CHAPTER 2- UNIT 3  THEORY OF SUPPLY

Supply Analysis

The term ‘supply’ refers the amount of a good or service that the producers are willing and able to offer to the market at various prices during a period of time. Two important points apply to supply:

(i) The supply refers to what firms offer for sale, not necessarily to what they succeed in selling.

(ii) Supply is a flow. The quantity supplied is so much per unit of time, per day, per week, or per year.

DETERMINANTS OF SUPPLY

(i) Price of the good: Other things being equal, the higher the relative price of a good the greater the quantity of it that will be supplied. This is because the firm produces goods and services in order to earn profits and ceteris paribus, profits rise if the price of its product rises.

(ii) Price of the related goods: If the prices of other goods rise, they become relatively more profitable to the firm to produce and sell than the good in question. For example, if price of wheat rises, the farmers may shift lands to wheat production and away from corn and soyabean.

(iii) Price of the factors of production: A rise in the price of a particular factor of production will cause an increase in the cost of making those goods that use a great deal of that factor than in the costs of producing those that use relatively small amount of the factor.

(iv) State of technology: The supply of a particular product depends upon the state of technology also. Inventions and innovations tend to make it possible to produce more or better goods with the same resources, and thus they tend to increase the quantity supplied of some products.

(v) Government Policy: The production of a good may be subject to the imposition of commodity taxes such as excise duty, sales tax and important duties. These raise the cost of production and so the quantity supplied of a good would increase only when its price in the market rises.

(vi) Other Factors: The quantity supplied of a good also depends upon government’s industrial and foreign policies, goals of the firm, infrastructural.

LAW OF SUPPLY

The law of supply can be stated as: Other things remaining constant, the quantity of a good produced and offered for sale will increase as the price of the good rises and decrease as the price falls.

This law is based upon common sense, for the higher the price of the good, the greater the profits and can be earned and thus greater the incentives to produce the good and offer it for sale. There is an exception however. If we take the supply of labour at very high wages, we may find that the supply of labour has decreased instead of increasing.

<table>
<thead>
<tr>
<th>Price (Rs.)</th>
<th>Quantity supplied</th>
</tr>
</thead>
</table>

Supply Schedule of Good ‘X’
<table>
<thead>
<tr>
<th>(per kg.)</th>
<th>(kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>55</td>
</tr>
<tr>
<td>5</td>
<td>65</td>
</tr>
</tbody>
</table>

Supply Curve

When we draw a smooth curve through the plotted points, what we get is the supply curve for good X. The curve shows the quantity of X that will be offered for sale at each price of X. It slopes upwards towards right showing that as price increases, the supply of X increases and vice-versa.

SHIFTS IN THE SUPPLY CURVE – INCREASE OR DECREASE IN SUPPLY

When the supply curve bodily shifts towards right as a result of a change in one of the factors that influence the quantity supplied other than the commodity’s own price, we say there is an increase in supply. When these factors cause the supply curve to shift to left we call it decrease in supply.

Shifts in supply curves

MOVEMENTS ON THE SUPPLY CURVE – INCREASE OR DECREASE IN THE QUANTITY SUPPLIED
When the supply of a good increases as a result of an increase in its price we say that there is an increase in the quantity supplied and there is an upward movement on the supply curve. The reverse is the case when there is a fall in the price of the goods (See the figure below).

The elasticity of supply is defined as the responsiveness of the quantity supplied of a good to a change in its price. Elasticity of supply is measured by dividing the percentage change in quantity supplied of a good by the percentage change in its price i.e.

\[
EP = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}
\]

Or

\[
\frac{\text{Change in quantity supplied}}{\text{quantity supplied}} \times 100 = \frac{\Delta q}{q} \times 100
\]

Or

\[
\frac{\Delta q}{\Delta p} = \frac{\Delta q \times p}{\Delta p \times q}
\]

Where

- \(q\) denotes original quantity supplied
- \(\Delta q\) denotes change in quantity supplied
- \(p\) denotes original price
- \(\Delta p\) denotes change in price

Types of Supply Elasticity: The elasticity of supply can be classified as under:

(i) **Perfectly Inelastic supply**: If as a result of a change in price, the quantity supplied of a good remains unchanged, we say that the elasticity of supply is zero or the good has perfectly inelastic supply.
(ii) **Relatively less-elastic supply:** It is a result of a change in the price of a good its supply changes less than proportionately, we say that the good is relatively less elastic or elasticity of supply is less than one.

![Showing relatively less elastic supply](image1.png)

(iii) **Relatively greater-elastic supply:** If elasticity of supply is greater than one i.e., when the quantity supplied of a good changes substantially in response to a small change in the price of the good we say that supply is greatly elastic, shows that the relative change in the quantity supplied is greater than the relative change in the price.

![Showing relatively greater elastic supply](image2.png)

(iv) **Unit-elastic:** If the relative change in the quantity supplied is exactly equal to the relative change in the price, the supply is said to be unitary elastic. Here coefficient of elasticity of supply is equal to one. The relative change in the quantity supplied ($\Delta q$) is equal to the relative change in the price ($\Delta p$).

![Showing unitary elasticity](image3.png)
(v) **Perfectly elastic supply**: The supply elasticity is infinite when nothing is supplied at a lower price but a small increase in price causes supply to rise from zero to an indefinitely large amount indicating that producers will supply any quantity demanded at that price.

The elasticity of supply can be considered with reference to a given point on the supply curve or between two points on the supply curve.

**Point-elasticity**: Just as in demand, point-elasticity can be measured with the help of the following formula:

$$E_s = \frac{dq}{dp} \times \frac{p}{q}$$

Where \(\frac{dq}{dp}\) is differentiation of the supply function with respect to price and \(p\) and \(q\) refers to price and quantity respectively.

**Arc-Elasticity**: Arc-elasticity i.e. elasticity of supply between two prices can be found out with the help of the following formula:

$$E_s = \frac{q_1 - q_2}{q_1 + q_2} \times \frac{p_1 - p_2}{p_1 + p_2}$$

Or

$$E_s = \frac{q_1 - q_2}{q_1 + q_2} \times \frac{p_1 + p_2}{p_1 - p_2}$$

Or

$$\frac{p_1 - p_2}{q_1 + q_2} \times \frac{\Delta q}{\Delta p}$$

Where \(p_1, q_1\) are original price and quantity and \(p_2, q_2\) are new price and quantity supplied.

---

**FACTORS AFFECTING ELASTICITY OF SUPPLY**

(i) **Nature of the commodity**

Elasticity of supply depends upon the nature of the commodity. The supply of perishable commodities is generally less elastic because their supply cannot be increased even when
their price changes. On the other hand, the supply of durable commodities is generally elastic because when price changes their supply can also be changes.

(ii) Cost of Production
Elasticity of supply depends upon the fact as to whether per unit cost of a commodity increases or decrease when output is increased. The supply of such commodities is generally inelastic whose per unit cost increases when output is increased. This is so because if price increases due to increase in the cost of production, supply cannot be easily increased. On the other hand, supply of such commodities is generally elastic whose per unit cost decreases when output is increased. The supply of such commodities can be increased if price increases.

(iii) Time period
Longer is the period higher is the elasticity of supply. On the other hand, lesser is the period lesser is the elasticity of supply. In short, supply is more elastic during long period lesser is the elasticity during short period. This is so because in the short period supply cannot be increased even when price increases. On the other hand, in the long period supply can be changed in accordance.

(iv) Production technology
The supply of commodities whose technology is simple is generally elastic. Output of such commodities can be easily increases when their price increases. On the other hand, the supply of such commodities whose production technology is complex and where more capital is used is generally less elastic. Output of such commodities cannot be easily increased when their prices increase.

(v) Natural factors
Supply of these commodities whose production depends on natural factors such as rain, climate, etc. is generally inelastic. Generally, elasticity of supply manufactured goods is greater than one.

(vi) Nature of inputs used
Nature of inputs used for producing a commodity also affects its elasticity of supply. If the inputs such as raw materials etc. are general in nature, then elasticity of supply of the commodity will be elastic. On the other hand, if inputs (both factor and non-factor) are of specific nature, then the elasticity of supply of the commodity will be inelastic.
MULTIPLE CHOICE QUESTIONS

Q.1. Demand for a commodity refers to:
(a) desire for the commodity.
(b) need for the commodity
(c) quantity demanded of the commodity
(d) quantity of the commodity demanded at a certain price during any particular period of time.

Q.2. Contraction of demand is the result of:
(a) decrease in the number of consumers
(b) increase in the price of the good concerned
(c) increase in the price of other goods
(d) decrease in the income of purchasers.

Q.3. All but one of the following are assumed to remain the same while drawing an individual's demand curve for a commodity. Which one is it?
(a) The preference of the individual
(b) His monetary income
(c) Price
(d) Price of related goods

Q.4. Which of the following pairs of goods is an example of substitutes?
(a) Tea and sugar
(b) Tea and coffee
(c) Pen and ink
(d) Shirt and trousers

Q.5. In the case of a straight line demand curve meeting the two axes, the price-elasticity of demand at the mid-point of the line would be:
(a) 0
(b) 1
(c) 1.5
(d) 2

Q.6. The Law of Demand, assuming other things to remain constant, establishes the relationship between:
(a) Income of the consumer and the quantity of a good demanded by him.
(b) Price of a good and the quantity demanded.
(c) Price of a good and the demand for its substitute.
(d) Quantity demanded of a good and the relative prices of its complementary goods.

Q.7. Identify the factor which generally keeps the price-elasticity of demand for a good low.
(a) Variety of uses for that good
(b) Its low price
(c) Close substitutes for that good
(d) High proportion of the consumer's income spent unit.

Q.8. Identify the coefficient of price-elasticity of demand when the percentage increase in the quantity of a good demanded is smaller than the percentage fall in its price:
(a) Equal to one
(b) Greater than one
(c) Smaller than one
(d) Zero.

Q.9. In the case of an inferior good, the income elasticity of demand is:
(a) positive
(b) zero
(c) negative
(d) infinite.
Q.10. If the demand for a good is inelastic, an increase in its price will cause the total expenditure of the consumers of the good to:

(a) remain the same  
(b) increase  
(c) decrease  
(d) any of these

Q.11. If regardless of changes in its price, the quantity demanded of a good remains unchanged, then the demand curve for the good will be -

(a) horizontal  
(b) vertical  
(c) positively sloped  
(d) negatively sloped.

Q.12. The law of demand is:

(a) a quantitative statement  
(b) a qualitative statement  
(c) both a quantitative and a qualitative statement.  
(d) neither a quantitative nor a qualitative statement.

Q.13. All of the following are determinants of demand except:

(a) tastes and preferences  
(b) quantity supplied  
(c) income  
(d) price of related goods.

Q.14. A movement along the demand curve for soft drinks is best described as:

(a) An increase in demand  
(b) A decrease in demand  
(c) A change in quantity demanded  
(d) A change in demand.

Q.15. If the price of Pepsi decreases relative to the price of Coke and 7-Up, the demand for

(a) Coke will decrease  
(b) 7-Up will decrease  
(c) Coke and 7-Up will increase  
(d) Coke and 7-Up will decrease.

Q.16. If a good is a luxury, its income elasticity of demand is:

(a) positive and less than 1  
(b) negative but greater than 1  
(c) positive and greater than 1  
(d) zero.

Q.17. The price of hot dog increases by 22% and the quantity of hot dogs demanded falls by 25%. This indicates that demand for hot dogs is:

(a) elastic  
(b) inelastic  
(c) unitarily elastic  
(d) perfectly elastic.

Q.18. If the quantity demanded of beef increases by 5% when the price of chicken increases by 20%, the cross-price elasticity of demand between beef and chicken is

(a) – 0.25  
(b) 0.25  
(c) – 4  
(d) 4

Q.19. Given the following four possibilities, which one results in an increase in total consumer expenditures?

(a) demand is unitary elastic and price falls  
(b) demand is elastic and price rises  
(c) demand is inelastic and price falls  
(d) demand is inelastic and prices rises.
Q.20. The price elasticity of demand for hamburger is
(a) the change in the quantity demanded of hamburger when hamburger increases by 30 paise per rupee.
(b) the percentage increase in the quantity demanded of hamburger when the price of hamburger falls by 1 per cent per rupee.
(c) the increase in the demand for hamburger when the price of hamburger falls by 10 per cent per rupee.
(d) the decrease in the quantity demanded of hamburger when the price of hamburger falls by 1 per cent per rupee.

Q.21. The price elasticity of demand is defined as the responsiveness of
(a) price to a change in quantity demanded
(b) quantity demanded to a change in price
(c) price to a change in income
(d) quantity demanded to a change in income.

Q.22. Suppose the price of movies seen at a theater rises from Rs.120 per person to Rs.200 per person. The theater manager observes that the rise in price causes attendance at a given movie to fall from 300 persons to 200 persons. What is the price elasticity of demand for movies?
(a) .5  (b) .8  (c) 1.0  (d) 1.2

Q.23. Suppose a department store has a sale on its silverware. If the price of a plate-setting is reduced from Rs.300 to Rs.200 and the quantity demanded increases from 3,000 plate-settings to 5,000 plate-settings, what is the price elasticity of demand for silverware?
(a) .8  (b) 1.0  (c) 1.25  (d) 1.50

Q.24. A discount store has a special offer on CDs. It reduces their price from Rs.150 to Rs.100. Suppose the store manager observes that the quantity demanded increases from 700 CDs to 1,300 CDs. What is the price elasticity of demand for CDs?
(a) .8  (b) 1.0  (c) 1.25  (d) 1.50

Q.25. If the local pizzeria raises the price of a medium pizza from Rs.60 to Rs.100 and quantity demanded falls from 700 pizzas a night to 100 pizzas a night, the price elasticity of demand for pizzas is:
(a) .67  (b) 1.5  (c) 2.0  (d) 3.0

Q.26. If electricity demand is inelastic, and electric rates increase, which of the following is likely to occur.
(a) Quantity demanded will fall by a relatively large amount.
(b) Quantity demanded will fall by a relatively small amount.
(c) quantity demanded will rise in the short run, but fall in the long run.
(d) quantity demanded will fall in the short run, but rise in the long run.

Q.27. Suppose the demand for meals at a medium-priced restaurant is elastic. If the management of the restaurant is considering raising prices, it can expect a relatively
(a) large fall in quantity demanded  (b) large fall in demand
(c) small fall in quantity demanded  (d) small fall in demand.

Q.28. Point elasticity is useful for which of the following situations?
(a) The bookstore is considering doubling the price of notebooks.
(b) A restaurant is considering lowering the price of its most expensive dishes by 50 percent.
(c) An auto producer is interested in determining the response of consumers to the price of cars being lowered by Rs.100.
(d) None of the above.

Q.29. A decrease in price will result in an increase in total revenue if:

(a) The percentage change in quantity demanded in less than the percentage change in price.
(b) The percentage change in quantity demanded is greater than the percentage change in price.
(c) Demand is inelastic.
(d) The consumer is operating along a linear demand curve at a point at which the price is very low and the quantity demanded is very high.

Q.30. An increase in price will result in an increase in total revenue if:

(a) The percentage change in quantity demanded is less than the percentage change in price.
(b) The percentage change in quantity demanded is greater than the percentage change in price.
(c) Demand is elastic.
(d) The consumer is operating along a linear demand curve at a point at which the price is very high and the quantity demanded is very low.

Q.31. Demand for a good will tend to be more elastic if it exhibits which of the following characteristics?

(a) It represents a small part of the consumer’s income.
(b) The good has many substitutes available.
(c) It is a necessity (as opposed to a luxury).
(d) There is little time for the consumer to adjust to the price change.

Q.32. Demand for a good will tend to be more inelastic if it exhibits which of the following characteristics?

(a) The good has many substitutes
(b) The good is a luxury (as opposed to necessity).
(c) The good is a small part of the consumer’s income.
(d) There is a great deal of time for the consumer to adjust to the change in price.

Q.33. Suppose a consumer’s income increases from Rs.30,000 to Rs.36,000. As a result, the consumer increases her purchases of compact discs (CDs) from 25 CDs to 30 CDs. What is the consumer’s income elasticity of demand for CDs?

(a) 0.5  (b) 1.0  (c) 1.5  (d) 2.0

Q.34. Total utility is maximum when:

(a) Marginal utility is zero
(b) Marginal utility is at its highest point
(c) Marginal utility is equal to average utility.
(d) Average utility is maximum.

Q.35. Which one is not an assumption of the theory of demand based on analysis of indifference curves?

(a) Given scale of preferences as between different combinations of two goods.
(b) Diminishing marginal rate of substitution.
(c) Constant marginal utility of money
(d) Consumers would always prefer more of a particular good to less of it, other things remaining the same.

Q.36. The consumer is in equilibrium at a point where the budget line:
(a) is above an indifference curve  
(b) is below an indifference curve  
(c) is tangent to an indifference curve  
(d) cuts an indifference curve.

Q.37. An indifference curve slopes down towards right since more of one commodity and less of another result in:
(a) same satisfaction  
(b) greater satisfaction  
(c) maximum satisfaction  
(d) decreasing expenditure.

Q.38. Which of the following statements is incorrect?
(a) An indifference curve must be downward-sloping to the right.
(b) Convexity of a curve implies that the slope of the curve diminishes as one moves from left to right.
(c) The elasticity of substitution between two goods to a consumer is zero.
(d) The total effect of a change in the price of a good on its quantity demanded is called the price effect.

Q.39. The second glass of lemonade gives lesser satisfaction to a thirsty boy. This is a clear case of
(a) Law of Demand.
(b) Law of diminishing return.
(c) Law of diminishing utility
(d) Law of supply.

Q.40. The consumer is an equilibrium when the following condition is satisfied:
(a) \( \frac{MU_x}{MU_y} > \frac{P_x}{P_y} \)  
(b) \( \frac{MU_x}{MU_y} < \frac{P_x}{P_y} \)  
(c) \( \frac{MU_x}{MU_y} = \frac{P_x}{P_y} \)  
(d) None of the above.

Q.41. In the case of a Giffen good, the demand curve will be:
(a) Horizontal  
(b) downward-sloping to the right  
(c) backward falling to the left  
(d) upward-sloping to the right.

Q.42. By consumer surplus economists mean
(a) The area inside the budget line.
(b) The area between the average revenue and marginal revenue curves.
(c) The difference between the maximum amount a person is willing to pay for a good and its market price.
(d) None of the above.

Q.43. Which of the following is a property of an indifference curve?
(a) It is convex to the origin
(b) The marginal rate of substitution is constant as you move along an indifference curve
(c) Marginal utility is constant as you move along an indifference curve.
(d) Total utility is greatest where the 45 degree line cuts the indifference curve.

Q.44. When economists speak of the utility of a certain good, they are referring to
(a) The demand for the good.
(b) The usefulness of the good in consumption.
(c) The satisfaction gained from consuming the good.
(d) The rate at which consumers are willing to exchange one good for another.

Q.45. A vertical supply curve parallel to Y axis implies that the elasticity of supply is

(a) Zero  
(b) Infinity  
(c) Equal to one  
(d) Greater than zero but less than infinity

Q.46. The supply of a good refers to

(a) actual production of the good  
(b) total existing stock of the good  
(c) total existing stock of the good  
(d) amount of the good offered for sale at a particular price per unit of time.

Q.47. An increase in the supply of a good is caused by

(a) improvements in its technology  
(b) fall in the price of other goods  
(c) fall in the prices of factors of production  
(d) all of the above.

Q.48. Elasticity of supply refers to the degree of responsiveness of supply of a good to changes in its:

(a) demand  
(b) price  
(c) cost of production  
(d) state of technology.

Q.49. A horizontal supply curve parallel to the quantity axis implies that the elasticity of supply is

(a) zero  
(b) infinite  
(c) equal to one  
(d) greater than zero but less than one.

Q.50. Contraction of supply is the result of:

(a) decrease in the number of producers  
(b) decrease in the price of the good concern  
(c) increase in the prices of other goods  
(d) decrease in the outlay of sellers.

ANSWERS

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (d)</td>
<td>2. (b)</td>
<td>3. (c)</td>
<td>4. (b)</td>
<td>5. (b)</td>
</tr>
<tr>
<td>6. (b)</td>
<td>7. (b)</td>
<td>8. (c)</td>
<td>9. (c)</td>
<td>10. (b)</td>
</tr>
<tr>
<td>11. (b)</td>
<td>12. (b)</td>
<td>13. (b)</td>
<td>14. (c)</td>
<td>15. (d)</td>
</tr>
<tr>
<td>16. (c)</td>
<td>17. (a)</td>
<td>18. (b)</td>
<td>19. (d)</td>
<td>20. (b)</td>
</tr>
<tr>
<td>21. (b)</td>
<td>22. (b)</td>
<td>23. (c)</td>
<td>24. (d)</td>
<td>25. (d)</td>
</tr>
<tr>
<td>26. (b)</td>
<td>27. (a)</td>
<td>28. (c)</td>
<td>29. (b)</td>
<td>30. (a)</td>
</tr>
<tr>
<td>31. (b)</td>
<td>32. (c)</td>
<td>33. (b)</td>
<td>34. (a)</td>
<td>35. (c)</td>
</tr>
<tr>
<td>36. (c)</td>
<td>37. (a)</td>
<td>38. (c)</td>
<td>39. (c)</td>
<td>40. (c)</td>
</tr>
<tr>
<td>41. (c)</td>
<td>42. (c)</td>
<td>43. (a)</td>
<td>44. (c)</td>
<td>45. (a)</td>
</tr>
<tr>
<td>46. (d)</td>
<td>47. (d)</td>
<td>48. (b)</td>
<td>49. (b)</td>
<td>50. (b)</td>
</tr>
</tbody>
</table>