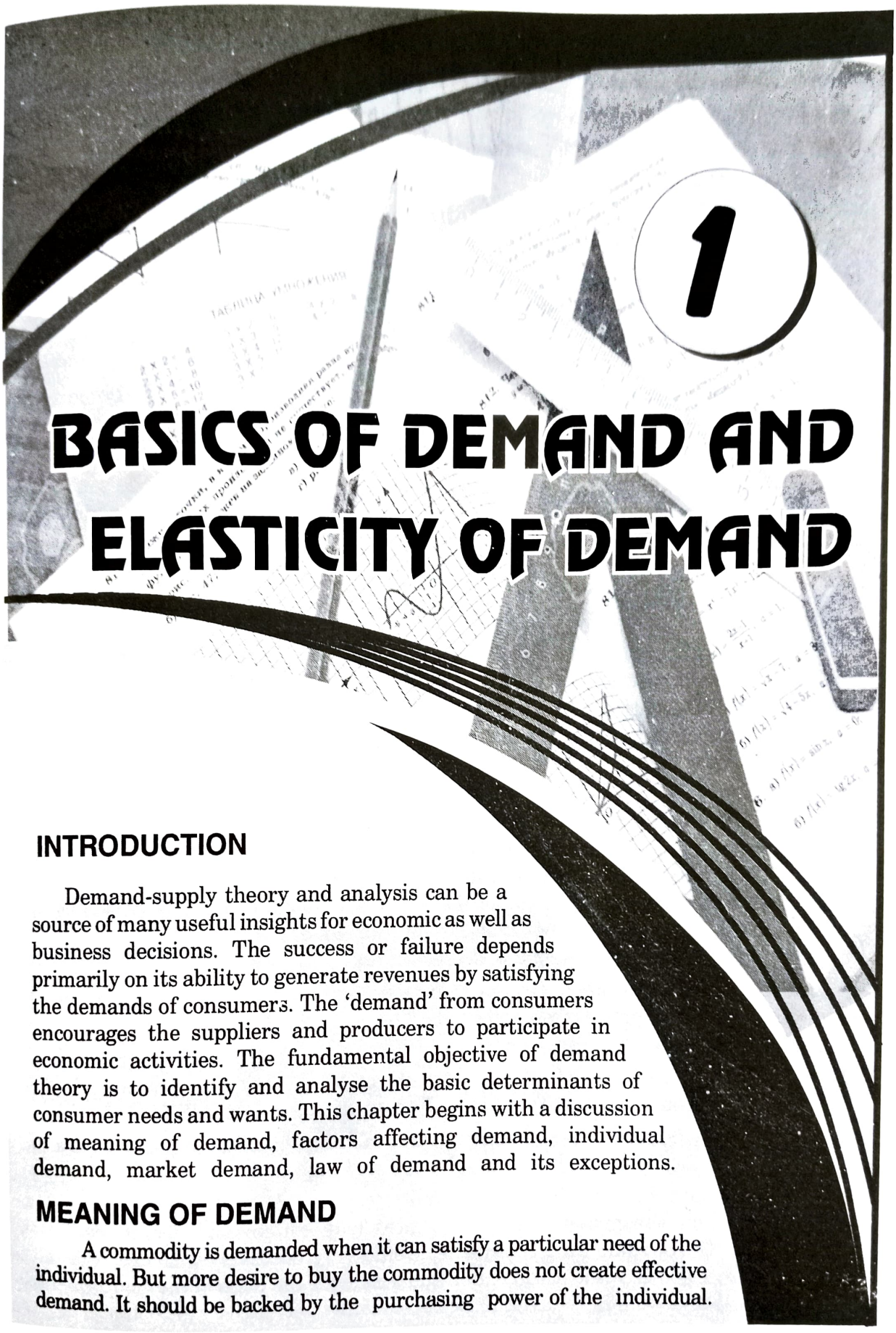

1

BASICS OF DEMAND AND ELASTICITY OF DEMAND

INTRODUCTION

Demand-supply theory and analysis can be a source of many useful insights for economic as well as business decisions. The success or failure depends primarily on its ability to generate revenues by satisfying the demands of consumers. The 'demand' from consumers encourages the suppliers and producers to participate in economic activities. The fundamental objective of demand theory is to identify and analyse the basic determinants of consumer needs and wants. This chapter begins with a discussion of meaning of demand, factors affecting demand, individual demand, market demand, law of demand and its exceptions.

MEANING OF DEMAND

A commodity is demanded when it can satisfy a particular need of the individual. But more desire to buy the commodity does not create effective demand. It should be backed by the purchasing power of the individual.

For example, a beggar desires four-wheeler car, but has no purchasing power. Here a beggar's desire for car does not constitute an effective demand for car.

In Economics, by demand (or effective demand) we mean the desire to purchase a commodity backed by purchasing power.

That is, **Effective demand = Willingness to purchase a commodity + ability to purchase the commodity.**

According to **Benhan**, "The demand for anything at a given price is the amount of it which will be bought per unit of time at that price."

DETERMINANTS OF DEMAND

Demand for a commodity in a market depends on several factors. Some of the important factors are discussed below :

1. **Tastes and preferences of the Consumer :** Demand for a particular commodity depends on the pattern of tastes and preferences of the consumers. If there is a change in the tastes and preferences of the consumers in favour of a commodity (due to advertising, fashion, etc.) its demand will rise at each price level. Similarly, change in tastes against a commodity leads to a fall in its demand at each price level.
2. **Own Price of the Commodity** : The own price of the commodity is one of the most important factors affecting demand. Normally there exists an inverse relationship between own price of the commodity and the quantity demanded. This means as price of the commodity increases the quantity demanded decreases and *vice versa.* This is called the 'general law of demand'. However, there are some exceptions to this law. For example, in case of **Giffen goods** this law does not hold true.
3. **Income of the Consumer** : The income level of the consumer is another important factor affecting demand. Generally there exists a direct or positive relation between level of income and quantity demanded. In case of normal goods as income of the consumer increases (decreases) the demand also increases (decreases). But this is not true for inferior goods. In case of inferior goods as income increases the demand decreases and *vice versa.*
4. **Price of the related Goods** : Sometimes, the demand for a commodity depends on the prices of related goods. The related goods maybe either substitute goods or complementary goods.
   (*a*) Two goods are said to be substitute of each other if one is used in place of the other to satisfy a want. For example, tea and coffee.
   (*b*) Two goods are said to be complement of each other if they are used jointly to satisfy a want. For example, tea and sugar.

   The demand for a particular commodity (say tea) depends as much on its own price as on the prices of its substitutes (say coffee) and complements (say sugar). The demand for a commodity would vary positively with the price of the substitute goods, while it will vary negatively with the price of the complementary goods. For example, when the price of coffee increases, the demand for tea increases and when the price of sugar increases, the demand for tea decreases

5. **Expected Changes regarding the Future Price of the Commodity** : Different individuals have different expectations regarding future price change. If one individual expects prices to fall in future, he will reduce present consumption (or demand) of the commodity. Conversely, present consumption will increase if the individual expects prices to rise in future.

6. **Weather Conditions** : Our demands are very much affected by weather. For example, the demand for woollen clothes increases during winter and the demand for cold drinks increases during summer.

7. **Population Size** : The demand for the commodities increases with a rise in population size. For example, demand for the necessary goods increases as total population size increases.

8. **Demographic Structure** : The demographic structure of a country is another important factor for determining the type of market demand. If the percentage of children in the total population increases, the demand for goods used by the children would increase. On the other hand, higher percentage of old aged people in the total population would lead to higher market demand for those goods which are particularly consumed by old aged people.

9. **Distribution of Income and Wealth** : This is an important determinant of market demand. If there is a high inequality in the distribution of income and wealth, total market demand will be low. On the other hand, more equitable distribution of income and wealth leads to enhance market demand.

10. **Government Policy**: Market demand is also influenced by the government policy. If government imposes tax, the price of the commodity will increase and its demand will fall. On the other hand, if the government grants subsidy, the price of the commodity falls and its demand increases. More tight (soft) government policy would generally imply low (high) market demand.

One can make a difference between the factors affecting individual demand and factors affecting market demand as shown below :

Box 1. Factors Affecting Individual Demand and Market Demand at a Glance

Factors Affecting Individual Demand	Factors Affecting Market Demand
1. Tastes and preferences of the consumer	1. Tastes and preferences of the consumer
2. Own price of the commodity	2. Own price of the commodity
3. Income of the consumer	3. Income of the consumer
4. Price of the related goods	4. Price of the related goods
5. Expected changes regarding the future price of the commodity	5. Expected changes regarding the future price of the commodity
6. Weather condition	6. Weather condition
	7. Population size
	8. Demographic structure
	9. Distribution of income and wealth
	10. Government policy

DEMAND FUNCTION

From the above analysis, it is cleared that the demand for a commodity depends on a number of factors. Such dependency can be expressed in the form of a demand function. Demand function is the functional relationship between the demand for a commodity and its determinants.

The demand for any commodity (say commodity depends on the following factors :

1. Tastes and preferences of the consumer (T).
2. Own price of the commodity (P_1).
3. Income of the consumer (M).
4. Price of the related commodities, i.e., price of substitutes (P_s) and the price of complements (P_c).
5. Expected changes regarding the future price of the commodity (P_e).
6. Weather conditions (W).
7. Population size (N).
8. Demographic structure (DS).
9. Distribution of income and wealth (IW).
10. Government policy (G).

On the basis of the above factors, the **demand function for commodity** can be expressed in a functional form :

$$\mathbf{Q_1^d = D\ (P1,\ M,\ Pc,\ Ps,\ T,\ Pe,\ W,\ N,\ DS,\ IW,\ G)}$$

where Q_1^d = Quantity demanded of commodity

In the demand function $\mathbf{P_1}$ **M,** $\mathbf{P_c}$**,** $\mathbf{P_s}$**, T,** $\mathbf{P^e}$**, W, N, DS, IW, G are** treated as **independent variables (or, exogenous variables) and Q1d is a dependent variable (or, endogenous variable).** If we assume all other independent variables except P_1 remain unchanged (*Ceteris Paribus* assumption) then the *ceteris paribus* demand function is expressed as :

$$Q_1^d = D(P_1)$$

This demand function shows that the demand for commodity depends on the price of commodity (*i.e.*, P_1) only. Generally, there exists an inverse relationship between price and quantity demanded. **So, the demand curve is negatively sloped.** This means as P_1 increases, the demand for commodity decreases and *vice versa.* This is known as general law of demand.

LAW OF DEMAND

Assumptions of the Law

The law of demand is based on the *ceteris paribus* assumption, i.e., other things remain unchanged. From our previous analysis (discussed in Section 2), we have seen that the demand for a commodity depends not only on its own price, but on many other factors like income of the consumer, price of related goods, consumer's tastes and

preferences, population size etc. These other factors are assumed to be constant to state the law of demand. Thus, the law of demand is based on the following assumptions:

1. Tastes and preferences of the consumers are constant.
2. Income of the consumer is constant.
3. Prices of the related commodities are constant.
4. Population size is constant.
5. There is no change in the expected future price.
6. Climatic condition remains same.
7. Commodity is a normal commodity.

Statement of the Law

Other things remaining constant (*ceteris paribus*), the quantity demanded of a commodity generally increases with a fall in price of the commodity and decreases with a rise in the price of the commodity.

DEMAND SCHEDULE

Law of demand can be better understood with the help of demand schedule. By a demand schedule, we mean a chart or table showing different quantities demanded per period at different prices of the commodity.

The demand schedule may be of two types :

(*a*) Individual Demand Schedule, and (*b*) Market Demand Schedule.

Individual Demand Schedule : An individual demand schedule indicates different quantities demanded by an individual at different possible prices. An individual demand schedule is shown in Table 1.

Table 1 : Individual Demand Schedule

Price of Commodity-1 (in ₹)	Quantity Demanded (in units)
1	40
2	30
3	20
4	10

From Table 1 it is seen that as price of the commodity increases, the quantity demanded decreases and *vice versa*. The diagrammatic representation of the individual demand schedule gives the individual demand curve.

Market Demand Schedule : The market demand schedule shows total quantities demanded by all individuals in the market at different prices of the commodity. If we assume '*n*' consumers in the market having identical demand schedules, then the market demand at any price will be equal to *n* times the individual demand.

For the sake of simplicity, we assume that at any given price, each individual consumer consumes the same amount. The market demand schedule is shown in Table 2.

Adding the quantities demanded by the two consumers at various prices, we get the market demand schedule in the last column of Table 2.

Table 2 : Market Demand Schedule

Price of the Commodity (in ₹)	Individual Demand Schedule		Market Demand (units)
	First Individual	Second Individual	
1	40	40	80
2	30	30	60
3	20	20	40
4	10	10	20

Differences between individual demand schedule and market demand schedule are shown in Table 3.

Table 3 : Difference between Individual Demand Schedule and Market Demand Schedule

Individual Demand Schedule	Market Demand Schedule
1. It represents the desired demand of particular commodity that an individual is ready to purchase at different possible prices at a particular point of time.	1. It indicates the total demand by all individuals for a particular commodity in the market at which they are ready to purchase at different possible prices at a particular point of time.
2. The income of an individual affects the individual demand schedule of particular commodity.	2. The income among different groups of individuals affects the total market demand schedule of a commodity.
3. Individual demand schedule depends upon the taste, liking and desire to consume a commodity.	3. The market demand schedule depends upon the number of individuals desiring that commodity. With the increase in number of consumers, the demand increases and *vice versa*.
4. The individual demand schedule is represented by an individual demand curve.	4. The market demand schedule is represented by the market demand curve.

DEMAND CURVE

The demand curve is negatively sloped. This is due to the inverse relationship between price and quantity demanded. The slope of the demand curve can be expressed as,

$$\frac{\Delta P}{\Delta Q} = \frac{\text{Change in Price}}{\text{Change in Quantity}}$$

The value of the slope is negative because one of the two changes (ΔP or ΔQ) is negative. If price falls (ΔP is negative) and quantity rises (ΔQ is positive). Similarly,

if price rises (ΔP is positive) and quantity falls (ΔQ is negative). So, $\frac{\Delta P}{\Delta Q}$ is always negative.

The graphical representation of the demand schedule is called the demand curve. Like demand schedule, there are two concepts of demand curve. These are : (*a*) Individual Demand Curve, and (*b*) Market Demand Curve.

Individual Demand Curve

Individual demand curve is the locus of the different combinations of price and quantity of a commodity of one particular individual buyer at different possible prices at a point *of time*. Individual demand curve is the graphical representation of the individual demand schedule. For example, graphical representation of the individual demand schedule as shown in Table 1 gives the individual demand curve shown in Figure 1. DD is a negatively sloped individual demand curve. The curve reflects the general law of demand *i.e.*, inverse relationship between price and quantity demanded.

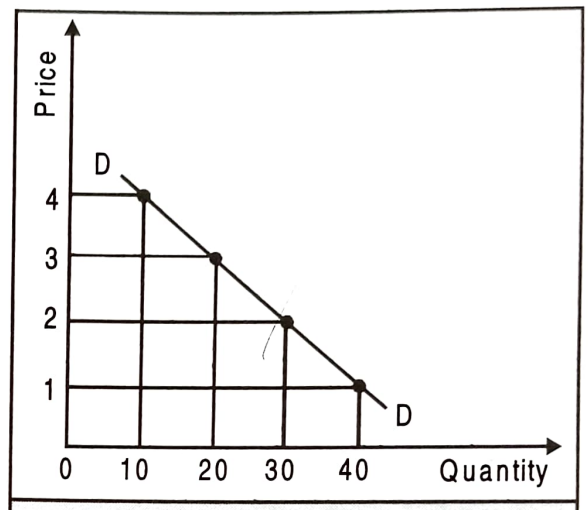

Fig. 1. Individual Demand Curve

Market Demand Curve

Market demand curve is the locus of the different combinations of price and quantity of a commodity of all the buyers in the market at different possible prices at a point of time. Market demand curve is the graphical representation of the market demand schedule. For example, graphical representation of the market demand schedule as shown in Table 2 gives the **market demand curve** shown in Figure 2.

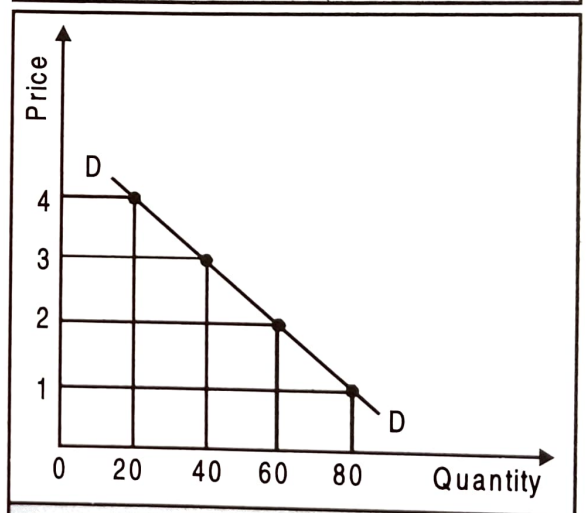

Fig. 2. Market Demand Curve

If we consider the price quantity combinations viz. (1, 80), (2, 60), (3,40), (4, 20) and plot them on a graph, we get the market demand curve (DD) of the commodity as shown in Figure 2. Actually market demand curve for the commodity is **the horizontal summation** of the demand curves of all consumers in the market, provided consumer demand curves are independent (supplementary **axiom** — this means that consumer's preferences are not influenced by the purchase of others).

Market demand curve also slopes downward showing inverse relationship between own price of the commodity and its quantity demanded.

The differences between individual demand curve and market demand curve is shown in Table 4.

REASONS FOR INVERSE RELATIONSHIP BETWEEN PRICE AND DEMAND (OR REASONS FOR DOWNWARD SLOPING DEMAND CURVE)

1. **Cardinal Explanation** : According to the *Cardinal* theory or *Marshallian* theory, the main reason behind the downward sloping demand curve is the operation of the law of diminishing marginal utility. The law states that the marginal utility (MU) decreases as the consumer consumes more and more units of any commodity. According to Prof. Marshall, a rational consumer attains equilibrium at the point, where marginal utility (MU) of the commodity is equal to the price (P) of the commodity (*i.e.*, at equilibrium MU = P). Now if there is a fall in price (P) then MU becomes greater than price (*i.e.*, MU > P). In such a situation, the consumer finds that he gets relatively higher marginal utility compared to his sacrifice measured in terms of price paid for the commodity, and then the consumer will purchase more units of a commodity. As a result, MU will fall. This process continues until MU = P. On the other hand, when price rises and the consumer finds that he gets relatively lower marginal utility compared to his sacrifice, then consumer will purchase lesser units of the commodity. As a result, MU will rise until MU = P. So, we get an inverse relation between price and quantity demanded. Hence, the demand curve is negatively sloped.
2. **Ordinal Explanation** : We can also explain the general law of demand with the help of ordinal approach or indifference curve approach of consumer behaviour provided by *J.R. Hicks, Slutsky, Allen* and others. According to this

approach the law of demand can be explained in terms of Substitution Effect (SE) and Income Effect (IE) of a price change. When the price of any commodity changes, *ceteris paribus,* its effect on the demand for that commodity is known as **Price Effect (PE).** This price effect is the sum of substitution effect and income effect.

Substitution Effect: When the price of a commodity falls with other things remaining constant, it becomes cheaper in comparison to other commodities. Then the consumer starts to substitute this commodity in place of other commodities. As a result, the demand for this commodity increases. This is known as substitution effect.

Income Effect: Again with the fall in the price of a commodity, real income of the consumer increases. Now the consumer can purchase more units of the commodity with the same money income. The effect on the demand for commodity (whose price falls) due to such change in real income induced by price change is known as income effect of price change.

In case of normal goods, both SE and IE move in the same direction and cause an increase (or decrease) in quantity demanded after a price fall (or price rise). Thus demand curve for normal commodity is downward sloping.

3. **Change in the Number of Customers** : When the price of a commodity falls, some new customers who were unable to purchase the commodity earlier enter the market and start purchasing the commodity. The old customers also start consuming more of the commodity. Conversely, in case of rise in price, existing customers find it difficult to purchase the commodity and hence start to reduce consumption. In this way, the change in the number of customers in the market explains the law of demand.

Box 3 : Explanation of the Law of Demand at a Glance
• Cardinal explanation • Ordinal explanation : Substitution effect Income effect • Change in the number of customers

EXCEPTIONS TO THE GENERAL LAW OF DEMAND

The situations when the law of demand becomes ineffective are known as exceptions to the law. Some of these important exceptions are :

1. **Giffen Goods** : In case of *Giffen* goods (after the name of *Sir Robert Giffen),* the general law of demand is violated. When the price of such commodity increases, the poor people are forced to curtail the consumption of more expensive foods and increase their purchase of this commodity. This situation is also known as **Giffen Paradox.**

   British workers consumed a diet of mainly bread and meat. *Sir Robert Giffen* observed that when the price of bread went up, the low paid British workers

in the early 19th century purchased more bread and not less of it, this contrary to the law of demand. The reason given for this was that Brit workers consumed a diet mainly bread and when the price of bread went they were compelled to spend more on given quantity of bread. They could afford to purchase as much meat as before. Thus, they substituted bread meat in order to maintain their food intake. It is important to note the G condition can hold only for inferior goods where Substitution effect is lar than the income effect.

2. **Price and Quality** : It frequently happens that the consumers judge qual of a commodity by its price. This is the case particularly with goods wh quality is essential but which cannot be assessed early by the consumer. Wh the price of any product increases, one may think that the quality of th product has increased and hence the consumer purchases more units of the commodity. Such effect is known as **Veblen Effect** (After the name of *Tltorste Veblen* who mentioned this feature). For example, a high priced drug or doct is often thought of as representing better quality.
3. **Conspicuous Consumption** : The law of demand will not operate in cas of costly items such as diamond. Such goods are purchased by wealthier person who want to distinguish themselves from the others. These commodities will b demanded even if the price goes up. This effect is known as **Snob Effect** This is an example of negative network externality.
4. **Speculation** : If people anticipate that the price of a commodity will increase in future, they would purchase more at the existing price which may be higher than what it was in past. For example, in the share market, it is found that as the price of any share increases (decreases) its demand also increases (decreases).
5. **The Bandwagon Effect** : This refers to a situation when people doing certain things because other people are doing, regardless of their own beliefs, which they may ignore or override. For instance, once a product becomes popular, more people tend to 'get on the bandwagon' and buy it too. For example, any player's hairstyle during the Football World Cup. This is an example of positive network externality. In the extreme form of the bandwagon effect, the demand curve becomes positively sloped.

In all the above mentioned cases, the demand curve will be positively sloped showing a direct or positive relation between price and quantity demanded, as shown in Figure 8.

Remember : Even when some individual demand curves are positively sloped, the market demand curve is assumed to be negatively sloped. This is because as price falls, some of the consumers may purchase less of the commodity but most of them will purchase more and hence law of demand holds.

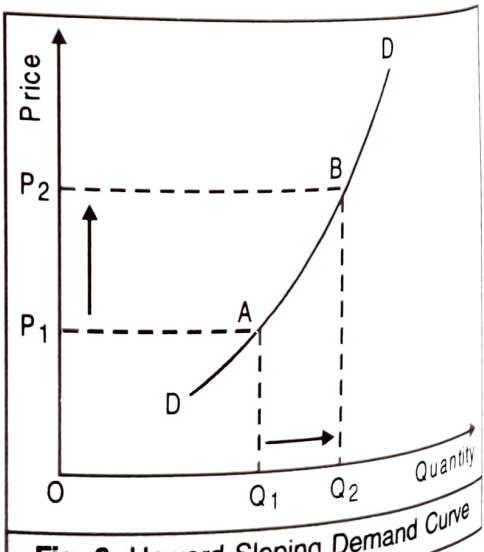

Fig. 8. Upward Sloping Demand Curve

Box 4 : Exceptions to the Law of Demand at a Glance

- Giffen goods
- Price and quality (veblen effect)
- Conspicuous consumption (snob effect)
- Speculation
- The Bandwagon effect

CONCEPT OF NORMAL GOODS, INFERIOR GOODS AND GIFFEN GOODS

From the previous discussion it is clear that you must have a clear idea about the concepts of normal goods, Giffen goods and inferior goods. Let us discuss one by one.

Normal Goods : The goods whose demand increases (decreases) with the increase (decrease) in consumer's income, is termed as normal goods. Following are the important features to remember about normal goods :

(*a*) Income effect (due to income change) is positive.

(*b*) Substitution effect (due to price change) is negative.

(*c*) Income effect (due to price change) is negative.

(*d*) Price effect is negative.

(*e*) General law of demand holds true.

(*f*) Demand curve is negatively sloped.

Inferior Goods : The goods whose demand increases (decreases) with the decrease (increase) in consumer's income, is termed as inferior goods. Following are the important features to remember about inferior goods :

(*a*) Income effect (due to income change) is negative.

(*b*) Substitution effect (due to price change) is negative.

(*c*) Income effect (due to price change) is positive.

(*d*) Substitution effect and income effect move in opposite direction, but substitution effect is stronger than income effect and hence price effect is negative.

(*e*) General law of demand holds true.

(f) Demand curve is negatively sloped but steeper.

(*g*) Extreme form of the inferior goods is termed as Giffen goods.

Giffen Goods : The goods whose demand increases (decreases) with the increase (decrease) in their prices, is termed as Giffen goods. Following features are important to note about the Giffen goods:

(*a*) Income effect (due to income change) is not applicable here. Because Giffen goods case is a price phenomenon.

(*b*) Substitution effect (due to price change) is negative.

(*c*) Income effect (due to price change) is positive.

(*d*) Substitution effect and income effect move in opposite direction but income effect is stronger than the substitution effect and hence price effect is positive.

(*e*) General law of demand is violated.

(*f*) Demand curve becomes positively sloped.

RELATIONSHIP BETWEEN INCOME AND DEMAND

The effect of change in consumer's income depends on the nature of goods. The effect will not be the same for all types of goods. Let us now see the effect of changes in consumer's income on demand for normal goods and inferior goods.

1. **Normal Goods** : In case of normal goods, there exists a positive relationship between income and demand. It means as income of the consumer increases (decreases), the demand for the normal commodity also increases (decreases). Alternatively we can say that income effect (due to income change) is positive.

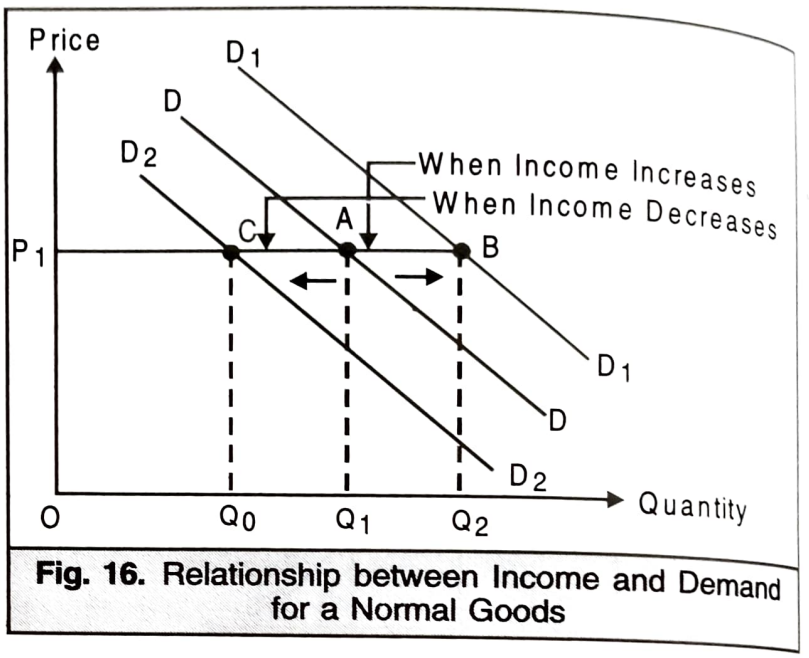

Fig. 16. Relationship between Income and Demand for a Normal Goods

If there is a rise in income, the demand curve shifts to the right which implies increase in demand for normal goods at a given price. On the other hand, if there is a fall in income, the demand curve shifts to the left implies decrease in demand for normal goods at a given price. This is shown in Figure 16. When income increases, demand curve (DD) shifts to the right and becomes D_1D_1 at the given price P_1 When income decreases, the demand curve shifts the left and becomes D_2D_2 at the given price P_1.

2. **Inferior Goods :** In case of inferior goods, there exists a negative relationship between income and demand. It means as income of the consumer increases (decreases), the demand for the inferior goods decreases (increases). Alternatively, we can say that income effect (due to income change) is negative. Coarse grain (Jowar, Bajra, Maize etc.), coarse cloth, bidi etc. come under the category of inferior goods. Here should be noted that the concept of inferior goods is a relative concept i.e., inferior type of goods maybe treated as normal goods for someone.

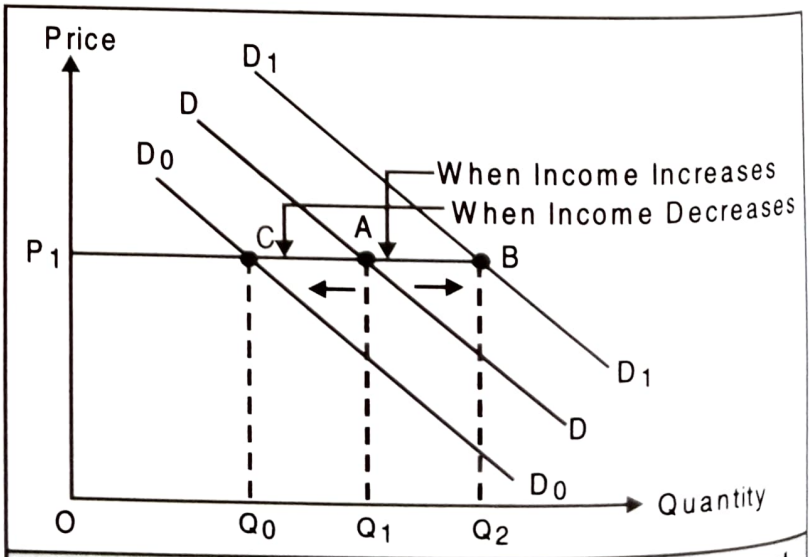

Fig. 17. Relationship between Income and Demand for a Inferior Goods

If there is a rise in income, the demand curve shifts to the left which implies decrease in demand for inferior goods at a given price. On the other hand, if there is a fall in

income, the demand curve shifts to the right implies increase in demand for inferior goods at a given price. This is shown in Figure 17. When income increases, demand curve (DD) shifts to the left and becomes D_0D_0 at a given price P_1. When income decreases, the demand curve shifts to the right and becomes D_1D_1 at a given price P_1.

Box. 6. Effects of Factors on Demand Curve At a Glance	
Change in Factors	**Impact on the Demand Curve**
1. Higher (lower) taste and preferences for the commodity.	1. Rightward (leftward) shift of the demand curve.
2. Increase (decrease) in household income.	2. Rightward (leftward) shift of the demand curve.
3. Increase (decrease) in the price of a substitute goods.	3. Rightward (leftward) shift of the demand curve.
4. Increase (decrease) in the price of a complementary goods.	4. Leftward (rightward) shift of the demand curve.
5. Expected rise (fall) in the future price of the commodity.	5. Rightward (leftward) shift of the demand curve.

MEANING OF ELASTICITY OF DEMAND

The elasticity of demand determines the degree of responsiveness of the quantity demanded of a commodity to a change in anyone of the determinants of the demand function, viz., the own price of the commodity, income of the consumer and the price of related goods etc.

DIFFERENT TYPES OF ELASTICITY OF DEMAND

There are three important concepts of elasticity of demand : (1) Own Price Elasticity of Demand (or Simply Elasticity of Demand), (2) Income Elasticity of Demand, (3) Cross Price Elasticity of Demand.

Remember : By elasticity of demand, we generally mean the price elasticity of demand.

PRICE ELASTICITY OF DEMAND

The price elasticity of demand is the degree of responsiveness of demand to change in its own price. It is defined as the percentage change in quantity demand due to 1% change in own price of the commodity, *ceteris paribus. i.e.*,

$$\in = (-)\frac{\%\text{ Change in Quantity Demanded for a Commodity}}{\%\text{ Change in the Own Price of the Commodity}}$$

$$= (-)\frac{\frac{\Delta Q}{Q}\times 100}{\frac{\Delta P}{P}\times 100} = (-)\frac{\Delta Q}{\Delta P}\cdot\frac{P}{Q}$$

Where, ΔQ = Change in quantity demand

ΔP = Change in price

P = Initial price

Q = Initial quantity

The coefficient of price elasticity of demand ($\in$) is always negative because when price changes demand moves in the opposite direction, $|\in|$ = absolute value of the

price elasticity of demand $= \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$

An important feature of the price elasticity of demand is that **it is unit free measure.**

DIFFERENT TYPES OF PRICE ELASTICITY OF DEMAND

Depending upon the value of the coefficient (E), we can get five types of elasticity of demand. These are as follows :

1. Elastic demand ($|\in|>1$).
2. Inelastic demand ($|\in|< 1$).
3. Unitary elastic demand ($|\in|= 1$).
4. Perfectly (or completely) inelastic demand ($|\in|= 0$).
5. Perfectly (or completely) elastic demand ($|\in|= \propto$).

Let us explain these elasticities of demand one by one.

1. **Elastic Demand** : When the change in quantity demanded is more than proportionate change in own price, the demand is said to be elastic. For **luxury commodity** we have elastic demand.

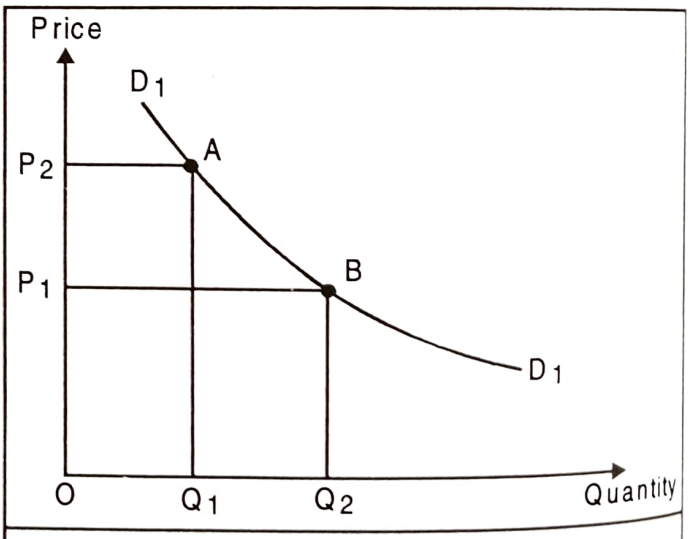

Fig. 18. Elastic Demand Curve

Here, $|\in| > 1$

$$\Rightarrow \quad \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} > 1$$

$$\Rightarrow \quad \frac{\Delta Q}{Q} > \frac{\Delta P}{P}$$

$$\Rightarrow \quad \frac{\Delta Q}{Q} \times 100 > \frac{\Delta P}{P} \times 100$$

$\Rightarrow$ % change in quantity demand > % change in price

In Figure 18, D_1D_1 curve is an elastic demand curve. We see that when price declines from P_2 to P_1, demand increases from Q_1 to Q_2. Here the rate of change in price is $\left(\frac{P_1P_2}{P_1}\right)$ and the rate of change in demand is $\left(\frac{Q_1Q_2}{Q_1}\right)$ which is more than the change in price. In this case, the demand curve becomes **flatter.**

2. **Inelastic Demand** : When the change in quantity demanded is less than proportionate change in own price, the demand is said to be inelastic. For **necessary commodity** we have inelastic demand.

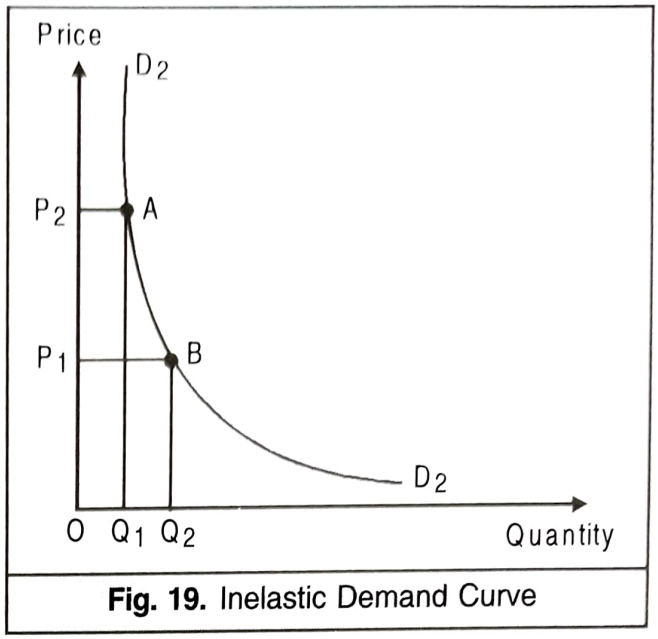

Fig. 19. Inelastic Demand Curve

Here, $|\in| < 1$

$$\Rightarrow \quad \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} < 1$$

$$\Rightarrow \quad \frac{\Delta Q}{Q} < \frac{\Delta P}{P}$$

$$\Rightarrow \quad \frac{\Delta Q}{Q} \times 100 < \frac{\Delta P}{P} \times 100$$

$\Rightarrow$ % change in quantity demand < % change in price

In Figure 19, D_2D_2 curve is an inelastic demand curve. As price decreases from P_2 to P_1, the quantity demanded increases from Q_2 to Q_2.

Here, the rate of change in price is $\left(\frac{P_1P_2}{P_1}\right)$ much higher in comparison to the rate of change in quantity demand $\left(\frac{Q_1Q_2}{Q_1}\right)$. In this case, demand curve becomes **steeper.**

3. **Unitary Elastic Demand** : When the proportionate change in demand equals the proportionate change in own price, the demand is said to be unit elastic.

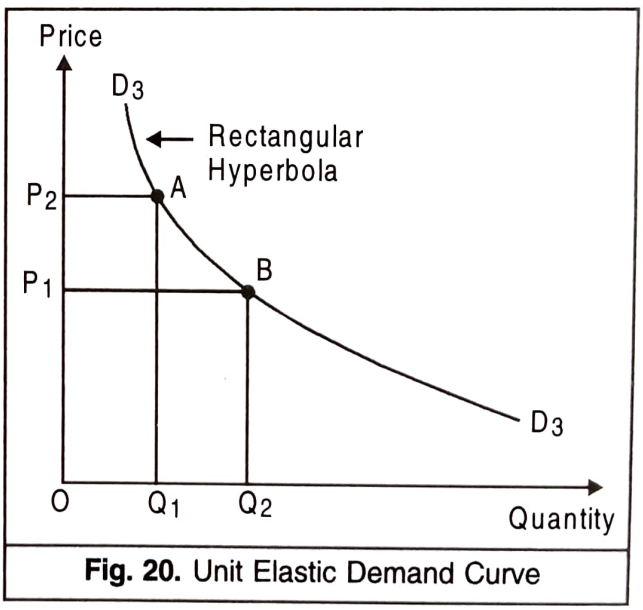

Fig. 20. Unit Elastic Demand Curve

Here, $|\in| = 1$

$$\Rightarrow \quad \frac{\Delta Q}{\Delta P} \cdot \frac{\Delta P}{\Delta Q} = 1$$

$$\Rightarrow \quad \frac{\Delta Q}{Q} \times 100 = \frac{\Delta P}{P} \times 100$$

$\Rightarrow$ % change in quantity demand = % change in price

In Figure 20, D_3D_3 is the unitary elastic demand curve. In this case, the rate of change in price $\left(\frac{P_1P_2}{P_1}\right)$ is equal to the rate of change in quantity demanded $\left(\frac{Q_1Q_2}{Q_1}\right)$

Here, demand curve takes the shape of **rectangular hyperbola which implies that elasticity of demand is constant at value one throughout the length of the curves.** The area of the rectangle drawn below this curve represents the total expenditure and area of all rectangles will always be equal.

4. Perfectly Inelastic Demand : When there is no change in quantity demanded in response to any price change, the demand is said to be perfectly or completely inelastic.

Here, $|\in| = 0$

$$\Rightarrow \quad \frac{\Delta Q}{\Delta P} \cdot \frac{\Delta P}{\Delta Q} = 0$$

$$\Rightarrow \quad \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} = 0 \quad \Rightarrow \quad \frac{\Delta Q}{Q} = 0$$

$\Rightarrow \Delta Q = 0$ or, Q = constant

In this case, the demand curve becomes **vertical** or **parallel** to the Y-axis.

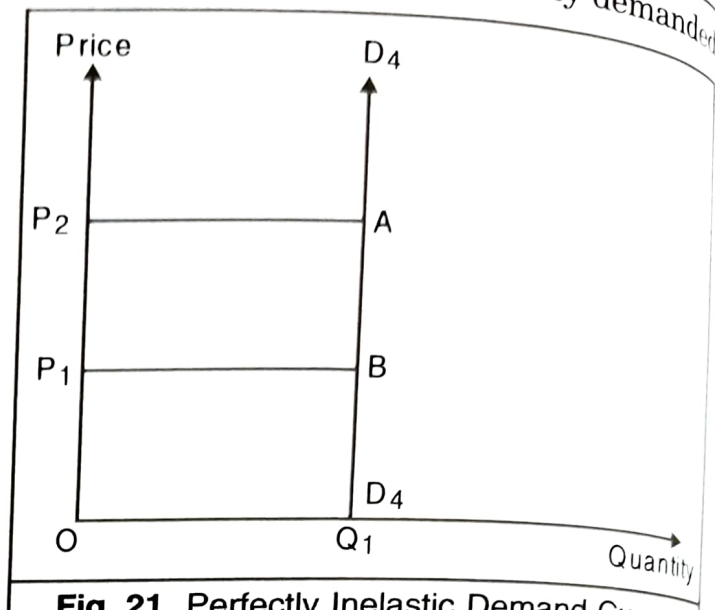

Fig. 21. Perfectly Inelastic Demand Curve

5. Perfectly Elastic Demand : When an infinitely small change in price leads to an infinitely large change in the quantity demanded, the demand is said to be perfectly elastic.

Here, $|\in| = \infty$

$$\Rightarrow \quad \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} \quad \Rightarrow \quad \frac{\Delta P}{P} = 0$$

$\Rightarrow \Delta P = 0$ or P = constant

In this case, the demand curve becomes **horizontal or parallel to** the X-axis.

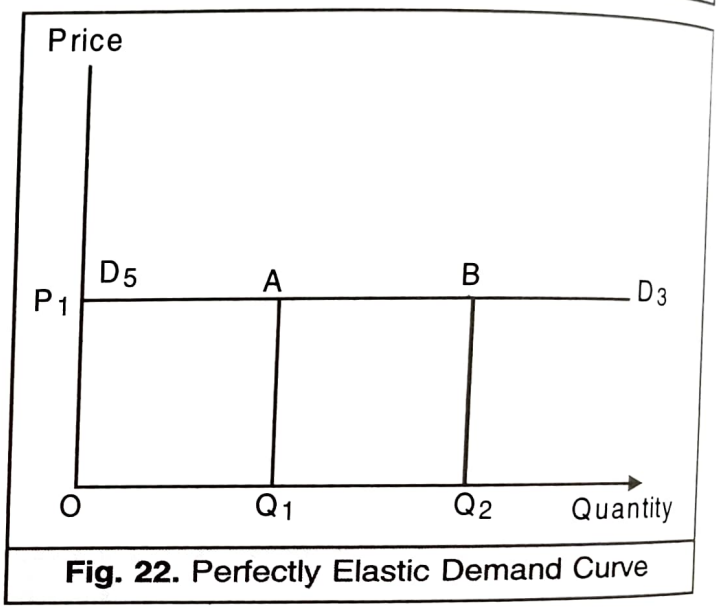

Fig. 22. Perfectly Elastic Demand Curve

MEASUREMENT OF PRICE ELASTICITY OF DEMAND

Generally four methods are used to measure price elasticity of demand. These are:

1. Percentage Method or Proportionate Method.
2. Total Expenditure Method or Total Outlay Method.
3. Point Elasticity Method or Geometric Method.
4. Arc Elasticity Method.

Percentage Method

In this method, elasticity of demand is measured by comparing the ratio of percentage change in the quantity demanded to the percentage change in the price of a commodity. Thus we can measure price elasticity by using the following formula :

$$\text{Price elasticity of demand} = (-)\frac{\%\text{ Change in Quantity Demanded}}{\%\text{ Change in Proce}}$$

Symbolically,

$$\in = -\frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100} = -\frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$$

Where, P = Initial price

Q = Initial quantity

ΔP = Change in price

ΔQ = Change in quantity

Absolute value of the price elasticity demand

$$|\in| = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$$

For the sake of convenience, we often use the absolute value of the price elasticity of demand. All the five types of price elasticity of demand are shown in Figure 23.

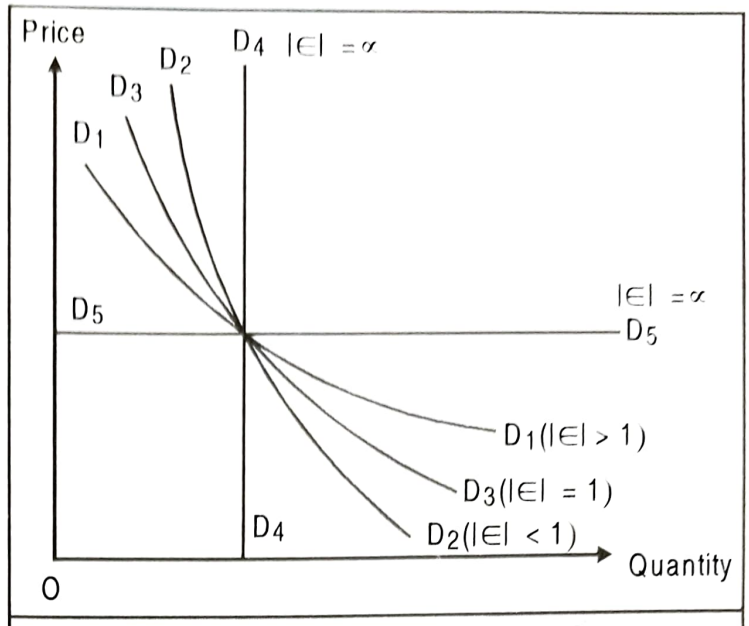

Fig. 23. Different Types of Demand Curve

Total Expenditure Method

Total expenditure is the expenditure (or outlay) borne by households for the purchase of a commodity. It is price (P) times quantity (Q) i.e., $TE = PQ$, where TE stands for total expenditure. Total expenditure is total revenue (TR) of the seller. That is why this method is also known as the total revenue method. The change in expenditure on commodity due to change in price and the price elasticity of demand are well connected to each other. This means that we can easily find out the price elasticity of demand from the changes in the total expenditure made on a good as a result of changes in its price. Under this method, we can find out three types of price elasticity of demand :

1. Unit Elastic Demand ($|\in| = 1$) : As result of change in price, the total expenditure remains constant, the commodity is said to have unitary elastic demand. This type of price elasticity of demand can be illustrated by the demand schedule (Table 7) as well as demand curve (Figure 24).

Table 7 : Demand Schedule Showing Unit Elasticity

Price (₹)	Quantity Demanded (units)	Total Outlay or Total Expenditure
5	20	100
4	25	100

From Table 17, it is seen that as price falls from ₹ 5 to ₹ 4 quantity' demanded increases from 20 units to 25 units, but the total expenditure remains constant at ₹ 100. Therefore, the price elasticity of demand is unity.

In Figure 24, D_1D_1 is the unit elastic demand curve (Rectangular hyperbola) with rectangles OP_2AQ_1 and OP_1BQ_2 being equal in areas *i.e.*, $\square OP_2AQ_1 = \square OP_3BQ_2$. Area of each rectangle represents total expenditure. With the fall in price (movement from A to B) the total outlay made on the commodity remains the same.

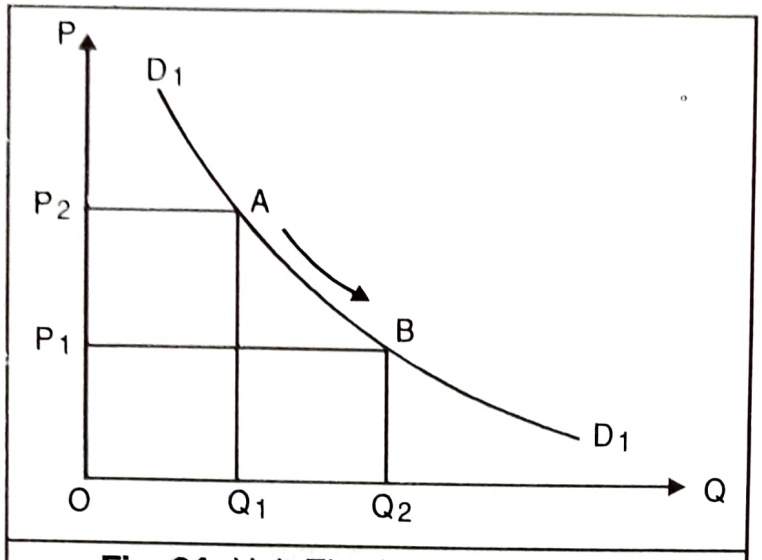

Fig. 24. Unit Elastic Demand Curve

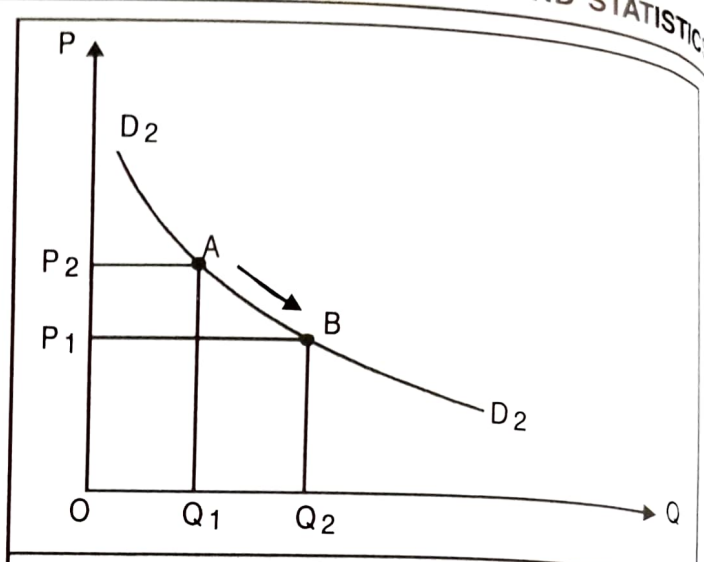

Fig 25. Elastic Demand Curve

2. Elastic Demand ($|\in| > 1$) : As a result of a rise (fall) in price, the total expenditure on the commodity falls (rises), the commodity is said to have elastic demand. Here, the price and total expenditure are moving in the opposite direction. This type of price elasticity of demand can be illustrated by the demand schedule (Table 8) as well as demand curve (Figure 25).

Table 8 : Demand Schedule Showing Elastic Demand

Price (₹)	Quantity Demanded (units)	Total Expenditure or Total Outlay
5	20	100
4	30	120

From Table 8, it is seen that as price falls from ₹ 5 to ₹ 4, quantity demanded increases from 20 units to 30 units and total expenditure increases from ₹ 100 to ₹ 120. Therefore, price elasticity of demand is greater than one.

From Figure 25, it is clear that the total expenditure ($\square OP_1BQ_2$) on the commodity at price OP_1 is greater than the expenditure ($\square OP_2AQ_1$) at price OP_2. Thus, with the fall in price (movement from A to B) the total outlay on the commodity has increased.

3. Inelastic Demand ($|\in|<1$) : As a result of a rise (fall) in price the total expenditure on the commodity rises (falls), the commodity is said to have inelastic demand. This type of price elasticity of demand can be illustrated by the demand schedule (Table 9) and graphically (Figure 26).

Table 9 : Demand Schedule Showing Inelastic Demand

Price (₹)	Quantity Demanded (units)	Total Expenditure or Total Outlay
5	20	100
4	22	88

From Table 19, it is clear that as price falls quantity demanded increases ; but total expenditure falls. Here, the price and total expenditure are moving in the same direction. This means that the price elasticity of demand is less than one.

In Figure 26, the total expenditure at price OP_2 is $\square OP_2AQ_1$ and when price falls to OP_2 the total expenditure made on it is equal to $\square OP_1BQ_2$. Now, by comparing the two total expenditures, it is evident that $\square OP_2AQ_1 > \square OP_1BQ_2$. This means that $|\in| < 1$.

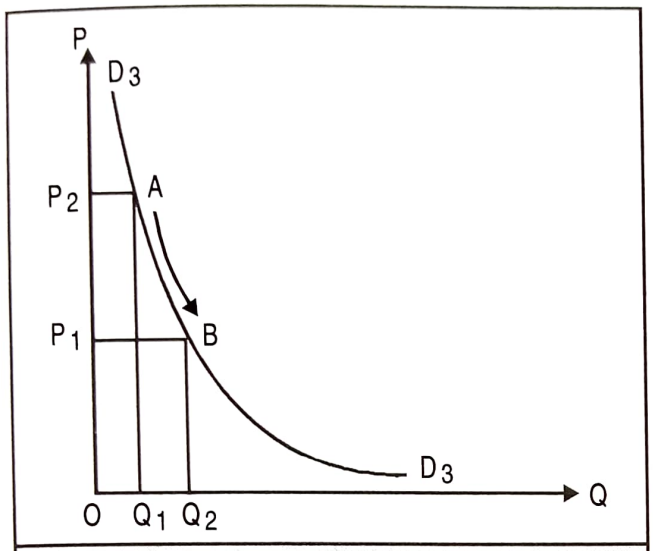

Fig. 26. Inelastic Demand Curve

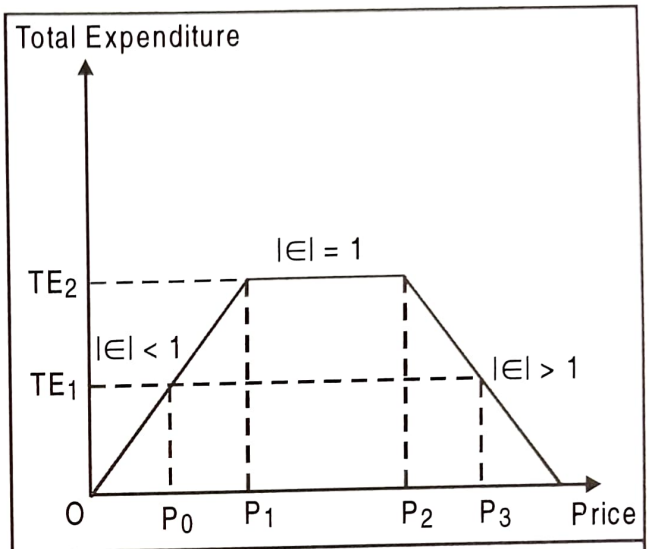

Fig. 27. Total Expenditure and Price

The relationship between total expenditure and the price elasticity of demand is also shown in Figure 27.

In Figure 27, total expenditure is measured in Y-axis and price is measured in the X-axis. When price falls from P_1 to P_0, total expenditure also falls from TE_2 to TE_1. Therefore, elasticity of demand is less than one ($| \in | < 1$). When price falls from P_2 to P_1 total expenditure remains the same at TE_2. Therefore, elasticity is equal to one ($|e| = 1$). When price falls from P_3 to P_2 total expenditure increases from TE_1 to TE_2. Here, elasticity is greater than one ($| \in | > 1$).

Box 7. An Alternative Analysis (Mathematical Approach)

Relationship between Elasticity and Change in Expenditure on Goods :

Suppose at initial price P, the demand for goods is Q.

$\therefore$ Initial total expenditure $(TE_1) = P \times Q$.

If price changes for P to $(P + \Delta P)$ and as a result demand changes from Q to $(Q + \Delta Q)$, the total expenditure on the goods is $(P + \Delta P)(Q + \Delta Q)$.

$\therefore$ New total expenditure $(TE_2) = (P + \Delta P)(Q + \Delta Q)$.

$\therefore$ Change in the total expenditure :

$$\begin{aligned}\Delta TE &= TE_2 - TE_1 \\ &= (P + \Delta P)(Q + \Delta Q) - P.Q \\ &= P.Q + P.\Delta Q + Q\Delta P + \Delta P\Delta Q - P.Q \\ &= P\Delta Q + Q\Delta P + \Delta P\Delta Q\end{aligned}$$

For small values of ΔP and ΔQ, the value of the term $\Delta P\Delta Q$ is negligible, and in that case, the change in the expenditure on the goods is approximately given by $\Delta TE = P\Delta Q + Q\Delta P$. Dividing both sides by ΔP, we get

$$\frac{\Delta TE}{\Delta P} = Q + P \cdot \frac{\Delta Q}{\Delta P}$$

$$= Q\left[1 + \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}\right] = Q\left[1 + \left(-\frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}\right)\right]$$

$$= Q\,[1 - |\ \in\ |]$$

Situation	If Price Falls	If Price Rises	Remark	Value of Elasticity
1.	Expenditure increases	Expenditure decreases	Inverse relation	$\| \in \| > 1$
2.	Expenditure remains constant constant	Expenditure remains	No relation	$\| \in \| = 1$
3.	Expenditure decreases	Expenditure increases	Direct relation	$\| \in \| < 1$

Point Elasticity Method

Price elasticity of demand can be measured geometrically. The method is called as point method. According to this method, price elasticity of demand on each point of the demand curve shall be different. It can be measured with the help of the following formula:

Lower Segment of the Demand Curve from the Point

Elasticity of Demand at a Particular Point ($\in$)

$$= \frac{\text{Lower Segment of the Demand Curve from the Point}}{\text{Upper Segment of the Demand Curve from the Point}}$$

Upper Segment of the Demand Curve from the Point

In Figure 28, DD′ is the linear demand curve and we want to measure elasticity of demand at point A. Corresponding to point A, OP_2 is the initial price of the commodity and OQ_1 is the initial quantity demanded. Let us consider another point, say, point B. At point B, price is OP_1 and quantity demanded is OQ_2.

Therefore, $\Delta P = P_1P_2$, $\Delta Q = Q_2Q_2$

Now, elasticity at point A.

$$|\ \in\ | = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} = \frac{Q_1Q_2}{P_1P_2} \cdot \frac{OP_2Q}{OQ_1}$$

$$= \frac{CB}{CA} \cdot \frac{AQ_1}{OQ_1} \quad \left[\because \begin{array}{l} Q_1Q_2 = CB \\ P_1P_2 = CA \\ OP_2 = AQ_1 \end{array}\right]$$

Now, ΔACB and $\Delta AQ_1D'$ are similar triangles.

$$\therefore \quad \frac{CB}{CA} = \frac{Q_1D'}{AQ_1}$$

$$\therefore\ |\ \in\ | = \frac{CB}{CA} \cdot \frac{AQ_1}{OQ_1} = \frac{Q_1D^2}{AQ_1} \cdot \frac{AQ_1}{OQ_1}$$

$$= \frac{Q_1D'}{OQ_1} = \frac{Q_1D'}{P_2A}$$

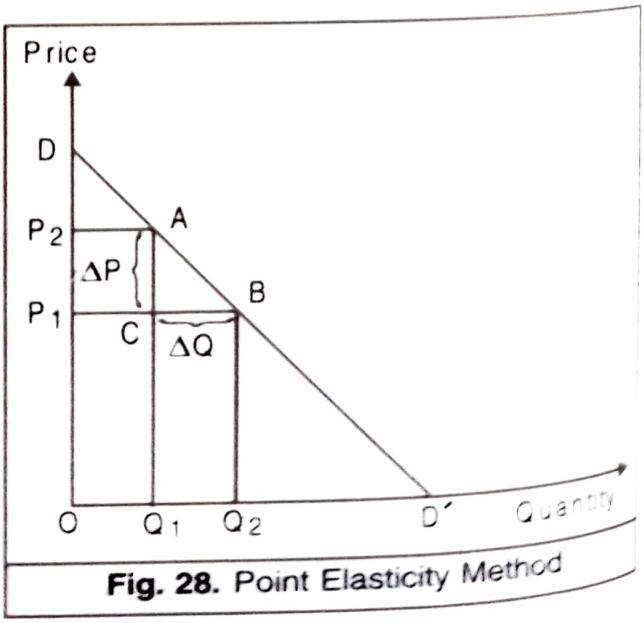

Fig. 28. Point Elasticity Method

Again, $\Delta DP_2 A$ and $\Delta AQ_1 D'$ are similar triangles.

$$\therefore |\in| = \frac{Q_1 D'}{P_2 A} \cdot \frac{AQ_1}{DP_2} = \frac{AD'}{AD}$$

$$\therefore |\in| = \frac{AD'}{AD} = \frac{\text{Lower Segment of the Demand Curve from Point A}}{\text{Upper Segment of the Demand Curve from Point A}} \quad \ldots (1)$$

Now, using formula (1), We can show that the **elasticity of demand varies from zero (0) to infinity ($\propto$) along a negatively sloped demand curve.** In other words, elasticity of demand is not constant along a negatively sloped demand curve. This is explained in Figure 29.

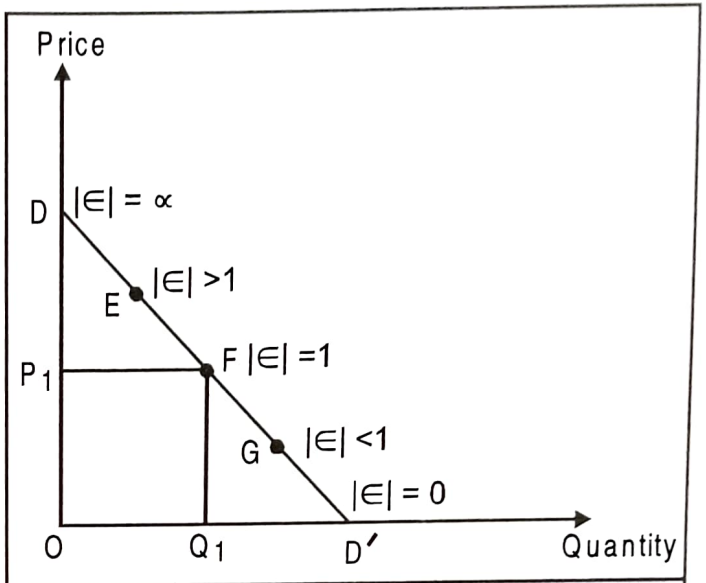

Fig. 29. Elasticity on a Linear Demand Curve

(*i*) At mid-point F, $|\in| = \frac{FD'}{FD} = 1$ ($\because$ FD = FD′)

(*ii*) At point E, $|\in| = \frac{ED'}{FD} > 1$ ($\because$ ED′ = ED)

(*iii*) At point G, $|\in| = \frac{GD'}{GD} < 1$ ($\because$ GD′ < GD)

(*iv*) At point D, $|\in| = \frac{DD'}{O} = \propto$ (infinity)

(*v*) At point D′, $|\in| = \frac{O}{DD'} = 0$ (zero)

Therefore, from (*i*) to (*v*), it is clear that the price elasticity of demand varies from zero to infinity on a linear negatively sloped demand curve.

Price Elasticity of Demand on a Non-Linear Demand Curve

In order to measure the price elasticity of demand on a non-linear demand curve, first we have to draw a tangent to the demand curve at the point concerned and extend the tangent in both directions to touch the axes and then obtain the point elasticity by using the following formula:

$$\text{Elasticity of Demand } (\in) = \frac{\text{The Lower Segment of the Tangent}}{\text{The Upper Segment of the Tangent}}$$

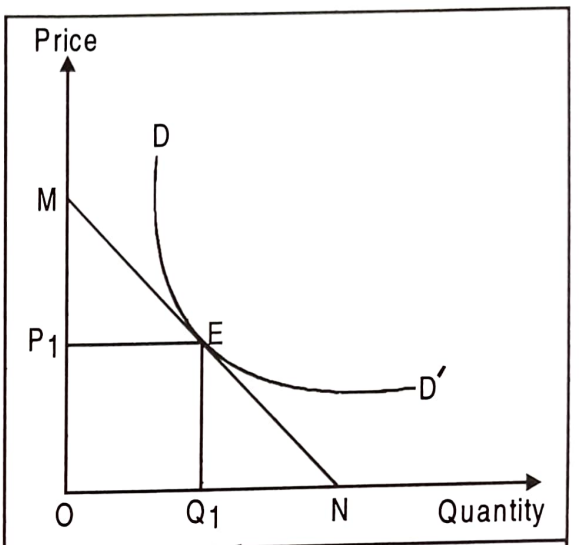

Fig. 32. Elasticity on a Non-Linear Demand Curve.

In Figure 32, DD′ is the non-linear demand curve. We want to measure price elasticity of demand at point E, (where price = OP_1, quantity demanded = OQ_1). A tangent MN is drawn to the demand curve at E and extend it in both directions to touch the price axis at M and quantity axis at N. Therefore, price elasticity at point E.

$$|\in| = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} = \frac{1}{\frac{\Delta P}{\Delta Q}} \cdot \frac{P}{Q}$$

$$= \frac{1}{\text{Absolute Slope of the Demand Curve}} \cdot \frac{P}{Q}$$

$$= \frac{1}{\frac{OM}{ON}} \cdot \frac{OP_1}{OQ_1} = \frac{ON}{OM} \cdot \frac{EQ_1}{P_1E} \qquad \left[\because \begin{matrix} OP_1 = EQ_1 \\ OQ_1 = P_1E \end{matrix}\right]$$

Now, ΔEQ_1N and ΔOMN are similar triangles.

$$\therefore \quad \frac{ON}{OM} = \frac{Q_1N}{EQ_1}$$

$$\therefore \quad |\in| = \frac{ON}{OM} \cdot \frac{EQ_1}{P_1E} = \frac{Q_1N}{EQ_1} \cdot \frac{EQ_1}{P_1E} = \frac{Q_1E}{P_1E}$$

Again, DEQ_1N and DMP_1E are similar triangles.

$$\therefore \quad \frac{Q_1N}{P_1E} = \frac{EN}{EM}$$

$$\therefore \quad |\in| = \frac{EN}{EM} = \frac{\text{The Lower Part of the Tangent}}{\text{The Upper Part of the Tangent}}$$

Arc Elasticity Method

Point elasticity method is used when we want to measure price elasticity of demand at a point on the demand curve. But when the elasticity is measured between two points on the same demand curve, then elasticity method is used.

In Figure 33, DD is the non-linear demand curve. A and B are two distinct points on the demand curve. If we use point elasticity method of computation, we will get one type of answer at point A and another type of answer at point B.

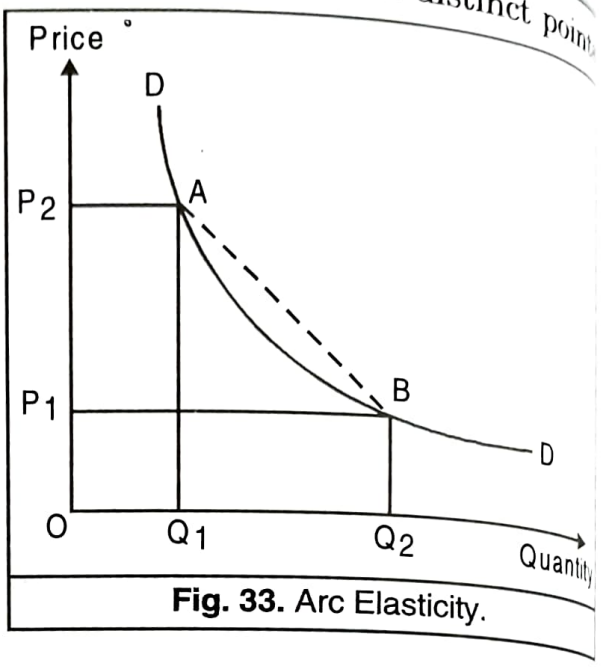

Fig. 33. Arc Elasticity.

When price falls from OP_2 to OP_1

$$|\in| = \frac{\frac{Q_1Q_2}{OQ_1} \times 100}{\frac{P_1P_2}{OP_2} \times 100} = \frac{Q_1Q_2}{P_1P_2} \cdot \frac{OP_2}{OQ_1} \quad ...(i)$$

When price rises from OP_1 to OP_2

$$|\in| = \frac{\frac{Q_1Q_2}{OQ_2} \times 100}{\frac{P_1P_2}{OP_1} \times 100} = \frac{Q_1Q_2}{P_1P_2} \cdot \frac{OP_1}{OQ_3} \quad ...(ii)$$

If we compare between equations (*i*) and (*ii*), we observe that the value of $|\in|$ differs since $\frac{OP_2}{OQ_1} \neq \frac{OP_1}{OQ_2}$ although $\frac{Q_1Q_2}{P_1P_2}$ is common to both.

Thus, the point method of measuring elasticity at two points on the same demand curve gives different value of elasticity of demand as we used a different base in computing the percentage change.

To overcome this problem, elasticity of the arc is calculated by considering the average of the two prices as the initial price and the average of the two quantities as the initial quantity.

The formula for arc elasticity is —

$$\in_{arc} = \frac{\frac{Q_1 - Q_2}{Q_1 + Q_2}}{\frac{P_2 - P_1}{P_2 + P_1}} = \frac{P_2 + P_1}{Q_2 + Q_1} \cdot \frac{Q_1 - Q_2}{P_2 - P_1}$$

Remember :

1. Arc elasticity is negative.
2. If the two points (A and B) are very close to each other, then we get the formula of point elasticity.

INCOME ELASTICITY OF DEMAND

The income elasticity of demand is the degree of responsiveness of demand to the change in (money) income of the consumer. It is defined as the percentage change in demand due to 1% change in income of the consumer, *ceteris paribus i.e.*,

$$\eta = \frac{\% \text{ Change in Demand for a Commodity}}{\% \text{ Change in Income of the Consumer}}$$

$$= \frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta M}{M} \times 100} = \frac{\Delta Q}{\Delta M} \cdot \frac{M}{Q}$$

Where, ΔQ = Change in demand

ΔM = Change in income

Q = Initial quantity

M = Initial income level

The income elasticity of demand may be positive or negative or zero depending on the nature of the commodities.

1. For a **normal commodity,** income elasticity of demand is **positive** ($\eta > 0$). This means that as income increases (decreases) demand also increases (decreases). In this case, the income demand curve is positively sloped as shown in Figure 41. As income increases from OM_1 to OM_2, quantity demanded also increases from OQ_1 to OQ_2.
2. For an **inferior commodity,** income elasticity of demand is **negative** ($\eta < 0$). This means that as income increases (decreases) the demand for

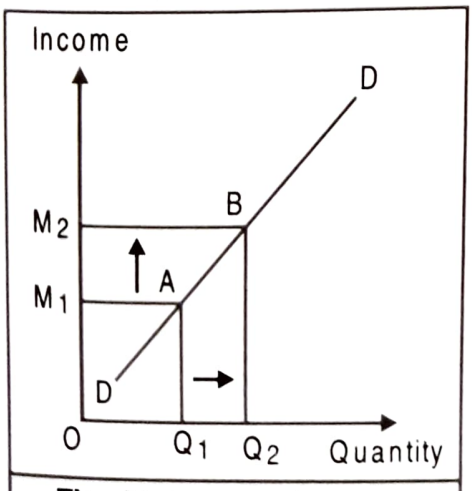

Fig. 41. Income Demand Curve for Normal Goods

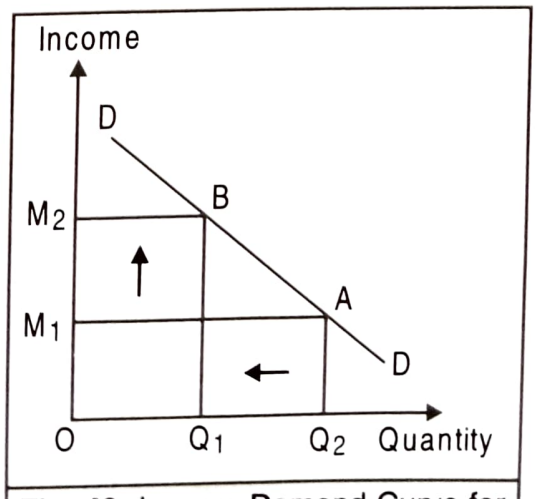

Fig. 42. Income Demand Curve for Inferior Goods

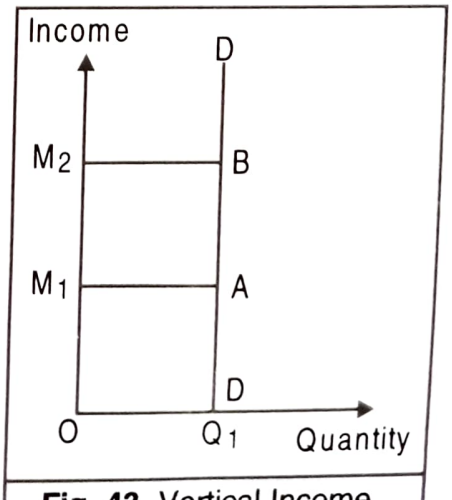

Fig. 43. Vertical Income Demand Curve

inferior goods decreases (increases). **Suppose income elasticity of dema is '– 1.5'. What does it mean ? It means a rise in income by 1 demand for the said commodity decreases by 1.5%.** In this case income demand curve is negatively sloped as shown in Figure 42. As inc increases from OM_1 to OM_2 quantity demanded decreases from OQ_2 to O

3. There are some commodities for which income elasticity is zero ($\eta = 0$). In case, there will be no change in demand due to change in income. The inc demand curve becomes vertical. When income rises from OM_1 to OM_2, quan demanded remains fixed at OQ1.

Again, the commodities having positive income elasticity are of three types :

(*i*) **Income Elastic ($\eta > 1$).** In this case, 1% change in income leads to more th 1% change in demand. The goods for which $\eta > 1$ are called luxury goods.

(*ii*) **Income Inelastic ($0 < \eta < 1$).** In this case, 1% change in income leads less than 1% change in demand. The goods for which income elasticity is positive fraction ($0 < \eta < 1$) are called necessary goods.

(*iii*) **Unit Income Elastic ($\eta = 1$).** In this case, 1% change in income leads just 1% change in demand for the commodity.

Table 10. Income Elasticity and the Nature of the Commodities

Value of Income Elasticity	Nature of Commodities
Positive	Normal
Negative	Inferior
Positive but greater than one	Luxury
Positive but less than one	Necessary

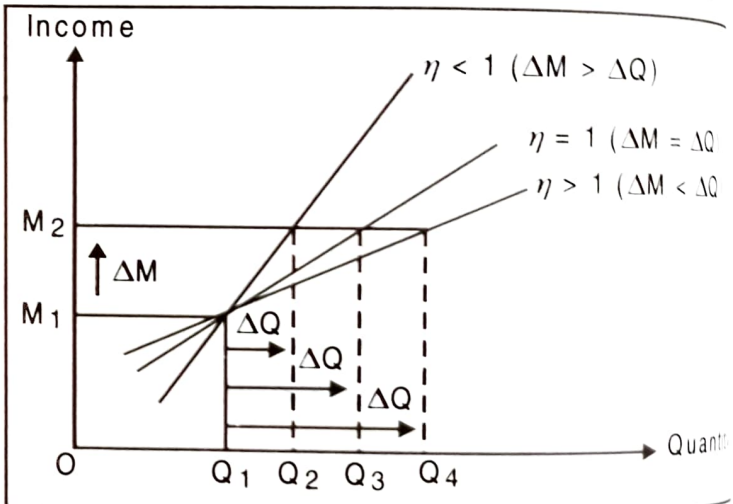

Fig. 44. Income Demand Curve for Different Income Elasticity

CROSS PRICE ELASTICITY OF DEMAND

The effect of change in the price of one commodity on the quantity demanded the other commodity is known as cross price effect. Responsiveness of demand to change in the price of related commodity is termed as cross price elasticity of demand. The related goods maybe either substitutes or complementary goods. It is defined as the percentage change in demand for one commodity due to 1% change in price of a related commodity, *ceteris paribus*.

Suppose, a consumer is consuming two related commodities : commodity-1 and commodity-2. Now, the cross price elasticity of demand for commodity-1 due to change in price of commodity-2 is given by :

$$E_{12} = \frac{\% \text{ Change in Quantity Demanded for Commodity-1}}{\% \text{ Change in Price of Commodity-2}}$$

$$= \frac{\frac{\Delta Q_1}{Q_1} \times 100}{\frac{\Delta P_2}{P_2} \times 100} = \frac{\Delta Q_1}{\Delta P_2} \cdot \frac{P_2}{Q_1}$$

Where, ΔQ_1 = Change in quantity demanded of commodity-1

ΔP_2 = Change in price of commodity-2

P_2 = Price of commodity-2

Q_1 = Quantity of commodity-1

The value of cross price elasticity may be positive or negative or zero. The sign of cross price elasticity will indicate the nature of the relationship between two goods.

1. If $\in_{12} > 0$, it would imply that two goods are **substitute goods,** (e.g., tea and coffee). An increase in the price of one commodity (say, coffee) leads to an increase in demand for another substitute commodity (say, tea). In this case, the cross demand curve becomes positively sloped as shown in Figure 45. When price of coffee increases from P_c to P_c' demand for tea increases from Q_T to Q_T'.

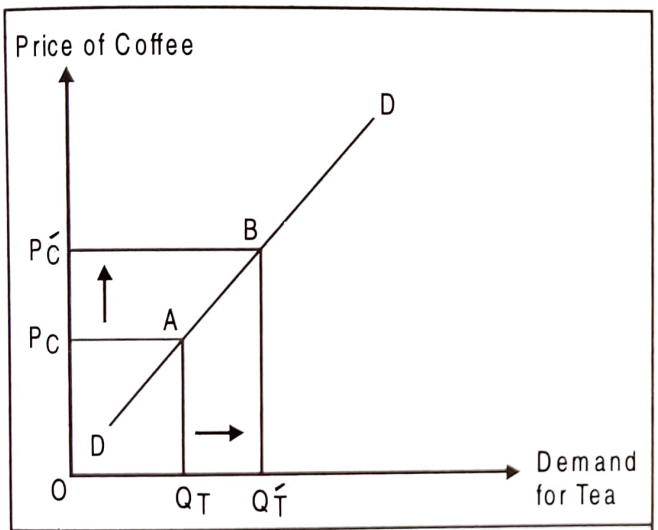

Fig. 45. Cross Demand Curve for Substitute Goods

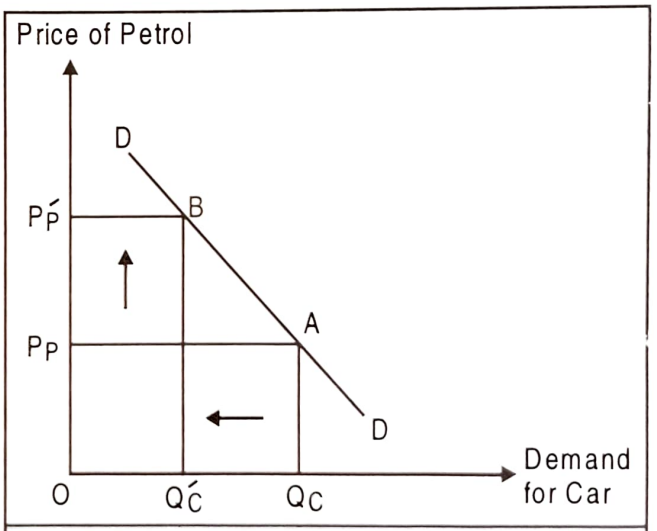

Fig. 46. Cross Demand Curve for Complementary Goods

2. If $\in_{12} < 0$, it would imply that two goods are complementary goods (e.g., car and petrol). An increase in the price of one commodity (say, petrol) leads to a decrease in demand for another commodity (say, car). In this case, the cross price demand curve becomes negatively sloped as shown in Figure 46. When price of petrol rises from P_p to P_p' demand for car decreases from Q_c to Q_c'.
3. If $\in_{12} = 0$, then two goods are **independent** (*i.e.*, **unrelated**). A

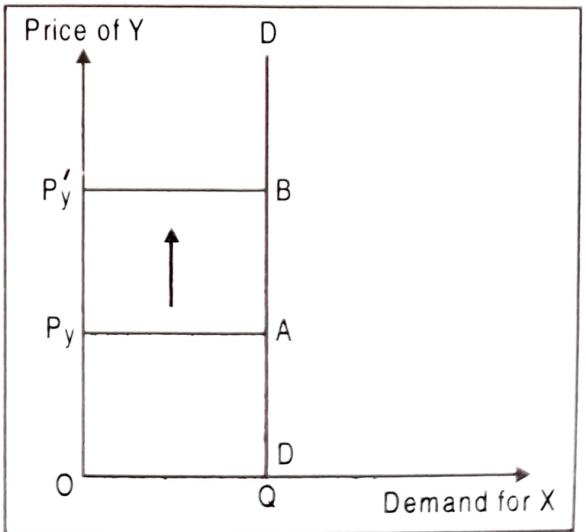

Fig. 47. Vertical Cross Demand Curve

change in price of one commodity will not affect the demand for another commodity. In this case, the cross demand curve becomes vertical.

Table 11 : Cross Price Elasticity and the Nature of the Commodities

Value of Cross Price Elasticity	Relationship between two Commodities
Positive	Substitutes
Negative	Complementary
Zero	No relation

DETERMINANTS OF ELASTICITY OF DEMAND

Elasticity of demand may vary from one commodity to another. This is due to the fact that elasticity of demand depends on the number of factors. The main determinants of price elasticity of demand are the following :

1. **Availability of Substitutes** : The elasticity of demand for a particular commodity depends on the existence of its substitute goods. The demand for commodities having large number of substitutes is highly elastic, because if there is an increase in the price of the commodity, people will start using other commodities. The demand for commodities having no substitute will be inelastic.
2. **Nature of the Commodity**: The elasticity of demand depends on the nature of the commodities. Generally, the demand for necessities (like salt, food) is inelastic and those of comforts and luxuries (like TV, car, refrigerator) are elastic.
3. **Durability of the Commodity** : The demand for durable goods is less elastic than the non-durable (perishable) goods.
4. **Different uses of the Commodity** : Generally, a commodity which has several uses (like electricity) will have elastic demand. On the other hand, a commodity having only one use will have inelastic demand.
5. **The Proportion of Income Spent on the Commodity** : If a small portion of income is spent on commodity, then the demand will be inelastic. On the other hand, if a large portion of income is spent on a commodity, then the demand will be elastic.
6. **Postponement of Consumption** : The demand for commodities whose consumption can be postponed for sometime will obviously have a high elasticity of demand. Again the commodities having no possibility of postponement of consumption will have inelastic demand.
7. **The Price Level** : Generally, the demand for very costly or very cheap goods is inelastic.
8. **The Time Period** : Demand for a particular commodity is inelastic in the short run but elastic in the long run. This is because in the short run, generally demand does not change immediately with the price change. But in the long run demand adjustment is supposed to take place.

Box. 10. Determinants of Price Elasticity of Demand at a Glance

- Availability of substitutes
- Nature of the commodity
- Durability of the commodity
- Different uses of the commodity
- The proportion of income spent on the commodity
- Postponement of consumption
- The price level
- The time period

Table 12 : Factors determining Price Elasticity of Demand

Determinants	Nature of the Determinants	Price Elasticity of Demand
1. Availability of substitutes	(*a*) Many (*b*) Few (*c*) None	(*a*) Relatively elastic (*b*) Relatively inelastic (*c*) Completely inelastic
2. Nature of commodity	(*a*) Necessary (*b*) Luxury	(*a*) Relatively inelastic (*b*) Relatively elastic
3. Durability of the commodity	(*a*) Durable (*b*) Non-durable	(*a*) Relatively inelastic (*b*) Relatively elastic
4. Different uses of the commodity	(*a*) Many (*b*) Few	(*a*) Relatively elastic (*b*) Relatively inelastic
5. Proportion of the income spent on the commodity in consumer's budget	(*a*) Insignificant share (*b*) Significant share	(*a*) Relatively inelastic (*b*) Relatively elastic
6. Possibility of postponing consumption	(*a*) Possible (*b*) Impossible	(*a*) Relatively elastic (*b*) Relatively inelastic
7. Price level	(*a*) High (*b*) Low	(*a*) Relatively elastic (*b*) Relatively inelastic
8. Time	(*a*) Short run (*b*) Long run	(*a*) Relatively inelastic (*b*) Relatively elastic

IMPORTANCE OF THE ELASTICITY OF DEMAND

The concept of elasticity of demand is of great practical importance in economics. These are :

1. **Importance to the Monopolist**: A profit maximising monopolist while fixing the price for his product takes into consideration its elasticity of demand. Monopolist will always operate on the elastic range of the demand curve to maximise his profit. Again, the concept of price elasticity will also help the monopolist to practise price discrimination in the market. A discriminating

monopolist charges a high price in the market with inelastic demand for his product and low price in the market with elastic demand.

2. **Importance to the Finance Minister** : The concept of elasticity of demand is very important to the Finance Minister in fixing the rate of indirect taxes. He must know the elasticity of demand of the product on which the tax is to be imposed. If the objective of the government is to obtain more tax revenue, the government levies taxes on inelastic goods.
3. **Importance in the International Trade** : When two or more than two countries are involved in the international trade, then the gains from trade depends on the elasticity of demand and terms of trade. Thus, the concept of elasticity of demand has great practical importance in analysing international trade. Again, the effects of tariffs also depend on elasticity of demand for exports and imports of the country.
4. **Devaluation Policy** : When a country suffers from adverse balance of payment problems, the government can adopt devaluation policy (i.e., reduce the price of domestic currency) to correct adverse balance of payment problems. Devaluation makes exports cheaper and imports dearer for the country adopting it. But the success of the devaluation policy will depend on the elasticity of demand for exports and imports of the country.
5. **Helping in Deciding Remuneration to Factors** : The concept of elasticity of demand is also important for the determination of rewards for factors of production. If the demand for a factor (say, labour) is highly elastic, then trade union movements will not be able to raise wage rate. If, however, the demand for labour is inelastic, trade union movement can raise the wages of workers.
6. **Oligopoly Market**: In oligopoly market, firms are interdependent in decision-making. In such a market structure the concept of cross price elasticity of demand becomes more important in determining the price structure.
7. **Output Targets** : Income elasticities of demand are used as an important predictive tool. For example, economic planners would be unable to fix the output targets of various goods during a plan period unless they are able to estimate income elasticities of demand for different consumer goods.

Box. 11. Importance of Elasticity of Demand at a Glance

- Importance to the monopolist
- Importance to the Finance Minister
- Importance in the international trade
- Devaluation policy
- Helping in deciding remuneration to factors
- Oligopoly market
- Output targets