fruits, egg, meat, milk etc.
- Agriculture goods:- supply of these goods doesn't depend upon P but depends upon natural conditions such as temperature rainfall humidity etc.
- Artistic goods:- These are those goods which require special skill. Supply of these goods doesn't change with the change in P. For eg:- carpets paintings etc.
- Auction goods:- these are those goods which are auctioned by the govt. & other department when these are out of use. Supply of these goods cannot be change whatever is the P. For eg:- defence equipment waste & outdated products of different offices.
- In case of future expectation:- If producers expect high price of a commodity in future then, they will not increase the supply even at slightly high price. For eg:- gold, shares etc.

Change in supply & change in quantity supply

When supply of a commodity is change due to change in price, then this is called change in quantity supplied. On other hand when supply of a commodity is changed due to other factors [price of related goodsnatural factors] then this is called change in supply.

Change in quantity supplied :- It can be discuss in two parts :-

- 1) Extension of supply:- when S of a commodity is increased due to increase in P, then this is called extension of supply.
- 2) Contraction of supply:- when S of a commodity is decreased due to decrease in P, then this is called contraction of supply.

Movement along the supply curve:- when S of a commodity change due to change in P, I then this is called movement along the supply curve.

Change in supply:- It can be discuss in two parts:-

- 1) Increase in supply:- when S of a commodity is increased not due to P but due to other factors, then this is called increase in supply.
- 2) Decrease in supply:- when S of a commodity is decreased not due to P, but due to other factor, then this is called decrease in supply.

Shifting of supply curve:- when S of a commodity is change not due to P, but due to other factor then this is called shifting of supply curve.

Elasticity of supply:- law of supply simply explain direct relationship between P&S of a commodity but it doesn't explain the extent to which S of a commodity is change due to change in P. This is explain by es.

"Elasticity of supply is the degree of responsiveness of the supply due to change in P".

$$es = \frac{\text{proportionate change in } S}{\text{proportionate change in } P}$$

Degrees of price elasticity of supply:-

- 1) Perfectly elastic supply:- when S of a commodity keeps on changing even without change in P, then this is called perfectly elastic supply
- 2) Highly elastic supply:- when % in S is greater than % change in P, then this is called highly elastic supply.
- 3) Unitary elastic supply:- when % change in S is equal to % change in P then this is called unitary elastic supply.
- 4) Highly inelastic supply:- When % change in S is less than % change in P, then this is called highly inelastic supply.
- 5) Perfectly inelastic supply:- when there is no change in S, irrespective of any change in P, then this is called perfectly inelastic supply.

Methods to measure es:-

1) Proportionate or percentage method:-

$$es = \frac{\% \text{ change in } S}{\% \text{ change in } P}$$

$$= \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}}$$

$$= \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

Num 1 when P of a commodity is Rs. 5

Px	Sx
5	500
5.5	650

$$Es = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

$$= \frac{50}{500} \times \frac{5}{0.5}$$

$$= 3, \quad es > 1.$$

Num 2

Px	Sx
2	80
2.5	

$$es = 1.2$$

$$Es = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

$$1.2 = \frac{\Delta Q}{80} \times \frac{2}{0.5}$$

$$\Delta Q = 20 \times 1.2$$

$$= 24$$

$$S \text{ at Rs. } 2.5 = 80 + 24 = 104$$

Num 3	Px	Sx	Sales (In rs.)
	2	2500	5000
	2.4	2750	6600 es = 0.5

$$Es = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} \times \frac{P}{\Delta P}$$

$$0.5 = \frac{\frac{\Delta Q}{2500}}{\frac{2}{0.4}} \times \frac{2}{0.4}$$

$$\Delta Q = 250$$

$$Q \text{ at } P \ 2.4 = 2500 + 250 = 2750$$

$$\text{Sales} = 2750 \times \frac{2.4}{10}$$

$$= 6600$$

Num 4	es = 2.5	Px	Sx
		5	300
		4	

$$Es = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} \times \frac{P}{\Delta P}$$

$$2.5 = \frac{\frac{\Delta Q}{300}}{\frac{5}{1}} \times \frac{5}{1}$$

$$\Delta Q = 60 \times 2.5 = 150$$

$$Q \text{ at } P \ 4 = 300 - 150 = 150$$

Compare es in a following diagram:-

$$Es = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} \times \frac{P}{\Delta P}$$

$$= \frac{\Delta Q P}{Q \Delta P} = 1$$

OP= original price
OQ – original supply

S1:- In this diagram changes towards P&S are proportionate. Prices change from OP to OP₁ is less changed as compared to S from OQ to OQ₁ but these changes are according to their original value.

S3 :- In this diagram the situation is exactly reverse. Hence we can conclude it in this way that what ever supply curve is steep or flat, doesn't make any difference if it starts from origin. Any curve starts from origin will have unitary elasticity.

2) Geometric method:-

Es = $\frac{\text{horizontal sequent along X' axis}}{\text{Quantity supplied}}$

$$= \frac{BC}{OC}$$

BC > OC, es > 1

BC = OC, es = 1

BC < OC, es < 1

Factors affecting es :-

- 1) Nature of a commodity :- in case of perishable commodity (milk, vegetable) es < 1 whereas in case of durable goods (T.V., furn) it is more than unitary.
- 2) Cost of production:- if production of a commodity is subject to diminishing cost, then es is more than unitary. On other hand, if it is subject to increase in cost, then es is less than unitary.
- 3) Technique of production:- if technique of production is easy & simple then es is more than unitary. But if technique of production is difficult & complicated then es is less than unitary.
- 4) Time period:- If there is a short- period to increase the S, then elasticity is less than unitary where as in case of long period it is more than unitary.