Elasticity of Demand

Meaning of Elasticity of Demand

The elasticity of demand measures the responsiveness of the quantity demanded for a good to a change in its price, price of other goods and changes in the consumer's income. Alfred Marshall was the first economist to develop the concept of price elasticity of demand as the ratio of a relative change in quantity demanded to a relative change in price.

Degrees of Price Elasticity of Demand

- Perfectly inelastic demand: The demand curve will be parallel to the y-axis. If the price increases or decreases, the quantity demanded remains fixed, i.e. ed = 0.
- Inelastic demand: The slope of an inelastic demand curve is steep when a large change in the price does not bring about a significant change in the demand, i.e. ed < 1.
- Unit elastic demand: The demand curve will be a rectangular hyperbola as it extends to both axes. Percentage change in the demand is equal to percentage change in the price, i.e. ed = 1.
- Elastic demand: The demand curve is a flat curve when the percentage change in the demand is much greater than the percentage change in price, i.e. ed > 1.
- Perfectly elastic demand curve: The demand curve is parallel to the x-axis. A small change in the price causes an infinitely large change in the amount demanded, i.e. ed ∞ 1.

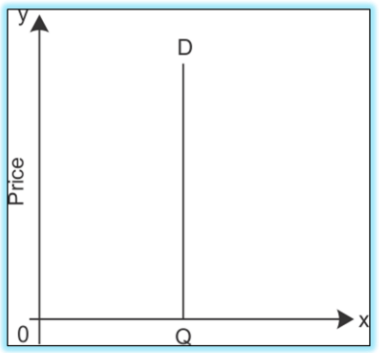

Fig 1: Perfectly Inelastic Demand

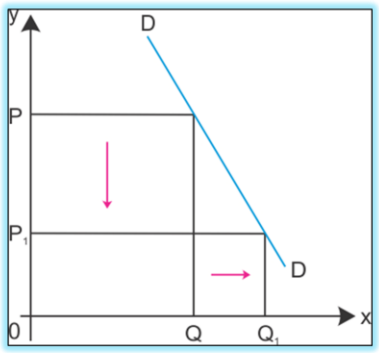

Fig 2: Inelastic Demand

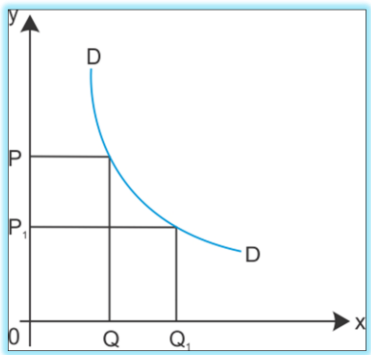

Fig 3: Unit Elastic Demand

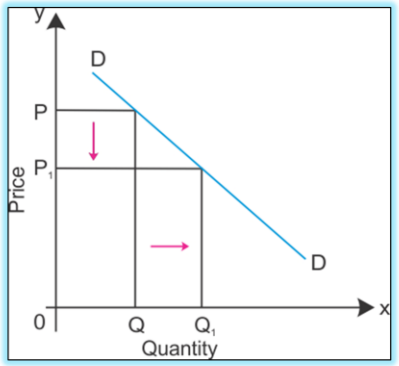

Fig 4: Elastic Demand

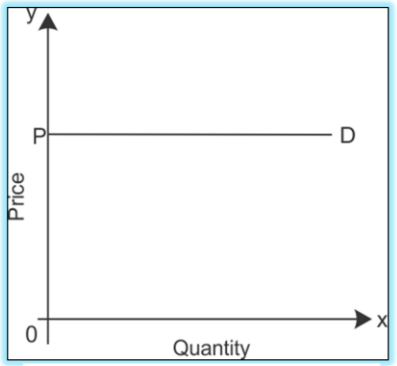

Fig 5: Perfectly Elastic Demand

Factors Affecting Elasticity of Demand

Factors	Nature of the Factor	Elasticity of Demand
• Number of commodity	○ Necessary items ○ Luxury items	○ Relatively inelastic ○ Relatively elastic
• Number of substitutes	○ Many ○ Few	○ Relatively elastic ○ Relatively inelastic
• Variety of uses	○ Many ○ Few	○ Relatively elastic ○ Relatively inelastic
• Income of the purchaser	○ High income group ○ Low income group	○ Relatively inelastic ○ Relatively elastic
• Habit of the purchaser in consuming any commodity	○ Habituated ○ Not habituated	○ Relatively inelastic ○ Relatively elastic
• Durability of the goods	○ Durable ○ Non-durable	○ Relatively inelastic ○ Relatively elastic
• Importance of the commodity in consumer's budget	○ Insignificant share ○ Significant share	○ Relatively inelastic ○ Relatively elastic
• Possibility of postponing consumption	○ Possible ○ Impossible	○ Relatively elastic ○ Relatively inelastic
• Price level	○ High ○ Low	○ Relatively elastic ○ Relatively inelastic
• Time	○ Short-run ○ Long-run	○ Relatively inelastic ○ Relatively elastic

Method of Measurement

Total expenditure method, proportionate method and geometric method are the three different methods to measure the price elasticity of demand.

- The price elasticity of demand for a good is the percentage change in demand for the good divided by the percentage change in its price. Price elasticity of demand is a pure number and it does not depend on the units in which the price of the good and the quantity of the good are measured. Price elasticity of demand is a negative number as the demand for a good is negatively related to the price of a good.
  ep = Percentage change in the demand for the good/Percentage change in the price of the good

$$e_p = \frac{\Delta Q/Q \times 100}{\Delta P/P \times 100} \text{ (or) } e_p = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Where e_p = Price elasticity of demand, ΔQ Change in demand,

ΔP Change in price, Q original demand and P original price.

Absolute changes in price and quantity are measured in original units, whereas relative changes are not based on units of measurement. They are calculated as percentage changes in price and quantity.

- The total expenditure method measures the elasticity of demand. The changes in expenditure with a change in the price of a good are measured by this method. Three possible situations in this method:
  - If a rise or fall in the price of a good has no change in its total expenditure, then the elasticity of demand is unitary.

- If with a fall in the price of a good, the total expenditure increases, and if with a rise in the price of a good, the total expenditure decreases, then the demand for this good is greater than unitary elastic.
- If with a fall in the price of a good, the total expenditure decreases, and if with a rise in the price of a good, the total expenditure increases, then the demand for this good is less than unitary elastic.

Importance of Elasticity of Demand

The concept of elasticity of demand has been applied in a variety of fields in economics such as price setting, wage bargaining, determining the international terms of trade, indirect taxation and devaluation policy.

Types of Elasticity of Demand

- The price elasticity of demand for a good is the percentage change in the demand for the good divided by the percentage change in its price.
  e_p = Percentage change in the demand for the good/Percentage change in the price of the good
- The income elasticity of demand shows the tendency in quantity demanded for any commodity due to one percent change in the money income of the consumer.
  e_d = Percentage change in quantity demanded/Percentage change in money income
- The geometric method measures the elasticity of demand at different points on the demand curve and is also known as the point method of measuring the elasticity of demand.
  e_g = Lower segment of the demand curve/Upper segment of the demand curve
- The cross elasticity of demand measures the responsiveness of demand of a commodity to a change in the price of other related commodity.
  e_c = Percentage change in demand of commodity X/Percentage change in price commodity Y