

December
13th 2023

THEORY OF DEMAND AND SUPPLY

CONCEPT OF 'WANTS' in ECONOMICS

Meaning

- All desires, tastes and motives are called 'Wants'
- Wants arise due to elementary and psychological causes.
- Since resources are limited, Wants need to be prioritised

Features

- Unlimited in Nature.
- Differ in intensity, some are urgent while others aren't.
- Every want is satiable.
- Competitive (Since resources are limited/scarse)
- Complementary (Car and petrol/diesel)
- Alternative
- Subjective and relative
- Vary from time, place and person.
- Some are recurring while others are less consistent.
- May become habitual
- Affected by income, taste, fashion, advertisements, etc.
- Arise due to different reasons.

Classification of Wants:

Necessities (Essentials)

- Necessities for Life (Food, Clothing)
- Necessities for Efficiency (Clean water)
- Conventional necessities (Pressure of habit, society)

Comforts (Basic possible comforts)

Luxuries

(Extraneous goods)

CONCEPT OF 'UTILITY' IN ECONOMICS

Meaning:

- It is the want satisfying power of a commodity.
- Expected satisfaction when a person is willing to spend.
- A commodity can have utility even when not consumed.
- Utility:- Anticipated satisfaction, Satisfaction:- Actually derived.

Features:

- Subjective entity hence varies from person to person.
- A commodity can have different utility for different people & time.
- Utility and usefulness are two different things.
- Eg: Liquor also has utility due to want, but is harmful.

Total Utility

- Sum of total / marginal utility derived from consumption of different units, i.e;
- $TU = MU_1 + MU_2 + MU_n \dots$
- MU_n refers to successive units of marginal utility.

Marginal Utility

- It is the addition made to total utility by consumption of an additional unit.
- It refers to the utility of single unit of a commodity consumed.

Utility Continued Later... (Post-Demand and its elasticity)

LAW OF 'DEMAND' AND ELASTICITY OF DEMAND

Meaning: Demand refers to the quantity of good or service that consumers are willing and able to purchase at various prices during a given period of time.

Demand v/s Desire

- Desire is simply a want
- But Demand is desire backed by purchasing power

Components of Demand (Effective)

- Desire
- Means to purchase and
- Willingness to purchase

(Only Effective Demand alone can figure out and help economic analysis and business decisions.)

Quantity Demand: Quantity demanded is always expressed at a given price (General price and quantity demanded)

- It is a flow (Not concerned with isolated purchase but continuous flow of purchases.)
- Eg: One thousand dozen of oranges per day (x7 per week)

Final Definition: "By demand we mean the various quantities of a given commodity or service which consumers would buy in one market during a given period of time, at various prices, or at various income or at various prices of related goods."

DETERMINANTS OF 'DEMAND'

- Price of commodity (Other things being equal, $P \uparrow D \downarrow$, $P \downarrow D \uparrow$)
- Price of Related Goods (Link Rel. $P \uparrow D \uparrow$)
 - Complementary - Car and Petrol (Inverse Relation) $P \uparrow D \downarrow$
 - Supplementary - Tea or Coffee (Direct Relation) $P \uparrow D \uparrow$
- Income of Consumer ($I \uparrow D \uparrow$, $I \downarrow D \downarrow$ Direct Relation)
 - Normal Goods - Direct Relation
 - Inferior Goods - Indirect Relation (Cheap Goods)
- Consumer Expectation (Future prices, income, supply conditions)
- Tastes and Preferences:

Demonstration or Bandwagon Effect: Desire to have something because someone else has it or for prestige or affordability.

Snob or Veblen Effect: When demand for a commodity rises, some people reduce its consumption, or stop using it altogether. It is common in rich people to maintain their status.

* Other factors:

- Size of population (Larger the population, greater the demand)
- Composition of Population (If kids are more, demand for toys will be more)
- Level of National Income ($NI \uparrow D$ for Normal Goods $\uparrow$)
- Consumer Credit facilities (low rate of Interest $\downarrow$ Demand $\uparrow$)

DEMAND FUNCTION (Demand of a product and its variable)

$$D_x = f(P_x, M, P_y, P_c, T, A)$$

ie: D_x = Quantity of Product X P_x = Price of Commodity
 M = Income of Consumer P_y = Price of Substitutes
 T = Taste and pref. of Consumer P_c = Price of Complementary Goods
 A = Advertisement Expenditure

Law of Demand

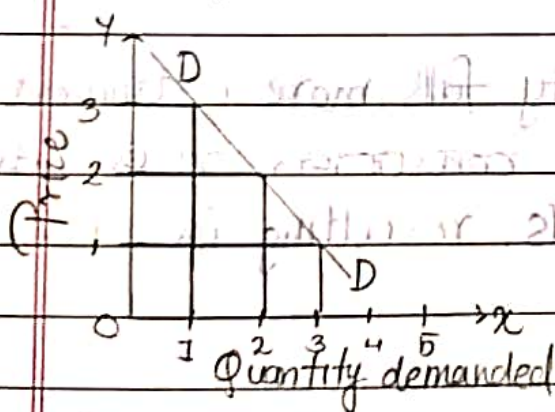
Meaning: According to the law of demand, other things being equal, if the price of a commodity falls, the quantity demanded of it will rise and if the price of the commodity rises, its quantity demanded will decline. (Thus showing, there is an inverse relation between price and quantity demanded)

DEMAND SCHEDULE

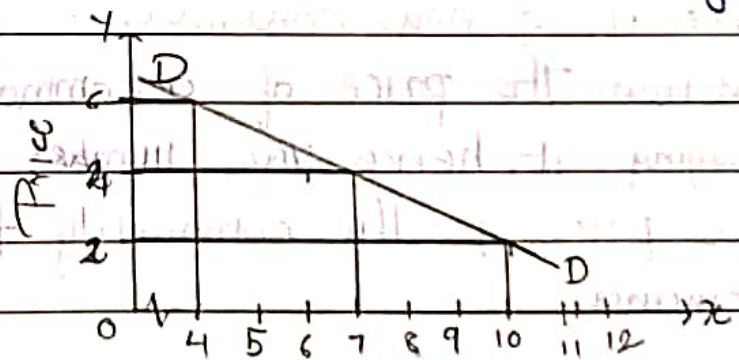
Individual Demand Schedule	Market Demand Schedule
- Shows quantity demanded by one person at selected prices	- Shows quantity demanded by group of people at one price

DEMAND CURVE

- Demand curve is a graphical representation of a demand schedule or demand function
- A demand curve for any commodity can be drawn plotting combination of price and demanded quantity



Individual Demand



Market-Demand

* Remember market demand curve is always flatter than the individual demand curve.

RATIONALE OF LAW OF DEMAND

- Law of Diminishing Marginal utility:

- A consumer has diminishing utility for each additional unit. Thus, he will be willing to buy more/additional units for lower price. A rational consumer will not pay more for lesser satisfaction.

- Price effect:

- The total fall in demand due to an increase in the price is termed as Price effect. (Negative Price Effect - Exceptions)

- a) Substitution effect: The fall in price of one commodity (A) decreases the price demand of other relative goods since the product (A) is now cheaper in price.

- b) Income effect: When price of a commodity falls, we can buy same quantity at less price or more quantity at the previous constant price. This implies increased purchasing power without actual growth in income.

- Arrival of new consumers:

- When the price of a commodity falls, more consumers start buying it, hence the number of consumers rises when the price of the commodity falls, resulting in rise of demand.

- Different uses:

Certain commodities can be used for alternative purposes. If their price will fall, they will be put to various uses and hence their demand will increase.

EXCEPTIONS TO THE LAW OF DEMAND

- **Conspicuous Goods:** These are luxury goods to which the theory and law of demand is not applicable.
- **Giffen Goods:** These are inferior goods but not when compared to plenty other goods, e.g. bread, its demand rises even after its price increases because it is still cheaper than meat.
- **Conspicuous necessities:** These are not actual necessities, but in today's fast life, living without them is quite hard. Eg: TV, Refrigerators.
- **Future expectations about prices:** Law of Demand does not apply if prices are rising and yet expected to rise in the future, thus people still buy larger quantities.
- **Irrational behaviour of consumers:** The law is used or has been derived from assuming that consumers are rational and knowledgeable, but not all the time is the consumer is rational, they sometimes tend to use or buy products impulsively.
- **Demand for necessities:** Law of demand is not applicable to necessities, as no matter the price fluctuations, their demand does not change, e.g. Salt.
- **Speculative goods:** It is particularly in market for stocks and shares, more will be demanded when prices are high and vice-versa.

* Increase and Decrease of Demand.

• Expansion and Contraction of Demand

Expansion

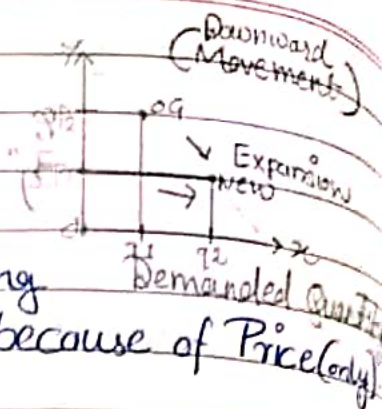
— It means change in demand due to Price

— When the price of commodity falls, its demand increases, "other things being equal, expansion is rise in the demand because of Price (only)"

— Thus, other determinants are constant like, taste and preference, price of related goods, etc.

— The position of curve is constant, the consumer moves downwards on the same demand curve

— If P_2 , quantity is Q_1 (less), at P_1 , quantity is Q_2 (more) Shows, Expansion.



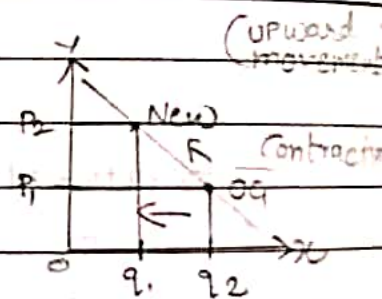
Contraction

— When the price of a commodity rises, its demand falls, "other things being equal, the demand falls due to rise, in price."

Consumer move

— The ~~consumer move~~ consumer moves upward in the same demand curve.

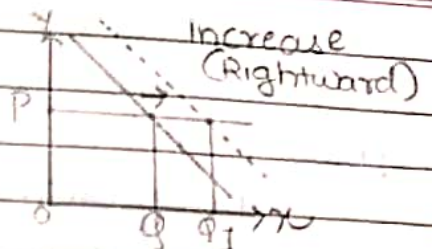
— At (P_1) the demand is (Q_2) whereas (P_2) attracts less consumers, hence, the demand is less, i.e. (Q_1)



• Increase and Decrease in Demand

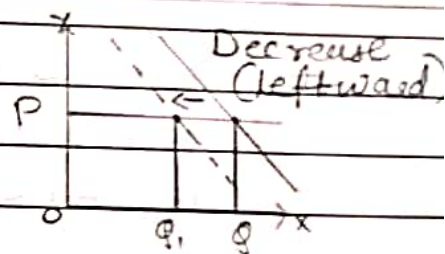
Increase

- It depicts change in demand from/ due to other factors (except Price)
- A result in change of consumer's income, tastes and preferences, etc.



- Thus, when the demand rises due to change in other factors, it is called Increase of in Demand
- Here more quantity is purchased at same price or same quantity is purchased at lower price.

Decrease



- When the demand falls due to change in other factors it is called Decrease in Demand.
- Here less quantity is purchased at same price or same quantity is purchased at higher price.

ELASTICITY OF DEMAND

Definition Elasticity of demand is defined as the responsiveness of the quantity demanded of a good to changes in one of the variables on which demand depends.

Precisely, elasticity of demand is the percentage change in quantity demanded divided by the percentage change in one of the variables on which demand depends.

Price Elasticity

— Price elasticity measures the degree of responsiveness of quantity demanded of a commodity to a change in its price, given the consumer's income, his tastes and prices of all other goods.

— It is defined as a ratio of the percentage change in the quantity demanded of a commodity to the percentage change in its own price.

It may be expressed as follows:

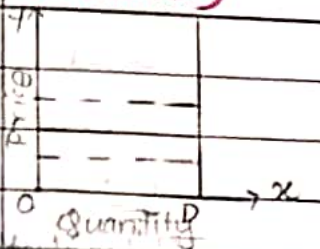
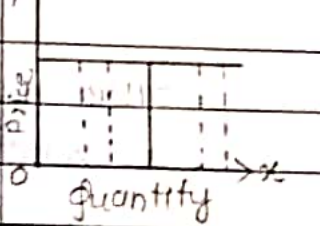
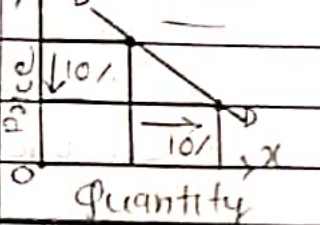
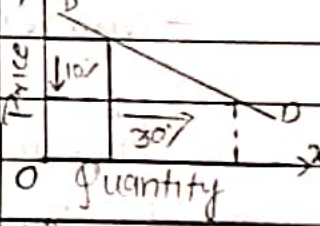
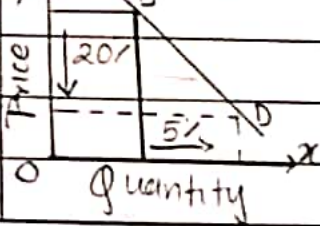
$$E_p = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

$$\Rightarrow \frac{\text{Change in Price} \times 100}{\text{Original Price}}$$

$$\Rightarrow \frac{\Delta q}{q} \div \frac{\Delta p}{p}$$

$$\frac{\text{Change in quantity demanded} \times 100}{\text{Original Price}} \Rightarrow \frac{\Delta q}{\Delta p} \times \frac{q}{p}$$

Degrees of Price Elasticity of Demand

Sr. no.	Degrees of Elasticity	Curve (Demand)
1.	Perfectly Inelastic demand: When change in price has no effect on the quantity demanded. $E_p = 0$	
2.	Perfectly Elastic demand: When there is no change in price but demand is affected. $E_p = \infty$	
3.	Unit Elastic demand: When percentage change in price is equal to percentage change in demand. $E_p = 1$ (Curve is called Rectangular Hyperbola)	
4.	Relatively Elastic demand: When the percentage change in demand is more than that of price. $E_p > 1$	
5.	Relatively Inelastic demand: When the percentage change in price is greater than that of demand. $E_p < 1$	

Measurement of Price elasticity of Demand

- The percentage method.

$$\Rightarrow \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$
- The point method

$$\Rightarrow E_p = \frac{\text{lower segment}}{\text{upper segment}}$$
- Total Outlay Method

$$\Rightarrow TO = P \times Q$$
- Arc Elasticity Method

Determinants of Price Elasticity of Demand:

- Availability of Substitutes:

Coffee
Salt

Goods that have close substitutes are elastic, whereas goods that do not have substitutes are inelastic.

- Position of a commodity in a consumer's budget:

The more income spent on a commodity, the more elastic it is and visa versa.

- Nature of the need that a commodity satisfies:

Luxuries are elastic whereas necessities are inelastic

- Number of uses to which a commodity can be put:

The more alternative uses, the more will be its price elasticity and visa versa

- Time period:

Longer the time period, the more can adjust (More elastic)

- Consumer habits:

If a consumer is habitual to a product, no matter the price, the demand will be inelastic.

— Tied demand:

Tied or Complimentary goods have inelastic demand as they go hand in hand.

Eg: Ink & Printers (Cartridges)

— Price Range:

Luxury goods or Giffen goods have inelastic demand whereas normal goods have elastic demand.

Income Elasticity of demand:

— Income elasticity measures the degree of responsiveness of quantity demanded to income of consumers.

Income Elasticity = $\frac{\% \text{ change in Quantity demanded}}{\% \text{ change in Price Income}}$

Symbolically $\Rightarrow \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$

Degrees of Income Elasticity:

— Zero Income Elasticity:

$E = 0$ It means that increase in income does not at all lead to any increase in quantity demanded at the commodity.
Eg: Demand in case of Salt, match box, kerosene oil.

— Negative Income Elasticity :

$E_y < 0$ It means that an increase in income results in fall in the quantity demanded of that commodity.

$E_y = 1$ — Unitary Income Elasticity :

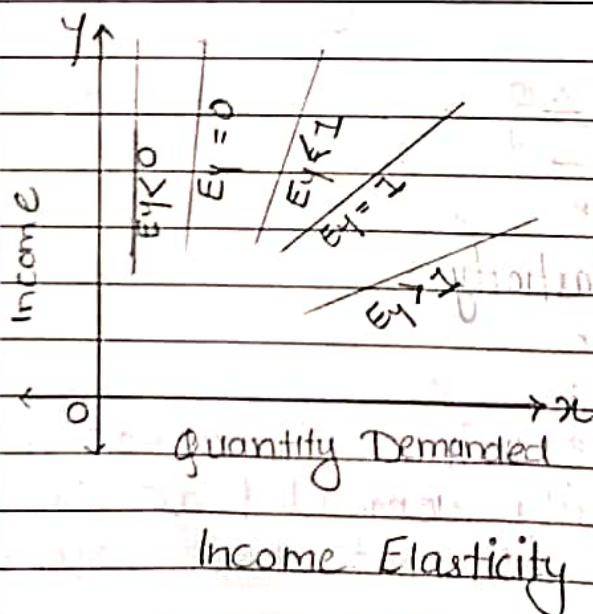
It means that the proportion of income spent remains unchanged before and after increase in income.

$E_y > 1$ — Greater than unity :

It refers to a situation where the consumer spends GREATER proportion of his income on a commodity when he becomes richer. Eg: Luxuries, etc.

$E_y < 1$ — lesser than unity :

It refers to a situation where the consumer spends SMALLER proportion of his income on a commodity when he becomes richer. Eg: Necessities, etc.



Cross Elasticity of Demand

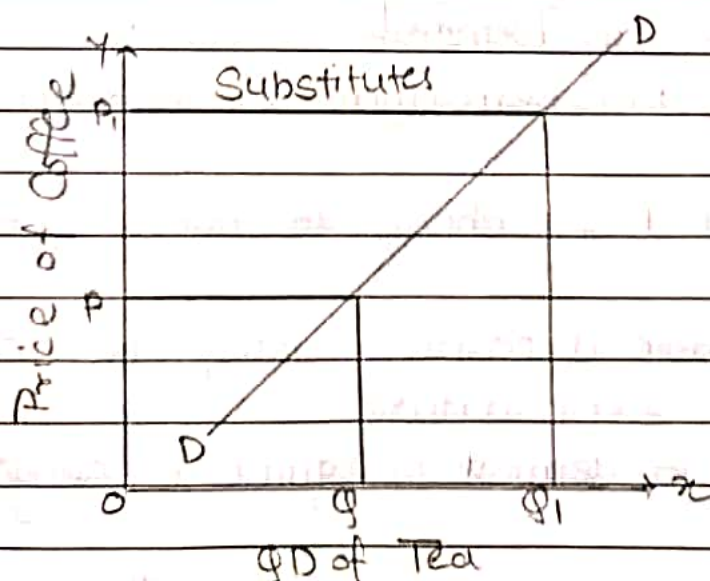
It can be defined as the ratio of percentage change in quantity demanded of commodity 'X' to a given percentage change in the price of the related commodity 'Y'.

$$E_c = \frac{\% \text{ change in demand of 'X'}}{\% \text{ change in Price of 'Y'}}$$

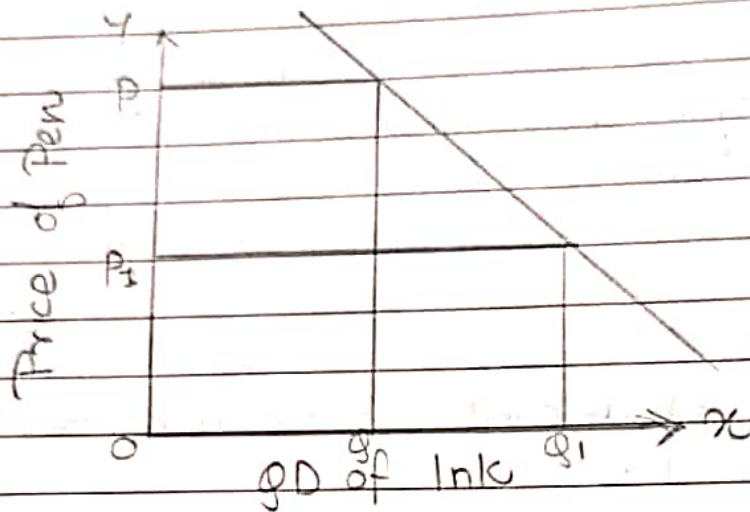
$$E_c = \frac{\Delta q_x}{\Delta p_y} \times \frac{p_y}{q_x}$$

- Cross Elasticity of demand can be used to classify goods as follows:

i) Substitute goods: eg: Tea and Coffee. The cross elasticity in such goods is always positive. In this case, the curve always slopes upwards. It shows that more quantity of product A will be consumed when the price of B rises. Only in case of close or perfect substitutes.



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- ii) Complementary goods: Petrol and Car. If the price of petrol rises. Not only does the demand for petrol fall but also for petrol cars. In such cases, cross elasticity is negative.



Advertisement Elasticity

Demand of a commodity is also influenced by advertisement or promotional efforts. It means that a demand for a good is responsive to the advertisement expenditure incurred by a firm.

$$E_a = \frac{\% \text{ change in Demand}}{\% \text{ change in Advertisement Expenditure}}$$

1. $E_a = 0$ Demand doesn't change to change in expenditure.
2. $E_a > 0$ but < 1 There is positive change but not proportionate to expenditure.
3. $E_a = 1$ Change in demand is equal to change in expenditure.
4. $E_a > 1$ Demand is affected more than the expenditure.

(Concept of Utility written before demand)

Law of Diminishing Marginal Utilities

Meaning The additional benefit that a person derives from a given increase in the stock of a thing diminishes with every increase in the stock that he already has.

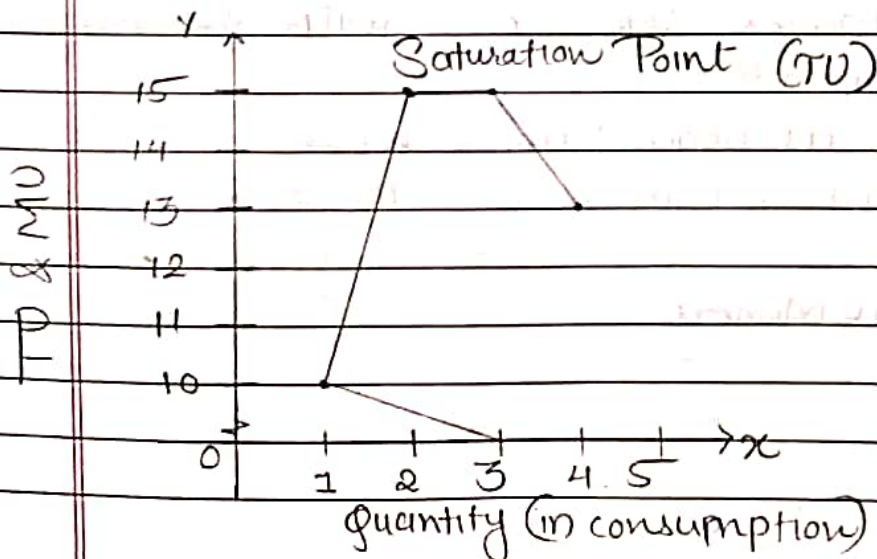
Total Utility: It may be defined as the sum of all utility derived from different units of a commodity consumed by a consumer.

Marginal Utility: It is the addition made to the total utility by the consumption of an additional unit of a commodity.

Numerical Illustration

Units Consumed	Total Utility	Marginal Utility
1	10	10
2	15	5
3	15	0
4	13	-2

Graphical Representation:



Conclusions about relationship between TU & MU

1. Total utility rises as long as MU is positive but at a decreasing rate because MU is diminishing.
2. Marginal utility diminished throughout.
3. When MU is zero, TU is maximum. It is called Saturation Point.
4. When MU is negative, TU is diminishing.
5. MU is The rate of change of TU or the slope of TU.
6. MU can be positive, zero or negative.

Exceptions to the law:

- Hobbies and rare collections.
- Abnormal persons.
- Indivisible goods (eg. T.V, house, etc)

Consumer Equilibrium:

- An individual tries to equalize marginal utility of a commodity with its price in order to maximise the satisfaction.
- A consumer compares the price with the marginal utility of a commodity.
- The consumer is at equilibrium when:
Marginal Utility of Commodity = Price of the commodity

$$MU_x = P_x \cdot MU_{\text{Money}}$$

Impact of Change in Price of Consumer Equilibrium

1) In case of decrease in price:

The consumer will consume more of the goods so as to restore the equality between the marginal utility and price. The marginal utility from the good will fall when he consumes more of the good. He will continue consuming more till the marginal utility becomes equal to the new lower price.

2) In case of increase in price:

When price of the good increases, the consumer will buy less so as to equate the marginal utility to the higher price.

Conclusion:

- A consumer spends his income to buy different commodities. In case of many products, consumer equilibrium is explained with the law of Equi-Marginal Utility.

- It states that the marginal utility is proportionate to its price in each commodity.

Consumer is said to have equilibrium when:

$$\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = MU \text{ Money}$$

$$\text{or, } \frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

Assumptions to the Law of Diminishing Marginal Utility:

Homogeneous Units: Different units consumed should be identical in all aspects, i.e., taste, income, etc.

Standard Units of Consumption: The units consumed should be of standard size.

Continuous Consumption: There should be no time gap or interval between consumption of units.

Prestigious Goods: This law fails in the case of gold, etc. as the utility rises instead of diminishing. It also fails in the case of hobbies, alcohol, etc.

Related Goods: Utility of tea can be affected due to sugar whereas utility of soft drinks may be affected due to availability of fresh juices.

Based on unrealistic assumptions: All the assumptions made are unrealistic.

Theory Of Supply

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Meaning: Supply of a commodity refers to the quantity of a commodity offered for sale at a particular price during a given period of time.

— Thus, the supply of a commodity may be defined as the amount of commodity which the sellers or producers are able and willing to offer for sale at a particular price, during a given period of time.

- Features:
1. Supply of a commodity is always with reference to a Price.
 2. Supply is referred in a given point of time.
 3. Supply depends on Ability of a seller to supply a good/commodity. However, ability of a seller to supply depends on the stock available with him.
 4. Supply also depends on willingness of seller to supply.
 5. Eg: A dairy farm's daily supply of milk at the price of Rs. 12/litre is 600 litres.

Determinants of Supply:

- i) Price of the commodity: Supply of a commodity is directly related to its price.
- ii) Price of related goods: If price of another goods rise, they become more profitable to a firm, relatively than the good in question.
- iii) Prices of factors of production: Supply decreases with rise in price of its raw cost or factors of production.

- iv) State of technology: Technological progress increases productivity and hence, Supply increases.
- v) Government policy: 1) If govt. policies are in favour, Supply increases.
Eg. Subsidies.
2) If govt. policy are not in favour, Supply decreases.
Eg. Taxes.
- vi) Competition: Supply will be more under competitive conditions than that under monopolistic conditions.
- vii) Other factors: Several factors affect Supply, like natural calamities, infrastructural facilities, labour strikes, etc.

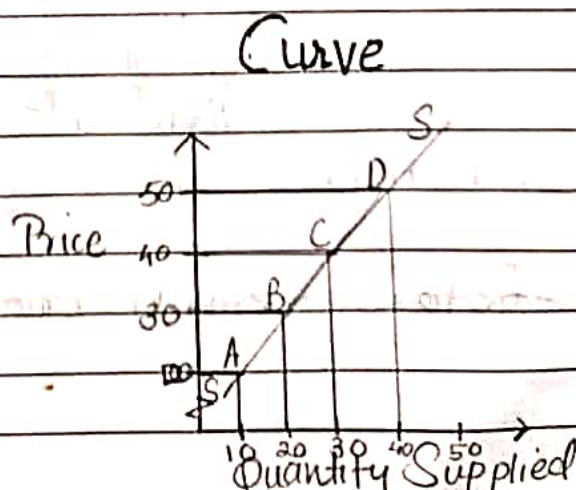
Law of Supply:

Statement: "Other things being equal, the supply of a commodity rises with an increase in the price, and *visà versa*."

Meaning ⇒ Law of Supply expresses the functional nature between price of a commodity and its supply.

⇒ Higher the price, greater the quantity supplied and *visà versa*. Other things remain constant.

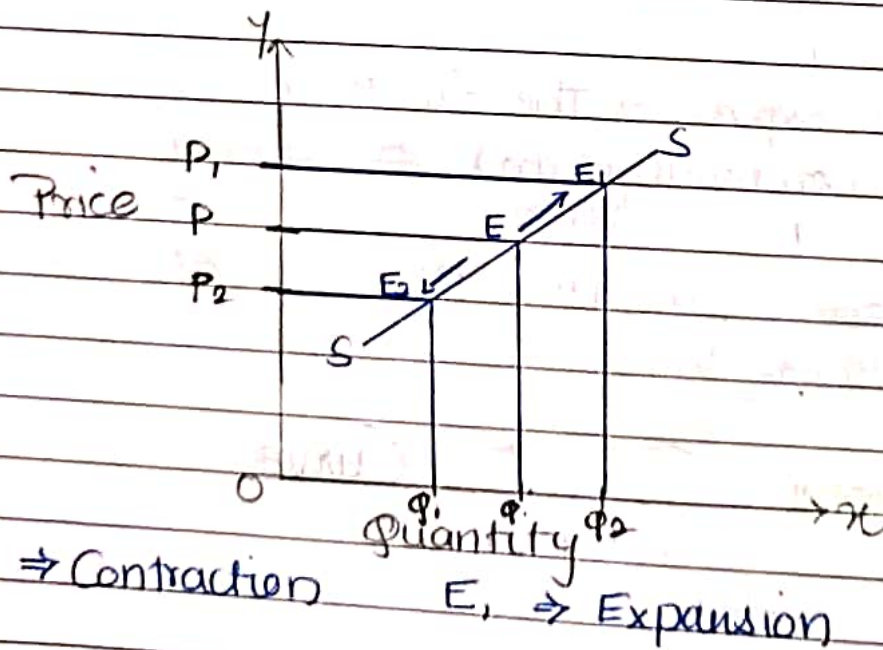
Supply Schedule and Curve	Price	Supply
	10	20
	20	30
	30	40
	40	50



Movement along the Supply Curve

Expansion and Contract of Supply.

- When Supply of a commodity changes only because of change in price, and other variables are constant.
- Changes in Quantity Supply - due to Price it results in Expansion and Contraction.
- When Price rises, Supply is Expanded
- When Price falls, it is called Contraction
- Expansion causes ^{upward} movement on the curve
- Contraction causes downward movement on the curve.



Note: Other factors remain constant.

Shift in the Supply curve 20

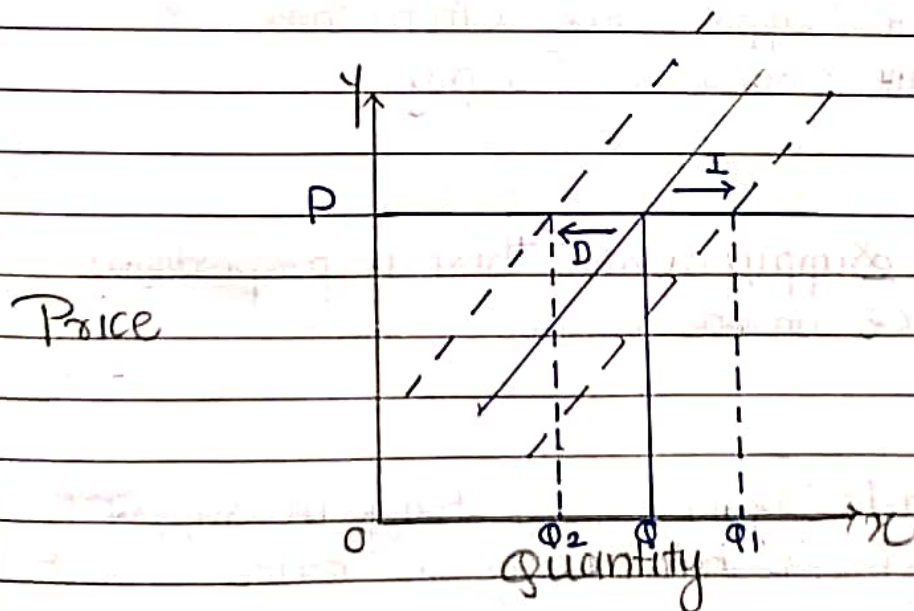
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Increase and Decrease in the Supply

- When Supply is affected due to change in other factors, except for price, it causes changes in Supply.
- Result of change of Govt policies, technology, prices of related goods, etc.
- Price is same, when Supply rises - Increase,
- Price is same, when Supply declines - Decreases
- Increase causes rightward shift in the curve.
- Decrease causes leftward shift in the curve.



Note: Price remains constant.

Elasticity of Supply

Definition: Percentage change in quantity supplied of a commodity to the percentage change in its price.

It can be expressed as:

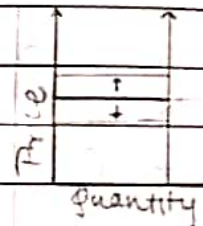
$$E_s = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in Price}}$$

$$E_s = \frac{\Delta q}{\Delta P} \times \frac{P}{q}$$

Degrees of Supply Elasticity

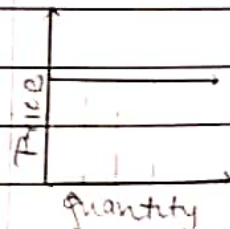
1. **Perfectly Inelastic Supply:** When change in Price has no effect on its quantity supplied.

$$E_s = 0$$



2. **Perfectly Elastic Supply:** When with no change in Price has infinite change in Supply.

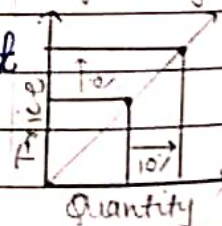
$$E_s = \infty$$



3.

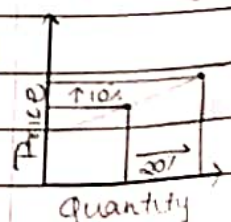
- Unit Elastic Supply:** When there is proportionate change in Price on its supply.

$$E_s = 1$$



4. **Relatively Elastic Supply:** When change in supply is relatively greater than change in Price.

$$E_s > 1$$



5. **Relatively Inelastic Supply:** When change in Price is relatively greater than change in Supply.

$$E_s < 1$$

