

## CHAPTER

## THREE

## THEORY OF SUPPLY

## 1. SUPPLY AND STOCK

## SUPPLY

"The quantity of a commodity which is offered in the market for sale at a particular price is called supply".

If the price of wheat in the market is Rs.300/40Kg and at this price the sellers offer 40,000 Kg wheat for sale in the market, this quantity of wheat will be regarded as the supply of wheat at price Rs.300/40Kg. Without referring to the price of a commodity, the quantity supplied of that commodity cannot be quoted.

## STOCK

"The stock is a total quantity of a commodity possessed by the seller that can be made available in the market for sale at a particular point of time".

The total quantity produced of a commodity can be called the stock of the commodity but only that portion of the total produced commodity that is put for sale in the market at a particular price will be called its supply.

A seller may have a stock of 5000 Kg of rice but he may put for sale only 1000 Kg. at Rs.40/Kg, which will be regarded as its supply at Rs.40.

At different prices, the stock of the commodity will remain the same but the portion, which is supplied or actually offered for sale in the market, will be different. The aim of the sellers is to earn maximum profit. So they consider the price of the commodity while making offer for the quantity of the commodity in the market for sale. If the price is high, they offer more quantity for sale while at lower price, lesser quantity is offered for sale in the market.

The supply of a commodity can be quoted at a point of time or during a period of time. With reference to the point of time, the supply of a commodity will be the quantity that is put for sale at a particular price at a particular time i.e., the quantity of rice that will be sold in the market at Rs.40/Kg on 20<sup>th</sup> December 2002.

The supply of a commodity with reference to a period of time will be defined as the quantity of a commodity that will be put for sale during a period of time e.g., one day or one week or one year. Thus the supply can be Short Period's Supply or Long Period's Supply.

## 2. LAW OF SUPPLY

"Other things remain the same, if the price of a commodity increases, quantity supplied for that commodity increases. If the price of a decreases, quantity supplied for that commodity decreases".

OR

"Ceterisparibus, quantity supplied for a commodity varies inversely with its price, not

necessarily proportionately."

Statement of the law shows that there is a positive relationship between price and quantity supplied of a commodity. It means the price of any commodity and supply for that commodity changes in the same direction. It is also obvious from the statement that the proportionate change in price and quantity supplied is not necessary.

We can also show the functional relationship between price and quantity demanded in the following way:

$$Q_s = f(P)$$

Quantity supplied is a function of price.

$$P \uparrow \rightarrow Q_s \uparrow$$

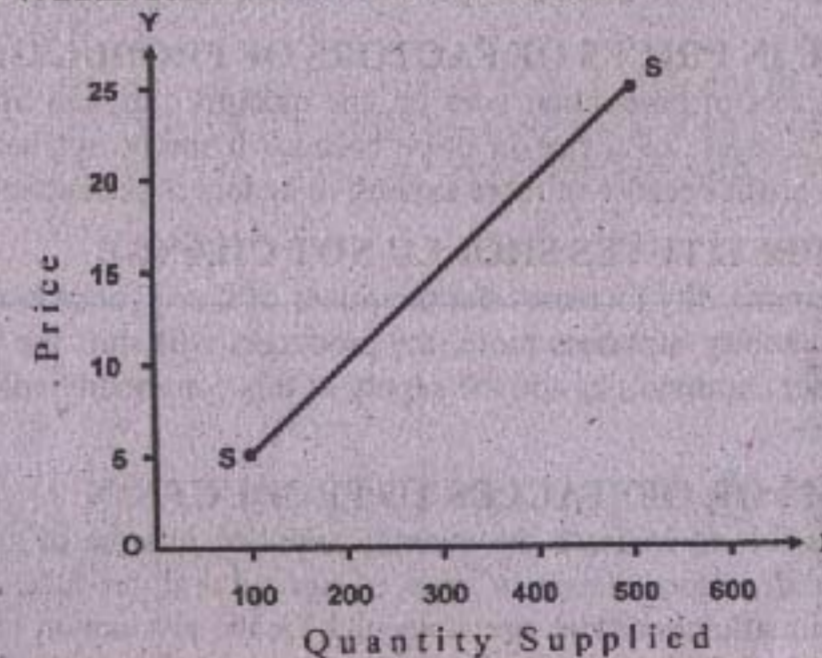
$$P \downarrow \rightarrow Q_s \downarrow$$

## EXPLANATION WITH THE HELP OF SCHEDULE

PRICE (Per Unit)	SUPPLY
Rs.05	100 Units
Rs.10	200 Units
Rs.15	300 Units
Rs.20	400 Units
Rs.25	500 Units

This schedule shows that when the price is Rs.05/Unit, the quantity supplied is 100 units. As the price increases, supply also increases. If we take Rs.25/Unit as the first price, we come to know that supply declines as the price decreases. So at price Rs.25/Unit, supply is 500 units while supply is only 100 units at price Rs.05/Unit.

## EXPLANATION WITH THE HELP OF DIAGRAM



In this diagram SS is the supply curve. The trend of the supply curve is from left to right upward i.e., the slope of the supply curve is positive. This trend shows the direct relationship between price and quantity supplied.

**ASSUMPTIONS OF THE LAW**

Assumptions mean those variables which we hold them constant in order to prove the law. Assumptions are also called conditions, parameters, Ceterisparibus (other things remain the same). The law of Supply proves true under the conditions. The Assumptions of law of Supply are as follows:

**1. COST OF PRODUCTION OR TECHNOLOGY DOES NOT CHANGE**

If a commodity is being produced under the Law of Diminishing Costs i.e., the cost of production decreases with the increase in production, it is possible that its supply may increase even with a fall in price. So also it is possible that as a result of research, experiments and inventions or due to better combination of factors of production, the quantity supplied of a commodity may increase in spite of a fall in price.

**2. NO DISCOVERY OF SOURCES OF RAW MATERIAL OR SUBSTITUTES**

If new sources of raw material are discovered or their substitutes are found, the cost of production of goods is reduced and it becomes possible to supply such goods in greater quantities even at lower prices.

**3. NO RESTRICTION BY GOVERNMENT FOR INCREASING OUTPUT**

If government restricts the increase in output of a commodity, the quantity supplied cannot be increased in spite of rise in its price.

**4. NO EXPECTED CHANGE IN PRICE IN NEAR FUTURE**

If price of a commodity decreases a little but the sellers expect the prices to go further down, they might increase the quantity even at a lower price to save themselves of additional loss. On the contrary, if there is a possibility of a further rise in prices in the near future, the sellers might not increase the quantity supplied at a raised price to benefit by further rise in prices.

**5. NO INCREASE IN PRICES OF FACTORS OF PRODUCTION**

If the price of factors of production goes up, the quantity supplied of a commodity might not be increased in spite of a rise in price because it might not be possible for certain producers to earn profit because of more expensive factors of production.

**6. PRICES OF SUBSTITUTES SHOULD NOT CHANGE**

If the price of a commodity increases but the prices of those goods that can be produced in place of this commodity increases more, the producers will shift the production from this commodity to other commodities and the supply of this commodity will come down in spite of a rise in its price.

**7. NO PROBLEMS OR OBSTACLES TO PRODUCTION**

It becomes impossible to increase the quantity supplied in spite of a rise in price, due to unfavorable natural circumstances in case of agricultural produce or due to industrial disputes. If the climatic conditions are congenial for the production purposes, the quantity supplied increases in spite of a fall in prices of such goods.

**8. SELLER'S ATTITUDE SHOULD NOT CHANGE**

The sellers sell their goods to maximize their profits. But if they once make it their

objective to maximize their sale in the market, then they will sell more quantity in the market even at a lower price.

**EXCEPTIONS OF THE LAW**

Exceptions mean those cases where any law does not work or hold or fails. The Exceptions of Law of Supply are as follows where Law of Supply cannot prove true:

**1. NEED FOR CASH**

Law of supply would not hold in the case of need for cash. If a seller is in need of cash, he would not follow the law of supply and sells his commodities at low prices.

**2. MIGRATION**

Migration is another limitation or exception of law of supply. If people are migrating from one place to another place, they would not care what the price level is. They would sell out the commodities even they are getting low prices.

**3. NATURAL RESOURCES**

In the case of natural resources (earth quake, floods etc), people would not follow the law of supply and sells his commodities at low prices.

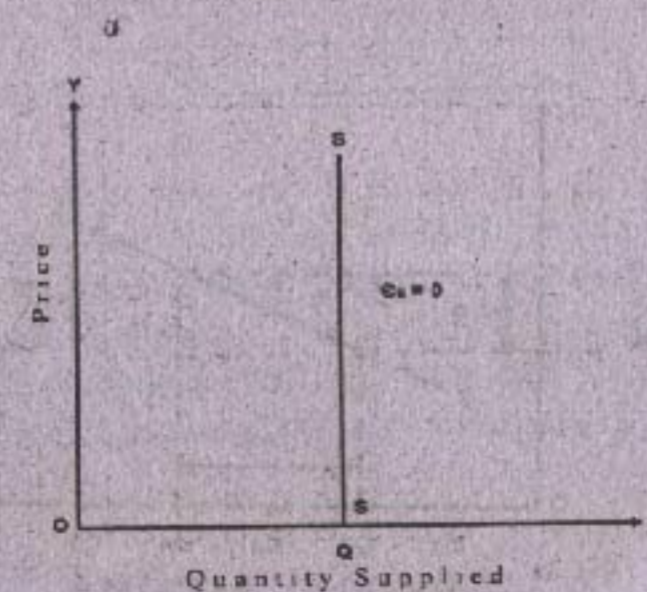
**3. KINDS OF SUPPLY WITH RESPECT TO TIME**

There are three kinds with respect to time:

- Fixed Supply
- Short Period Supply
- Long Period Supply

**1. FIXED SUPPLY**

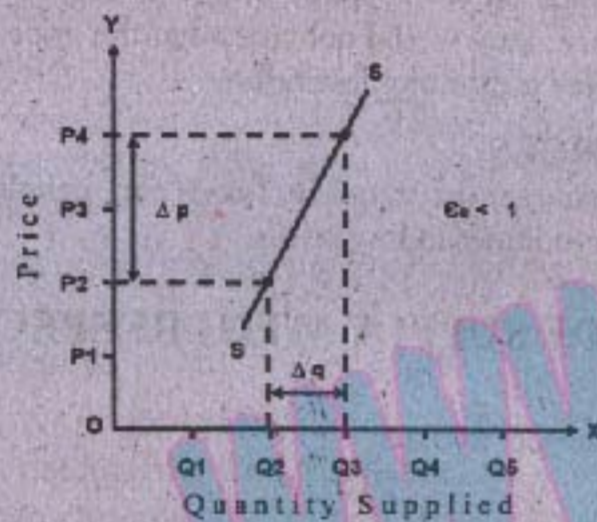
Fixed supply is related to the daily market which is consisting of one day or twenty four hours. The supply of daily market is more or less remains fixed. Fixed supply is for perishable commodities i.e. vegetable, fruit, milk, meat, ice etc. Fixed supply curve is Perfectly Inelastic or vertical.



The elasticity of supply is generally not zero or unlimited, however if the quantity supplied does not change at all with changes in price, the elasticity of supply is considered to be zero and it is called Perfectly Inelastic Supply. In this diagram oQ is the quantity supplied and remains the same even if the price rises or falls.

**2. SHORT PERIOD SUPPLY**

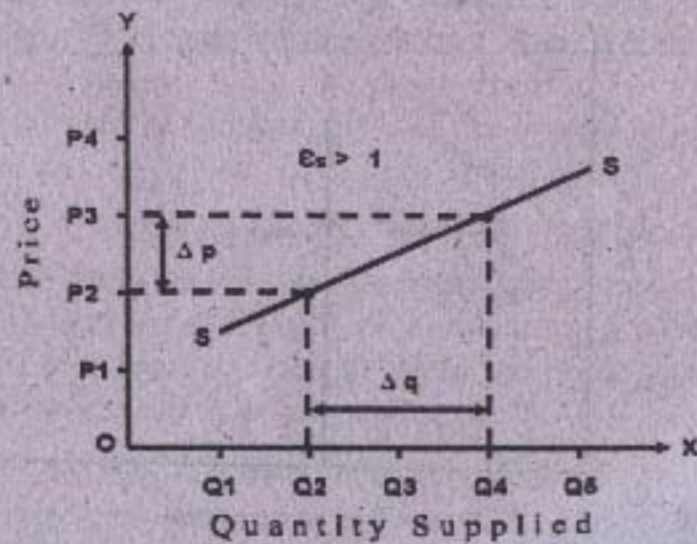
Short period or short run is period in which new firms can not enter the market and old or existing firms can not leave the business. If there is an increase in demand, supply can be increased to some extent by employing two or more than two shifts of laborers. Short period supply curve is less elastic.



This diagram shows that the change in supply is less than the change in price. So the elasticity of supply is less than unity.

**3. LONG PERIOD SUPPLY**

Long period or long run is period in which new firms can enter the market and old or existing firms can leave the business. If there is an increase in demand, supply can be increased to the desired extent by employing two or more than two shifts of laborers. Long period supply curve is more elastic.



In this diagram supply curve SS shows that the change in price is lesser than the corresponding change in supply. So elasticity of supply is more than unity.

**4. CHANGE IN SUPPLY VS CHANGES IN QUANTITY SUPPLY**

Change in Supply means Rise and Fall of Supply (Shifting of Supply curve) and Change in Quantity Supply means Extension or Contraction of Supply (Movement along Supply curve).

**EXTENSION AND CONTRACTION OF SUPPLY**

If the Supply for a commodity changes due to a change in the price of that commodity, it is called the Extension or Contraction of Supply.

**EXTENSION OF SUPPLY**

If price of commodity increases and Supply for a commodity also increases, it is called the Extension of Supply.

$P \uparrow \rightarrow Q_s \uparrow$

**CONTRACTION OF SUPPLY**

If price of commodity decreases and Supply for a commodity also decreases, it is called the Contraction of Supply.

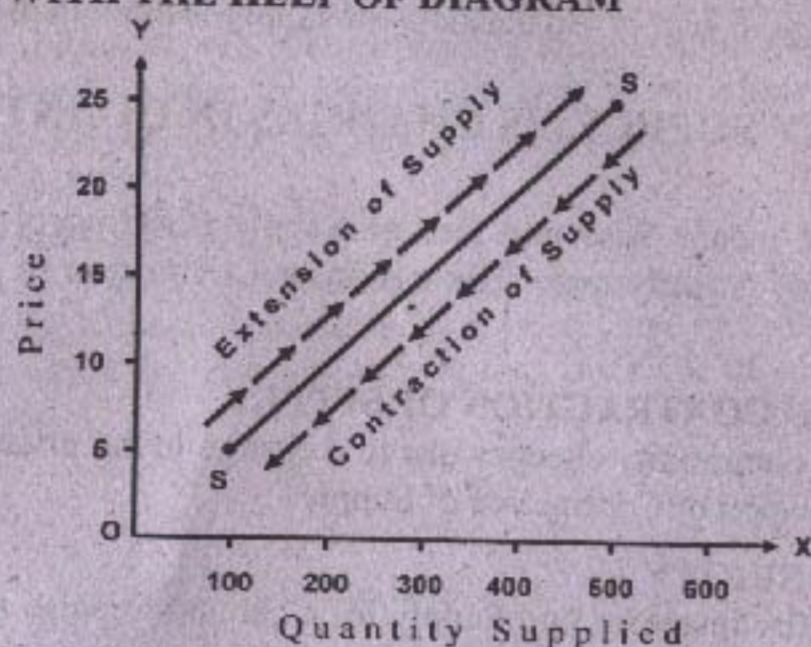
$P \downarrow \rightarrow Q_s \downarrow$

**EXPLANATION WITH THE HELP OF SCHEDULE**

PRICE (Per Unit)	SUPPLY
Rs.05	100 Units
Rs.10	200 Units
Rs.15	300 Units
Rs.20	400 Units
Rs.25	500 Units

This schedule shows that when the price is Rs.05/Unit, the quantity supplied is 100 units. As the price increases from Rs.05/Unit to Rs.10/Unit to Rs.15/Unit to Rs.20/Unit to Rs.25/Unit, supply also increases from 100 units to 200 units to 300 units to 400 units to 500 units. This increase in supply is due to rise in price that is why it is called the 'Extension of Supply'. If we take Rs.25/Unit as the first price, we come to know that supply declines as the price decreases. This trend of supply is called the 'Contraction of Supply'.

EXPLANATION WITH THE HELP OF DIAGRAM



This diagram shows that the supply curve remains the same in either case. The quantity supplied moves from one point to the other at the same supply curve. This is known as the 'Movement along the Supply Curve'.

**RISE AND FALL IN SUPPLY**

If the Supply for a commodity changes due to the other factors (excluding price), it is called the Rise or Fall in Supply.

**RISE IN SUPPLY**

If the Supply for a commodity increases due to the other factors (excluding price), it is called the Rise of Supply.

Other Factors →  $Q_s \uparrow$

**FALL IN SUPPLY**

If the Supply for a commodity decreases due to the other factors (excluding price), it is called the Fall of Supply.

Other Factors →  $Q_s \downarrow$

**RISE OF SUPPLY**

The Rise of Supply has two possibilities:

**FIRST POSSIBILITY**

**PRICE REMAINS THE SAME BUT SUPPLY INCREASES (due to some other factors)**

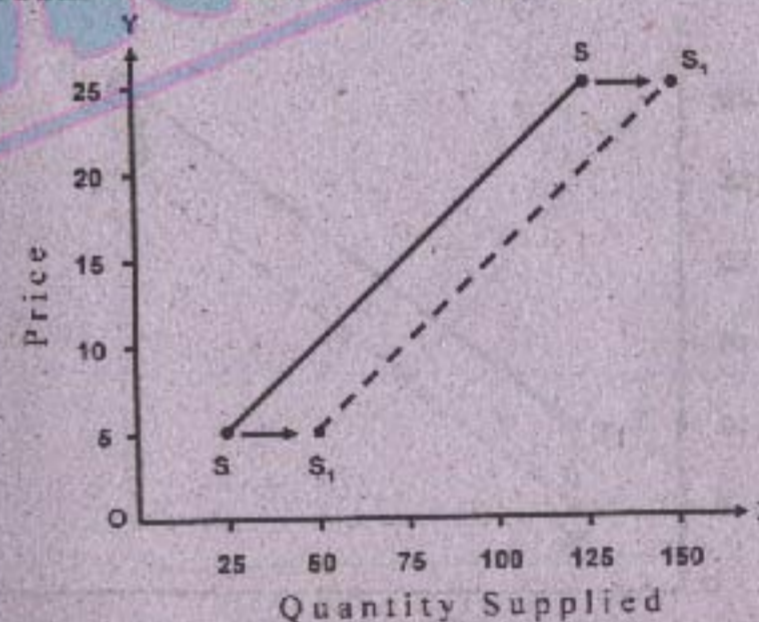
This possibility can be explained with the help of schedule and diagram.

EXPLANATION WITH THE HELP OF SCHEDULE

PRICE (Per Unit)	SUPPLY	INCREASED SUPPLY
Rs.05	25 Units	50 Units
Rs.10	50 Units	75 Units
Rs.15	75 Units	100 Units
Rs.20	100 Units	125 Units
Rs.25	125 Units	150 Units

This schedule shows that the supply of a commodity increases even when there is no changes in the price of a commodity e.g., at price Rs.05/unit, supply increases from 25 units to 50 units. This trend of increase in supply is known as 'Rise in Supply'.

EXPLANATION WITH THE HELP OF DIAGRAM



This diagram shows that when the price does not change but the supply increases due to some other reason, the supply curve SS shifts to the right i.e.,  $S_1S_1$ . This type of shift shows the rising trend of supply.

**SECOND POSSIBILITY**

**SUPPLY REMAINS THE SAME BUT PRICE DECREASES**

Supply of a commodity remaining unchanged, if the price of a commodity decreases, it is also called the Rise of Supply since reduction in price causes the fall in quantity supplied according to the Law of Supply but when the supply does not show any response to the change in price, it means that there are some other forces that restricts the supply to reduce.

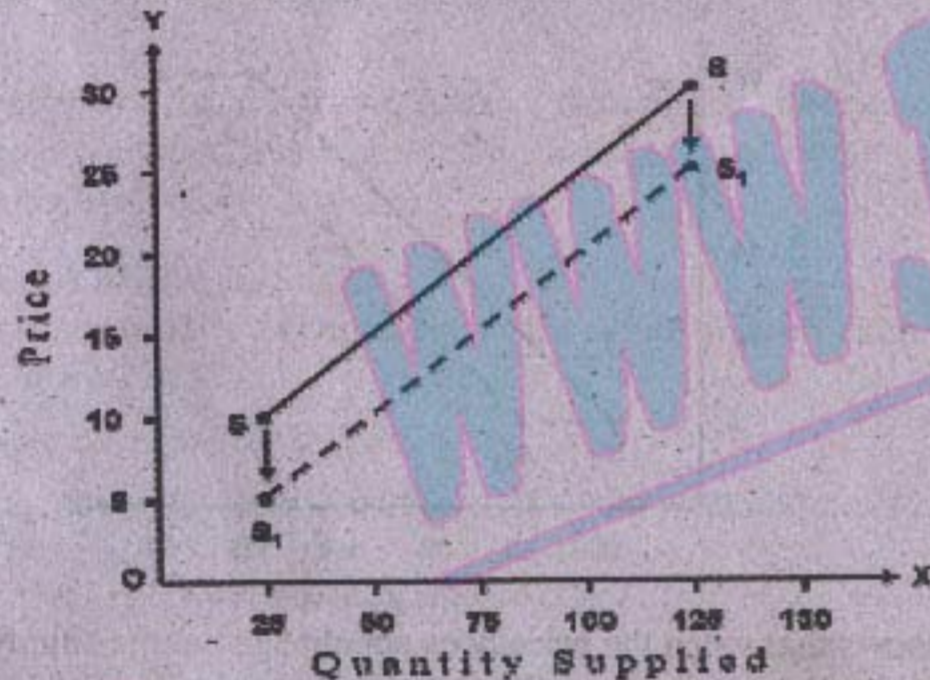
This possibility can be explained with the help of schedule and diagram.

EXPLANATION WITH THE HELP OF SCHEDULE

PRICE (Per Unit)	SUPPLY	DECREASED PRICE
Rs.10	25 Units	Rs.05/Unit
Rs.15	50 Units	Rs.10/Unit
Rs.20	75 Units	Rs.15/Unit
Rs.25	100 Units	Rs.20/Unit
Rs.30	125 Units	Rs.25/Unit

This schedule shows that the supply of a commodity remains unchanged even when the price decreases. This trend of the supply of a commodity is known as the 'Rise of Supply'.

EXPLANATION WITH THE HELP OF DIAGRAM



This diagram shows that when price of a commodity falls, the supply of the commodity does not show any response. The supply curve SS shifts downward i.e.,  $S_1S_1$ . This type of shift in supply curve also shows the rising trend of the supply of a commodity.

FALL IN SUPPLY

The Fall in supply has two possibilities.

FIRST POSSIBILITY

PRICE REMAINS THE SAME BUT SUPPLY DECREASES (due to some other factors)

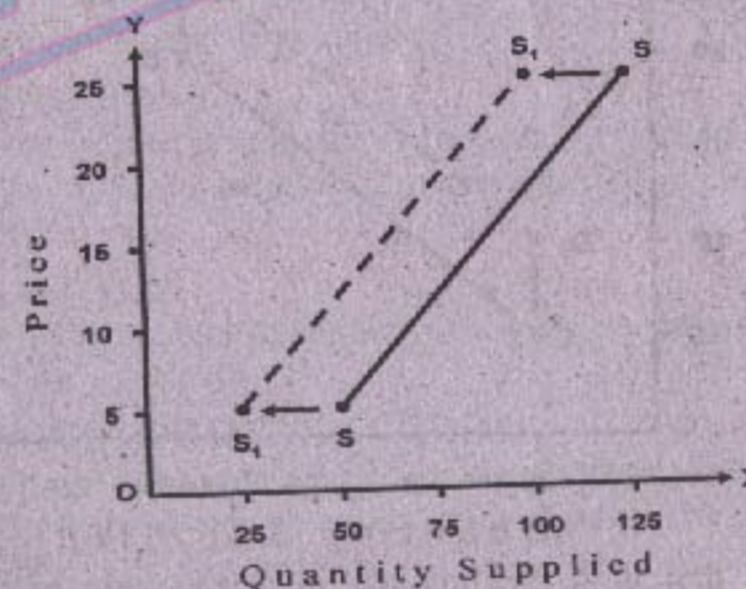
This possibility can be explained with the help of schedule and diagram.

EXPLANATION WITH THE HELP OF SCHEDULE

PRICE (Per Unit)	SUPPLY	DECREASED SUPPLY
Rs.05	50 Units	25 Units
Rs.10	75 Units	50 Units
Rs.15	100 Units	75 Units
Rs.20	125 Units	100 Units
Rs.25	150 Units	125 Units

This schedule shows that the supply of a commodity declines even when there is no change in the price of a commodity. This trend of decrease in supply is known as 'Fall in Supply'.

EXPLANATION WITH THE HELP OF DIAGRAM



This diagram shows that when the price does not change but the supply of a commodity declines due to some other reasons, the supply curve SS shifts to the left i.e.,  $S_1S_1$ . This type of shift shows the falling trend of supply.

SECOND POSSIBILITY

SUPPLY REMAINS THE SAME BUT PRICE INCREASES

If the price of a commodity increases and Supply of a commodity remains unchanged, it is also called the Fall in Supply since increase in price causes the increase in quantity supplied according to the Law of Supply but when the supply does not show any response to the change in price, it means that there are some other forces that restricts the supply to increase.

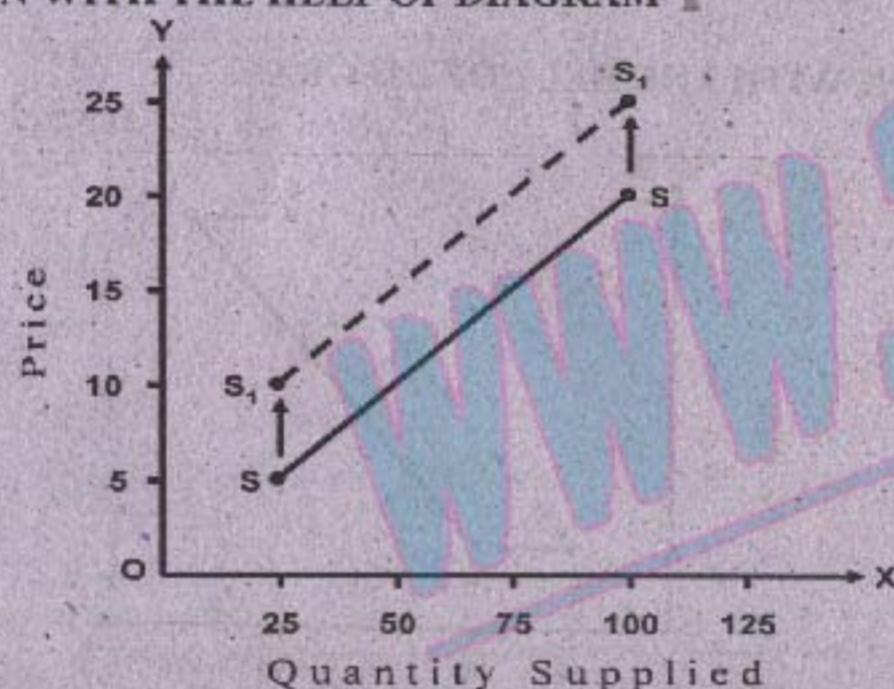
This possibility can be explained with the help of schedule and diagram.

## EXPLANATION WITH THE HELP OF SCHEDULE

PRICE (Per Unit)	SUPPLY	INCREASED PRICE
Rs.05	25 Units	Rs.10
Rs.10	50 Units	Rs.15
Rs.15	75 Units	Rs.20
Rs.20	100 Units	Rs.25
Rs.25	125 Units	Rs.30

This schedule shows that the supply of a commodity remains unchanged in response to the rise in the price of a commodity. This trend of supply is known as the 'Fall of Supply'.

## EXPLANATION WITH THE HELP OF DIAGRAM



This diagram shows that with the increase in price, there is no change in quantity supplied of a commodity. The supply curve shifts from  $SS$  to  $S_1S_1$  upward. This type of shift also shows the falling trend of supply.

### 5. CAUSES OF THE CHANGES IN SUPPLY OR SHIFT FACTORS OF SUPPLY

According to the Law of Supply, the supply for any commodity changes due to the change in the price of that commodity. But there are some other reasons due to which supply can also change. These reasons are as follows:

#### 1. CHANGES IN TECHNOLOGY OR TECHNIQUE OF PRODUCTION

When new technology is discovered or the technique of production is improved, the cost of production is reduced and the quantity supplied at the current price is increased.

#### 2. CHANGES IN THE PRICES OF FACTORS OF PRODUCTION:

Cost of production also rises due to increase in the remuneration for the use of land, labor and capital and this leads to a fall in the quantity supplied of the commodity at current price.

#### 3. DISCOVERY OF MINERALS OR NEW SOURCES OF RAW MATERIAL

There can be a rise in supply due to the discovery of minerals or new sources of raw material e.g., the discovery of oil natural gas resources influences both the cost of production and the production of commodities and it becomes easier to supply larger quantities of commodities at lower prices.

#### 4. GOVERNMENT POLICIES

Government fiscal and commercial policies can also influence the supply of commodities. If the government reduces the rate of tariff on imports of industrial raw material, the cost of producing manufactured goods is reduced and it becomes possible to supply more quantity at comparatively lower prices.

#### 5. WEATHER CONDITIONS

The supply of agricultural goods increases under favorable weather conditions while decreases under unfavorable weather conditions.

#### 6. POLITICAL CONDITIONS

If the country is facing internal disturbances or external aggression or if the government is unstable or if there are industrial disputes, obstacles arise in the process of production and the supply of goods falls.

#### 7. NATURAL CALAMITIES

If a country is affected by natural calamities like floods, earthquakes, locusts menace or epidemics, the supply of goods falls.

#### 8. CHANGES IN PRICES OF OTHER GOODS

If a firm producing a particular commodity, can also produce certain other goods with the same resources, will start producing other goods if their prices rise and reduce the supply of the original commodity e.g., cotton and rice.

#### 9. CHANGES IN JOINT SUPPLY

In some cases two or more goods are produced simultaneously i.e., if one is produced, the other is also produced e.g., mutton and skin, wheat and straw etc. If the price of one of the goods rises, the supply of other good will automatically increase.

#### 10. EXPECTATIONS OF CHANGE IN DEMAND OR PRICE IN FUTURE

Some firms supply more of a commodity, expecting a rise in demand or a rise in price in near future. On the contrary, if the firm expects a fall in demand or price of the commodity in future, then it will reduce its supply.

### 6. ELASTICITY OF SUPPLY

Law of Supply tells the positive relationship between price and quantity Supply. It means that the law of Supply shows just shows the **direction of change** which is

positive but it ignores the extent of change (how much change). This law does not tell us what proportion the Supply would change with the change in price.

In certain goods, a small change in price will bring about a very significant change in the quantity Supplied while in certain other goods; a very large change in price produces a very small change in the quantity Supplied.

So, Dr. Marshall has to give the concept of elasticity of Supply. Elasticity of Supply includes both aspects: **Direction of change and Extent of change.**

The elasticity of Supply tells us how much change has occurred in the Supply for a good in response to a change in its price. If a large change in quantity Supplied corresponds to a small change in price, it is called 'More Elastic Supply' and if a large change in price results in a small change in quantity Supplied, we call it 'Less Elastic Supply'.

"The degree of responsiveness, sensitivity or proportionate change in Supply due to the proportionate change in price is called Price Elasticity of Supply.

**FORMULA**

$$\epsilon_s = \frac{\text{Percentage Change in Q}}{\text{Percentage Change in P}}$$

$$\epsilon_s = \frac{\frac{Q_2 - Q_1}{Q_1} \times 100}{\frac{P_2 - P_1}{P_1} \times 100}$$

$$\epsilon_s = \frac{\Delta Q / Q_1}{\Delta P / P_1}$$

$$\epsilon_s = \frac{\text{Proportionate Change in Quantity}}{\text{Proportionate Change in Price}}$$

$$\epsilon_s = \frac{\Delta Q}{Q_1} \times \frac{P_1}{\Delta P}$$

$$\epsilon_s = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$$

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

Where:  $\Delta Q$  = Change in quantity supplied i.e.,  $Q_2 - Q_1$

$\Delta P$  = Change in price i.e.,  $P_2 - P_1$

Q = First quantity supplied

P = First price

$\epsilon_s$  = Elasticity of Supply

$\epsilon$  = Epselon

**MEASUREMENT OF ELASTICITY OF SUPPLY**

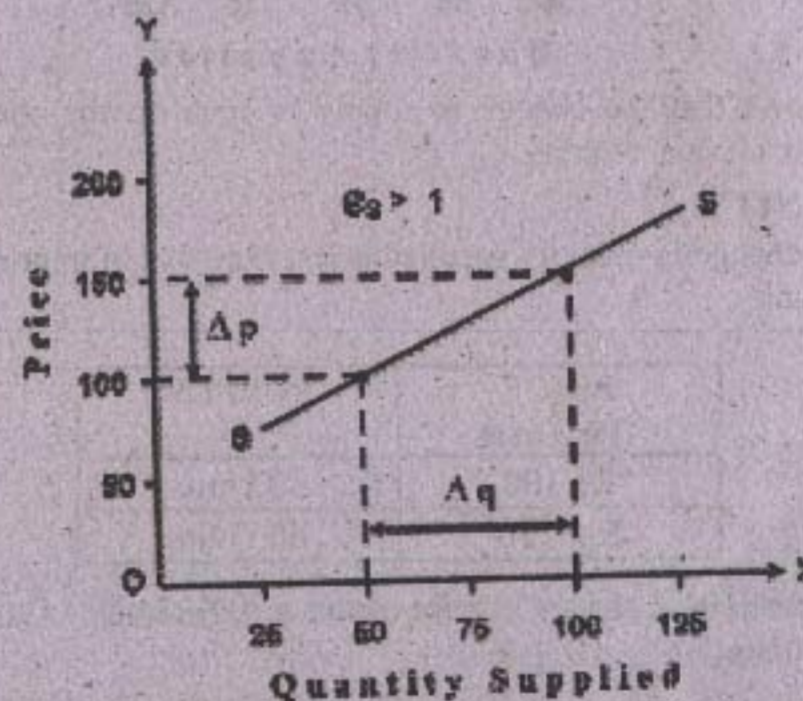
According to Alfred Marshall, we can measure the elasticity of supply with the help of 'UNITARY SCALE'. Elasticity of Supply may be Greater than Unity, Equal to Unity or Less than Unity. Percentage or Flux method can be used to measure the Elasticity of Supply.

**A) GREATER THAN UNITY**

If the percentage change in quantity supplied is greater than that of in price, elasticity of supply will be more than unity.

PRICE (Per Unit)	SUPPLY
Rs. 100	50 Units
Rs. 150	100 Units

This schedule shows that 50% change in price causes 100% change in supply i.e., change in supply is greater than the change in price. That is why the Elasticity of Supply is More than Unity.



In this diagram supply curve SS shows that the change in price is lesser than the

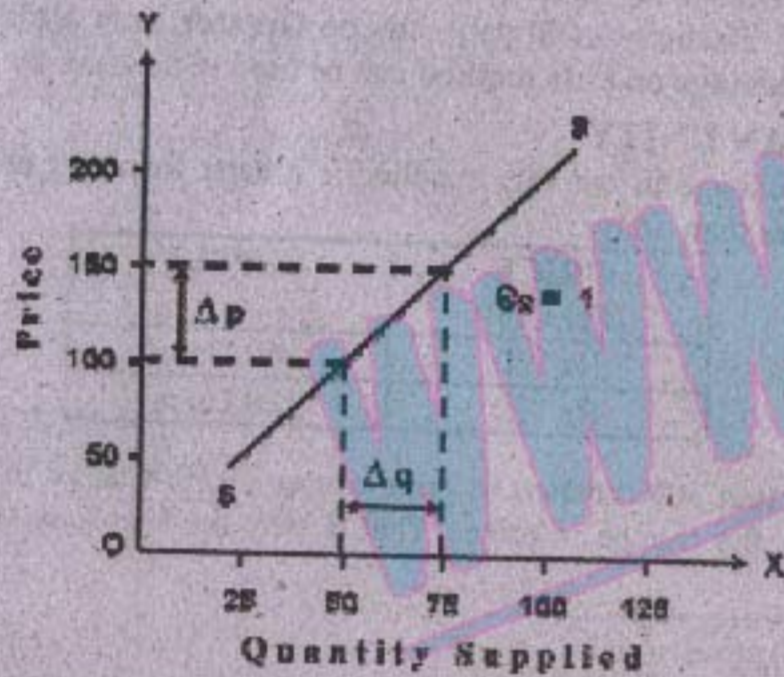
corresponding change in supply. So elasticity of supply is more than unity.

**B) EQUAL TO UNITY**

If the percentage change in quantity supplied is equal to that of in price, elasticity of supply will be equal to unity.

PRICE (Per Unit)	SUPPLY
Rs.100	50 Units
Rs.150	75 Units

This schedule shows that 50% change in price causes 50% change in supply. So the elasticity of supply is equal to unity.



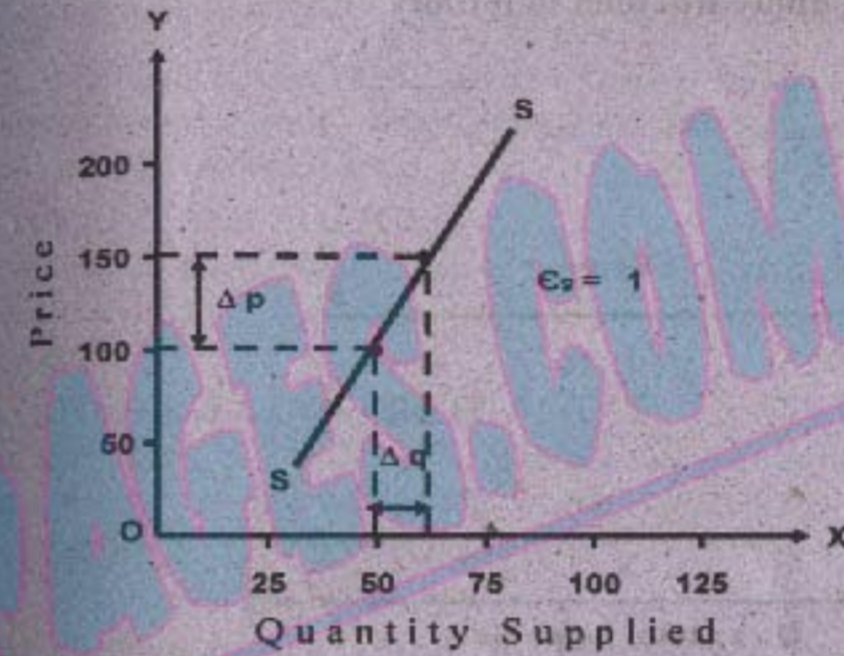
This diagram shows that the change in supply is equal to the change in price. So the elasticity of supply is equal to unity.

**C) LESS THAN UNITY**

If the percentage change in quantity supplied is less than that of in price, elasticity of supply will be less than unity.

PRICE (Per Unit)	SUPPLY
Rs.100	50 Units
Rs.150	60 Units

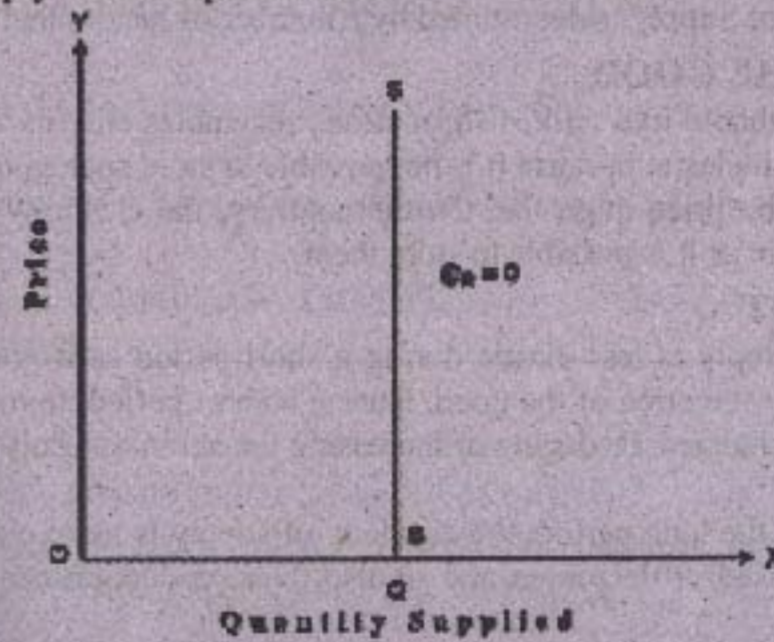
This schedule shows that 100% change in price causes a 20% change in supply. So the elasticity of supply is less than unity.



This diagram shows that the change in supply is less than the change in price. So the elasticity of supply is less than unity.

**D) PERFECTLY INELASTIC SUPPLY**

'If the change in price leads to no change in quantity supplied of a commodity, Elasticity of Supply will be equal to zero'.

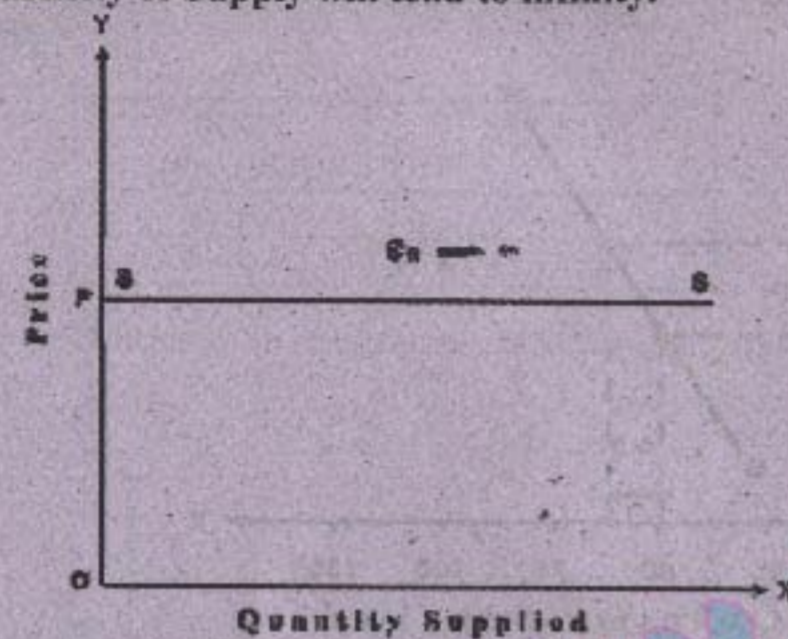


The elasticity of supply is generally not zero or unlimited, however if the quantity supplied does not change at all with changes in price, the elasticity of supply is considered to be zero and it is called Perfectly Inelastic Supply. In this diagram OQ is the quantity supplied and remains the same even if the price rises or falls.



**E) PERFECTLY ELASTIC SUPPLY**

If minute change in price leads to a very large change in quantity supplied of a commodity, Elasticity of Supply will tend to infinity.



If the supply of a commodity is very great at a particular price but it comes down to zero even with a slight fall in the price, it is called a Perfectly Elastic Supply. If price comes down below OP, no quantity is offered for sale but at OP, all the quantity that is being demanded in the market is supplied or offered for sale as shown in this diagram. In such a case, the  $E_s$  is said to be unlimited and it tends to infinity.

**7. DETERMINANTS OF ELASTICITY OF SUPPLY**

Price Elasticity of Supply is determined by a number of factors that are as follows

**1. NATURE OF THE GOOD**

If the good is perishable like milk, fish, mutton, vegetables etc., its elasticity of supply is generally perfectly inelastic because it is not possible to store such goods. Such goods are to be sold whatever the price might be. On the contrary, the elasticity of supply of durable goods is more elastic as it is possible to store them.

**2. TIME ELEMENT**

The elasticity of supply is less elastic during a short period as it is difficult to adjust the quantity supplied to the price of the good. During a short period, number of firms and their production can be changed. Reducing or increasing the shifts can only adjust the production a little.

On the contrary, in the long period, the elasticity of supply is more elastic as the number of firms can be increased or decreased and so also their production can be changed due to a long period.

**3. TECHNOLOGY**

The supply is less elastic in such goods for the production of which complex technical skill or huge capital or specialized conditions or climate is required. The goods for which ordinary labor or small capital is required will have an elastic supply as their supply can be increased or decreased easily.

**4. POLITICAL CONDITIONS**

During the period of internal disturbance or external aggression, the elasticity of supply is generally less elastic. During the peacetime, the supply is comparatively more elastic.

**5. MEANS OF TRANSPORT AND COMMUNICATION**

With the improvement of means of transport and communication in country, the supply of goods becomes more elastic.

**6. GOVERNMENT POLICY**

Government policies also influence the elasticity of supply of goods. If the government imposes restrictions against the import of goods into the country, elasticity of supply will be lowered.

**7. PRODUCER'S COOPERATION**

If producers, by cooperation among themselves, do not allow the price of a good to come down below a certain level, the supply will be less elastic.

**8. UNUSED PRODUCTIVE CAPACITY**

If in an industrial production, labor and capital may be lying idle or the stock of unsold units of a good exists, it is easier to increase the supply and hence the supply will be more elastic in such a case.

**9. FACILITY OF TRANSFERRING RESOURCES**

The elasticity of a supply of a good is more if the resources used for the production of that good can be easily shifted to the production of the other industrial goods.

**QUESTIONS FOR REVIEW**

- Q No.1 Write a short note on Supply and Stock.
- Q No.2 Explain the kinds of Supply with the help of diagrams.
- Q No.2 State & explain the Law of Supply. Also give its assumptions & exceptions.
- Q No.3 What are Extension, Contraction, and Rise & Fall of Supply? What are the reasons for rise & fall of Supply? Distinguish between Extension of Supply and Rise in Supply, Contraction of Supply and fall in Supply (B.Z.U. 1,2001)
- Q No.4 What is Elasticity of Supply? How can it be measured?