26th July

UNIT-2

Elasticity of demand.

The term elasticity is defined as a rate of responsiveness the demad of a commodity for a given change in price or any other determinants of demands.

In other words it explains the extent of change in quantity demanded bcoz of a given change in the other determining factors may be price or any other factors.

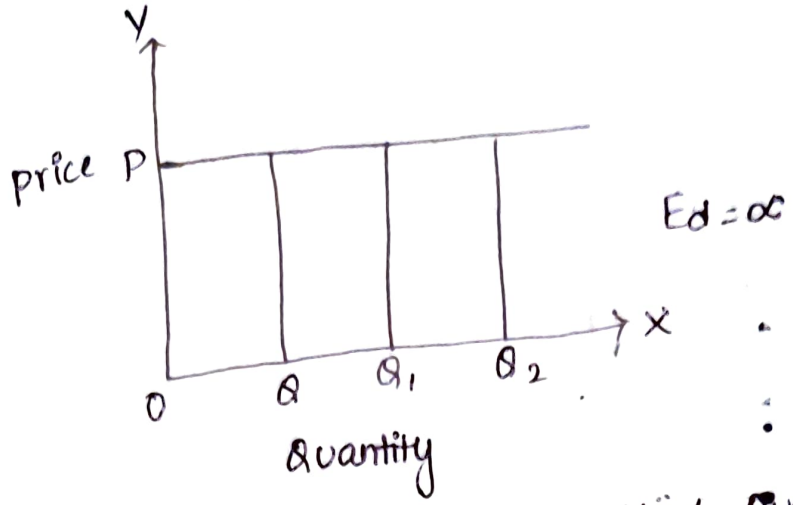
Measurement of elasticity:

The elasticity is measured in foll" ways:-

1. perfectly elastic demand.
2. perfectly inelastic "
3. relatively elastic "
4. " in " "
5. unitary elasticity of demand.

1. Perfectly elastic demand :- when any quantity can be sold at a given price and when there is no need to reduce price, the demand is said to be perfectly elastic.

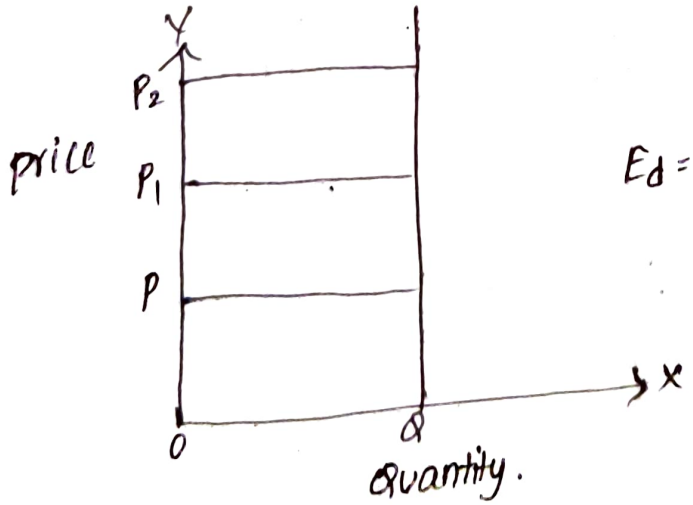
In such a case a small increase in price will lead to complete fall in demand.



In the above diagram it reveals that quantity demanded increase from OQ to OQ1 from OQ1 to OQ2 even though there is no change in price, price is fixed at OP.

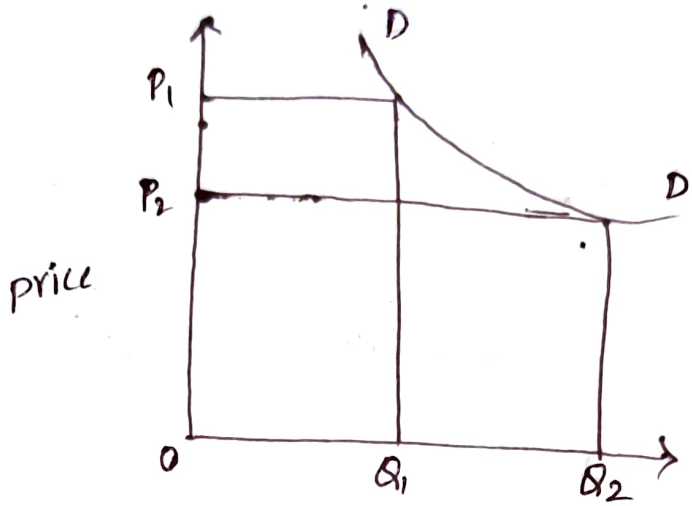
2) Perfectly inelastic demand:

when a significant degree of change in price leads to little or no change in the quantity demanded then the elasticity is said to be perfectly inelastic.



3. Relatively elastic demand :-

The demand is said to be relatively elastic when the change in demand is more than the change in price.



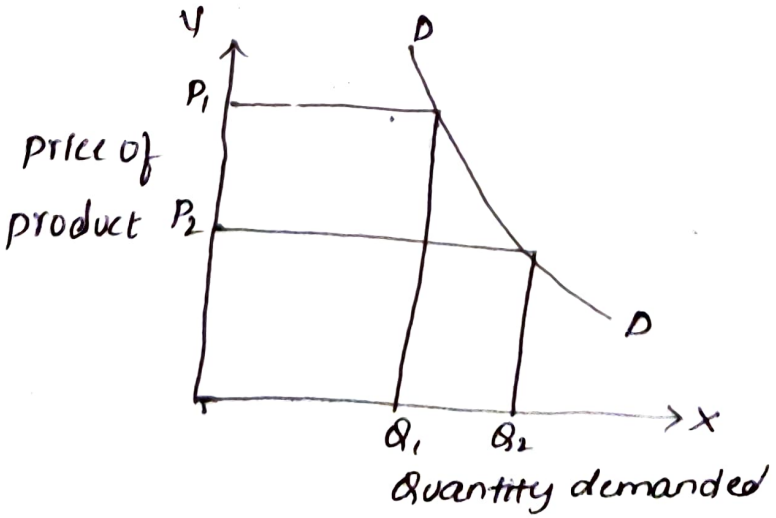
$E_d > 1$.

Above diag. reveals that the quantity demanded ↑ from OQ_1 to OQ_2 bcoz of the ↓ of price OP_1 to OP_2. The extent of ↑ in the quantity demanded is greater than the extent in fall in price.

27th July '10

4) Relatively inelastic demand :-

The demand is said to be relatively inelastic when the change in demand is less than the change in price.

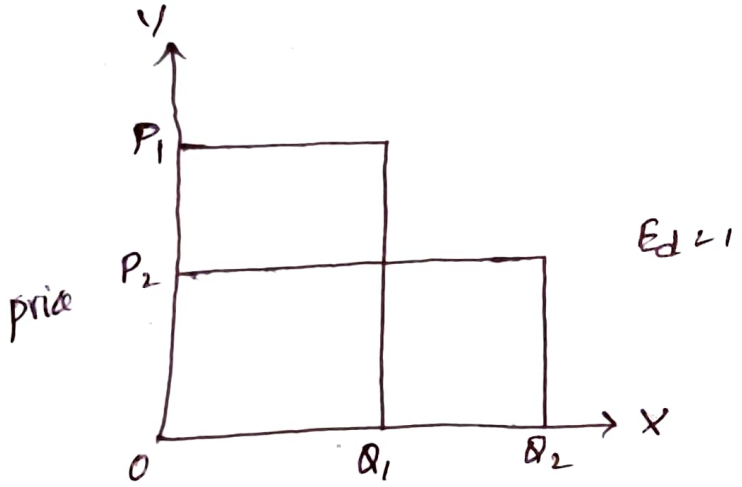


$E_d < 1$

Above diagram reveals that the quantity demanded ↑ from OQ_1 to OQ_2 bcoz of ↓ in price frm OP_1 to OP_2. The extent of ↑ quantity demanded is lesser than the extent of fall in price.

5) Unitary Elasticity:

The elasticity in demand is said to be unitary when change in demand = change in price.



Above diag. reveals that the quantity demanded ↑ frm OQ_1 to OQ_2 bcoz of ↓ in price frm OP_1 to OP_2. The extent of ↑ in quantity demand = the extent of fall in the price.

Types of Elasticity :-

It is defined as a rate of the responsiveness the demand of a commodity for a given change in price or any other determinants of demand.

Stonier & Hague defined elasticity of demand as "elasticity of demand is the degree of responsiveness of the demand for a commodity due to fall in its price."

There are 4 types of elasticity of demand

1) Price elasticity of demand
2) income " " "
3) Cross " " "
4) Advertising " " "

1) Price elasticity of demand :-

It generally refers to price elasticity of demand In other words it refers to the quantity demanded of a commodety in response to a given change in price.

Price elasticity is always negative. which indicates tht the customer tends to buy more with every fall in the price. It is measured as follows.

price Elasticity of Demand = $\frac{\text{proportionate change in quantity demanded for product 'x'}}{\text{proportionate change in price of 'x'}}$

$$Ed_P = \frac{(Q_2 - Q_1)/Q_1}{(P_2 - P_1)/P_1}$$

2) Income Elasticity of demand :-

It refers to the quantity demanded of a commodity in response to a given change in the income of the consumer. Income elasticity is normally +ve which indicate that the consumer tends to buy more & more with every ↑ in Income.

Income Elasticity of demand = $\frac{\text{proportionate change in the Quantity demanded for product 'x'}}{\text{proportionate change in the Income}}$

$$Ed_I = \frac{(Q_2 - Q_1)/Q_1}{(I_2 - I_1)/I_1}$$

3) Cross Elasticity of demand :-

It refers to the quantity demanded of a commodity in response to a change in price of a related good which may be substitute or complement. It is measured as follows.

Cross Elasticity of demand = $\frac{\text{proportionate change in the quantity demanded for product x}}{\text{proportionate change in price of product y}}$

$$E_{dc} = \frac{(Q_2 - Q_1)/Q_1}{(P_{2y} - P_{1y})/P_{1y}}$$

4) Advertising Elasticity :-

It refers to ↑ in the sales revenue bcoz of the change in the advertising expenditure. In other words there is a direct relationship blw the amt of money spent on advertising & its impact on sales. Advertising elasticity is always +ve

Advertising Elasticity of demand = $\frac{\text{proportionate change in quantity demanded for product x}}{\text{proportionate change in advertising cost}}$

$$E_{da} = \frac{(Q_2 - Q_1)/Q_1}{(A_2 - A_1)/A_1}$$

30th July '10

Price Elasticity of Demand :-

Determine the price elasticity of demand given that the quantity demanded for product m is 1000 units at a price of Rs 100. The price declines to Rs 90 and the quantity demanded ↑ to 1500 units.

$$E_{dp} = \frac{(Q_2 - Q_1)/Q_1}{(P_2 - P_1)/P_1}$$

$Q_1 = 1000$ units

$Q_2 = 1500$ units.

$P_1 = 100$

$P_2 = 90$.

$$E_{dp} = \frac{(1500 - 1000)/1000}{(90 - 100)/100}$$

$$= \frac{500/1000}{10/90} = -5.$$

$$= \frac{5}{10} \times 9.$$

$$= \frac{45}{10}$$

$$= 4.5.$$

Since E_{dp} is -5 it means that for a 10% change in price there is a change in demand by 50% where numerical value of elasticity is more than one the demand is elastic.

2) Income Elasticity of demand :-

Determine income elasticity of demand given that the quantity demanded for product m is 1000 units. At a daily income of Rs.100.
The daily income declines to Rs.80 the quantity demand ↓ to 700 units.

$I_1 = 100$ $I_2 = 80$

$Q_1 = 1000$, $Q_2 = 700$ units.

$$E_{dI} = \frac{(700-1000)/1000}{(80-100)/100}$$

$$= \frac{-300/1000}{\frac{-20}{100}}$$

$$= \frac{-300}{1000} \times \frac{100}{-20}$$

$$= 3/2 = 1.5.$$

Since E_{dI} is 1.5 which means that for 20% fall in income there is a ↓ in demand by 15% where the numerical value of elasticity is more than 1. The ~~price~~ income demand is relatively elastic.

Cross elasticity of demand :-

The quantity demanded for coffee is 1000kgs. If the price of sugar is 20RS. If quantity demanded for coffee is 1200 kgs the price for sugar is 30RS.

$Q_1 = 1000kgs \quad Q_2 = 1200kg.$

$P_{1y} = 20 \quad P_{2y} = 30RS.$

$$= \frac{(1200-1000)/1000}{(30-20)/20}$$

$$= \frac{200}{1000} \times \frac{20}{10}$$

$$= 0.4.$$

∴ If E_{dc} is 0.4 it means that for a 33% ↑ in price of sugar there is an ↑ in the demand by 4% where the numerical value of elasticity. is less than 1. The cross demand is relatively inelastic.

Advertising Elasticity :-

Determine the ~~Quantity~~ Advertising elasticity of demand given that the quantity demanded for product m is 1,00,000 units per day at a monthly advertising budget of Rs. 10,000. The monthly advertising budget slashed to Rs. 5,000. The quantity demanded will fall down to 30,000 units per day.

$Q_1 = 1,00,000, \quad Q_2 = 30,000$

$A_1 = 10,000, \quad A_2 = 8000$

$$= \frac{30000 - 1,00,000 / 1,00,000}{5000 - 10000 / 10000}$$

$$= \frac{+70,000}{1,00,000} \times \frac{+10000}{8000}$$

$$= \frac{14}{10} = 1.4.$$

Since Eda is 1.4 it means that for 50% ↓ in advertising budget there is a decrease in demand by 14% where the numerical value of elasticity is the more than 1 the advertising elasticity is relatively elastic.

✱ Factors Governing Elasticity of demand :- ✱

Elasticity is governed by a no. of factors. change in any one of these factors is likely to effect the elasticity of demand. The factors are.

1. Nature of product.

Based on the nature the products & services are classified into necessities, comfort & luxuries.

Necessaries imply the absolute (or) basic necessities such as food, cloth, shelter. comfort refers to TV, Refrigirators & other electronic Goods. Luxuries we mean sofasets, marble flooring etc.

The nature of product has a significant on the elasticity of demand for instants if there is an ↑ in the price of rice we still buy it bcoz it is necessary for us. This means that the demand is inelastic to price.

2. Time Frame :. → Subsidy - inelastic.
3. Degree of Postponement
4. No of alternative uses.
5. Taste & preferences of the consumer.
6. Availability of close substitutes. → elastic demand.
7. Level of prices.
8. Availability of subsidies.
9. Expectations of prices.
10. ~~Avail~~ Durability of product
11. Govt. Policy.

Significance of Elasticity of demand :-

The concept of a elasticity is very useful to the producers & policy makers. It is very valuable to decide the extent of ↑ or ↓ in price for a desired change in quantity demanded. for the product & services in the firm or economy The follⁿ are its applications :-

1. To fix the prices of factors of productⁿ
   land, labour, Capital & Technology.
2. To fix the prices of goods & services provided rendered.
3. To formulate or ~~device~~ administrate Govt. policies.
4. To forecast demand.
5. To plan the level of o/p & price.
6) ~~Helps~~ in Decision makings

Demand Forecasting :-

Accurate demand forecasting is essential for a firm to enable it to produce the req. quantities at the right tym & arrange well in advance for the various factors of production plan viz raw materials, equipment, machine accessories, labour, buildings etc.

Demand forecasting is also helpful in better planning & allocation of resources

* The results of demand forecasting guide the enterprenuer to set up their business / industrial activities accordingly.
* The macro policies such as export & import & ~~physical~~ fiscal policies can be designed based on result of demand forecasting.
* ~~with~~ There is a lot of competition the enterprenuer has to estimate the demand for product & services so that he can plan his material i/p's such as man power, machine condn, materials, & money, material
* In India the services of national council of applied economic research (NCAER) are very valuable in terms of demand estimates.
* NCAER estimates the probable demand for both industrial & consumer goods at national & regional levels. These estimates guide the enterprenuer to plan their production.

Types of Forecast :-

1. Short Run forecast - 1 year.
2. Long Run forecast - 5, 10, 20 years.

Forecasting levels :-

1. Macro Level (or) National level.
2. Industrial Level ~~(or) national level~~
3. Firm level.

1. Macro Level (or) National level :-

Macro (or) national level forecast is for the whole economy. National level forecast are work out based on levels of income, savings of the consumer

2) Industrial Level :

The total estimation of diff. rate association can also be viewed as industry level.

3) Firm level : Forecasting firm level means estimating the demand for the product & services offered by a single firm.

what constitutes a scientific approach to forecasting ?.

The following steps constitutes a scientific approach to demand forecasting

✱ STEPS in Scientific Demand Forecasting ✱

1. Identify & state the objectives of forecasting clearly.
2. Select appropriate method for forecasting.
3. Identify the variables affecting the demand for product & services.
4. Express these variables in appropriate form.
5. Collect the relevant data.
6. Determine the variables dependent & independent
7. Make appropriate assumptions.
8. Make alternative forecast for implementatn.

2nd Aug '10

✱ Methods of Demand Forecasting :- ✱

There are many methods of forecasting demand. To forecast demand we need to built certain base of informatn. to built such an informatn base we need 2 consider

a) what the customer says
b) what the customers do.
c) How the customers behave.

The foll are the methods of demand forecasting

1) Survey Method :-

a) Survey of buyer intentions.

* census method
* sample method.

b) Sales force opinion Method.

2) Statistical Method.

a) Trend Projection Method

* Trend line by observation.
* Least Square Method.
* Time Series analysis.
* Moving averages Method.
* Exponential Smoothing.

b) Barometric Techniques

c) Simultaneous Method

d) correlation & regression Method.

3) Other Methods :-

a) Expert opinion Method

b) Test Marketing

c) Controlled Experiments.

d) Judgemental approach.

Survey of Buyer intention Method:

In survey Method to avoid tym, cost, risk & get accurate soln for the given problem survey method will be helpful in accorder to reduce tym, cost & risk. The survey can be done on 2 methods i.e

* census method * Sample method.

The census method means taking a group as a whole where as a sample method is taken from one of the group which represents that group.

Survey of buyer intention: To know behaviour of a consumer & his intention in buying a product will be done on survey of buyer intention. In survey of buyer intention we will take for data collection both methods i.e census & sample methods

b) Sales force opinion method:-

Another source of gtng reliable informatn abt the possible levels of sales or demand for given product of service is the group of people who sell the same. Thus we can ctrl the limitation of cost & in delaying contacting customer.

Statistical Methods :-

For forecasting the demand for goods & services in the long run statistical & mathematical methods are used considering the past data.

6th Aug '10

a) Trend projection Method :-

These are generally based on analysis of past sales patterns or records.

i) Trend line by observation :- This method of forecasting trend is elimentary easy n quick as it involves merely the plotting the actual sales data on chart & then estimating just by observation where the trend line lies

ii) Least Square Method :- $S = x + y(t)$ $\Sigma S = Nx + y\Sigma T$

$\Sigma ST = x\Sigma T + y\Sigma T^2$

certain statistical formula are used here to find the trend line which best fits the available data

iii) Time series Analysis :- where the surveys (or) market test are costly & tym consuming statistical & mathematical analysis of past sales data offers another method to forecast i.e tym series analysis.

iv) Moving Average Method :-

This method considers that the avg of past events determine the future events.

v) Exponential Smoothing :-

This is a more popular technique used for short run forecast. This method is an improvement of moving averag method.

b) Barometric Technique :-

where forecasting based on tym series analysis may not yield significant results. Barometric techniques can be made use of :-

Under the Barometric technique, one set of data is used to predict another set.

c) Simultaneous Method :-

In this method all variables are simultaneously considered with the convection that every variable influences the other variables in an economic environment.

d) Correlation & Regression method :-

correlation describes the degree of association b/w

two variables such as Sales & advertisement expenditure. when the two variables tend to change together then they are said to be corelated.

In Regression Analysis an equation is estimated which best fits in the sets of observation of dependent & independent variables.

Other Methods

Expert opinion Method:-

well informed persons are called experts who have thorough knowledge on all disciplines & experience is known as expert. These experts constitutes yet another source of informat

b) Test Marketing:- It is likely that opinions given by buyers, salesmen & other experts may be at times, misleading this is the reason why most of the manufactures ~~forget~~ favour to test a product of service in a limited market as test run before the launch their products nationwide.

c) controlled Experiments :-

controlled experiments refer to such exercises where some of the major determinants of demand are manipulated to suit to the customers with different taste & preferences, income goods and such others. It is further assumed that all other factors remain the same in this method. the product is introduced with different packages, diff prices in diff markets to access which combination appeals to the customer most

d) Judgemental approach :-

when none of the above methods are directly related to the given product of service, the management has no alternative other than using its own judgement

Q. 2. ***Explain the Law of Demand and point out its assumptions.***

OR

State the Law of Demand. Why do demand curves slope downwards to the right? Are there any exceptions to it?

OR

State and explain the theory of demand. Point out the circumstances under which it does not hold good.

[Very Important]

The Law of Demand denotes the quantitative relationship between the quantity demanded of a commodity and its price. It explains the inverse

tionship between quantity of a commodity and its price.

The Law is based on an important assumption namely "Other conditio
aining constant". That means this law assumes other conditions like
ilability of substitutes or complementaries, consumer's tastes and fashions,
ome, price etc., remain constant. If these conditons change, this law does
t hold good.

ssumptions of the Law of Demand :

1. Tastes and Preferences : The Law of Demand assumes that
nsumer's tastes and preferences remain the same. If consumer's tastes and
eferences change, quantity demanded of a commodity by the consumers
so change.

2. Population : Constancy in population is another assumption of the
aw of demand. In fact population and demand are directly related to each
ther. Demand for a commodity will be great, when population of a country
ncrease. Similarly when the size of population is low, demand for commodities
lso remains less.

3. Discovery of substitutes : Discovery of substitutes influence the quantity demanded of a commodity. Demand changes whenever a new substitute product is discovered. The law of demand assumes that no new substitutes are discovered in the market.

4. Income : Demand and income are directly related to one another. Consumers purchase more quantity of a commodity with a rise in their income. Similarly they reduce their demand for a commodity when their income falls. The law of demand assumes constancy in income.

5. Weather conditions : Change in weather and season also affect the demand for a commodity. For example people demand cool drinks during summer and hot drinks in winter. The law of demand assumes constancy in weather conditions.

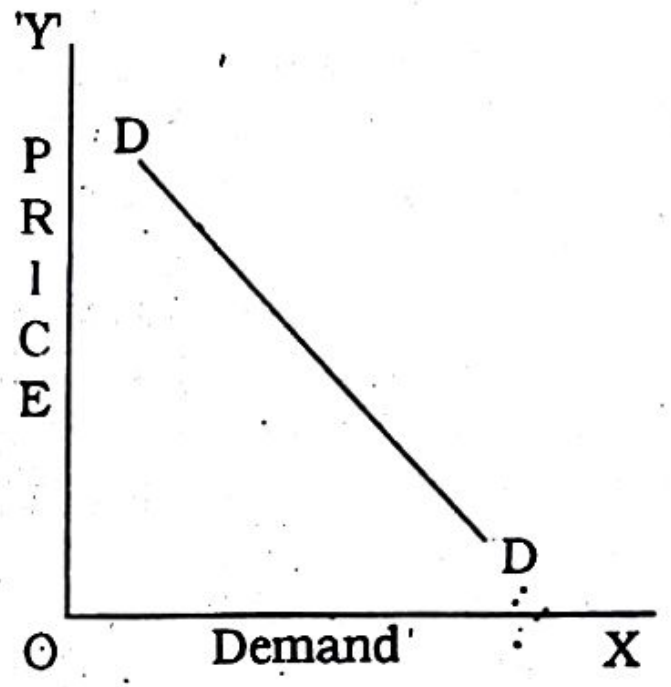
6. Prices of other goods : Demand for a good also depends on the price of other goods. These goods may be substitutes or complementaries. Tea and coffee are an example of substitutes. If price of tea increases, the demand for coffee rises even though the price of the latter remains unchanged. Similarly, car and petrol are considered complementaries. When price of cars decrease, the demand for petrol increases as new consumers buy cars and demand petrol for using their vehicles. A change in the price of other goods affects the demand of a good. This law assumes that prices of related goods do not change.

Demand function : The law of demand denotes the functional relationship between quantity demanded and the price of a commodity. This may be explained with the help of the following equation :

Price of coffee (in Rs.)	Demand for coffee (in Pounds)
5	10,000
4	20,000
3	30,000
2	50,000

The above Demand schedule denotes that more quantity of coffee is purchased when price is low.

Diagramatic representation : The above demand schedule can be represented in the following diagram :



In the diagram quantity demanded of a commodity is shown along OX axis and Price on 'Y' axis. DD is the demand curve. It slopes downwards from left to right. It denotes that a consumer purchases more quantity of a commodity at lower prices and less quantity at highe prices.

Why demand curve slopes downwards ? The demand curve always slopes downwards from left to right. This is due to the fact that demand increases when price falls and decreases when price rises. there are several other reasons or causes for the downward slope of the demand curve. They are mentioned as follows :

1. New buyers : When price is high, only a few poeple can buy a commodity. When price falls, people who could not buy upto now can also buy the commodity.A fall in the price of a commodity encourages new persons to buy it. As a result demand for it increases.

2. Income effect : Demand curve slopes downwards due to the

POINTS TO REMEMBER

1. The law of demand denotes the relationship between quantity demanded of a commodity and its price. It is based on the assumption 'other conditions remaining constant'.

2. The law is based on several assumptions (a) constancy in tastes, population, income and prices. (b) absence of substitutes.

3. Demand function explains the functional relationship between quantity demanded and price of a commodity. Demand schedule represents a table containing the different quantities of a commodity purchased at different prices.

4. Demand curve slopes downwards from left to right. This is due to the influence of several factors. These factors are, a) new buyers, b) income effect, c) substitution effect, d) different uses of a commodity.

income effect. When the price of a commodity falls, the consumers get that commodity by paying less amount of money. Their money is saved to some extent. As a result, they can get more units of the same commodity with the same amount. This is known as income effect.

3. Substitution effect : Substitution effect is another cause for the downward slope of the demand curve, Let us suppose that coffee and tea are close substitutes. When the price of coffee rises, the demand for tea increases. People reduce their demand for coffee and buy tea as tea became relatively cheaper. They substitute tea for coffee.

4. Different uses : Demand curve slopes downwards because of the diferent uses of a commodity. Certain commodities like electricity, sugar, wheat etc., have different uses. For instance, electricity can be used for domestic lighting, for running business enterprises or for street-lighitng purposes. When the price of electricity is high, people use if for limited purposes only. When its price decreases, they use it for even minor purposes like heating water, cooking food etc. As a result, the demand for electricity intereases to a great extent.

Thus, the demand curve slopes downwards from left to right due to the above mentioned reasons.

Exceptions of the Law of Demand : The Law of Demand is not applicable under certain conditions. It has the following exceptions :

5. The law of demand has several exceptions. It is not applicable to prestige goods and essential commodities. It is also not applicable in the case of speculation activities.

1. Prestige goods : The Law of Demand is not applicable in the case of prestige goods. Rich persons buy these goods for maintaining their prestige, status and dignity in society. Diamonds, pearls, gold etc. are some examples of prestige goods. Even though these goods do not possess use – value, they carry prestige value. The demand for these goods increases when their price rises and decreases whentheir price falls. Rich persons buy more quantity of these goods at higher prices. They hesitate to buy them at lower prices, because they feel that everybody can buy these goods at lower prices. So, this is against the Law of Demand.

2. Giffen Paradox : This exception of the Law of Demand was explained by Sir Robert Giffen. He explained this paradox on the basis of the consumption behaviour of the British people. He stated that people demand more quantity of inferior goods when their price increases. He described this paradox with the help of two essential commodities used by the Britishers. The two commodities are potatoes and meat. He considered that the Britishers spent a major portion of their income on potatoes and a less portion on meat. When the price of potatoes increase, they buy less quantity of meat by spending less amount of money. They spend this amount for buying more quantity of potatoes. So the demand for potatoes increases. This is against the Law of Demand.

3. Speculation : The Law of Demand is not applicable in the case of speculative activities and speculative goods. Businessmen consider it profitable to buy more quantity of goods eventhough the prices increase. They speculate a further rise in prices in the immediate future. Similarly if they expect any fall in the prices of goods, they like to reduce the demand for various goods as it is not profitable to buy more quantity of goods at falling prices. Such a tendency of business people in speculative activities is an exception to the Law of Demand.

Factors Governing Elasticity of demand :-

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1. Nature of product.

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3. Firm level:

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Macro (or) national level forecast is for the whole economy. National level forecast are work out based on levels income, savings of the consumer

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The total estimation of diff. rate association can also be viewed as industry level.

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4th Aug '10

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* Time Series analysis

* Moving averages Method.

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b) Barometric Techniques

c) Simultaneous Method

d) correlation & regression Method.

3) Other Methods :-

a) Expert opinion Method

b) Test Marketing

c) Controlled Experiments.

d) Judgemental approach.

ELASTICITY OF DEMAND

Q. 1. ***Define Elasticity of Demand. How do you measure it?***

OR

Explain the meaning of Elasticity of Demand. Describe the methods of measuring it with suitable diagrams.

[Very Important]

The Law of Demand explains that demand for a commodity increases with a fall in price and decreases with a rise in price. But it does not explain the exact change in the demand for commodities due to the changes in their prices. Due to a change in price, the demand for some commodities may increase to a great extent. Demand may change slightly in the case of other commodities. Hence changes in demand for all commodities are not same. The proportionate change in demand for a commodity due to a proportionate change in its price is known as elasticity of demand. Elasticity of demand expresses the quantitative relationship between two variables, demand and price.

Definition of Elasticity of Demand :

Stonier and Hague : "Elasticity of Demand is the degree of responsiveness of the demand for a commodity due to a fall in its price".

Measurement of Elasticity : Altogether there are four methods available for measuring Elasticity of demand. They are : 1) Percentage method; 2) Total outlay method, 3) Arc method, 4) Geometric method.

1. Percentage method : The comparison between the percentage change in price and percentage change in quantity demanded of a commodity

is known as percentage method. Elastici
method, is measured through the followin

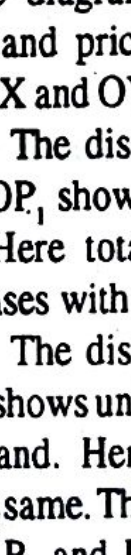
$$Ed : \frac{\text{Percentage change in the de}}{\text{Percentage change in the p}}$$

If the co-efficient is one, it is called
is less than one, it is called inelastic dema
one, it is called elastic demand.

This is also explained in another
price and percentage change in demand ar
When the percentage change in demand is
in price, it is called elastic demand. When
is less than the percentage change in price

2. Total outlay method : Under thi
or expenditure and change in the price are
of demand. If the total expenditure rema
increased or decreased, it is known as unitar
decreases due to a fall in price, it is call
expenditure increases due to a fall in price
may be explained from the following diag

In the side diagram total expenditure and price are shown along OX and OY axes respectively. The distance from OP to OP_1 shows elastic demand. Here total expenditure increases with a decrease in price. The distance from P_1 to P_2 shows unit elasticity of demand. Here total expenditure is same. The distance between P_2 and P_3 denotes inelastic demand. Here total expenditure is falling.



Total outlay or expenditure method
is also explained with the following table

Price (Rs.)	Quantity demanded	Total expenditure (price x quantity)	Nature of Elasticity
Rs. 4/-	1,000	Rs. 4,000/-	Elastic demand
Rs. 3/-	4,000	Rs. 12,000/-	
Rs. 2/-	6,000	Rs. 12,000/-	Unitary elasticity
Rs. 1/-	8,000	Rs. 8,000/-	Inelastic demand

Elasticity of demand as shown in the above table, is elastic between Rs. 4/- and Rs. 3/- since total expenditure has increased from Rs. 4,000/- to Rs. 12,000/-. Elasticity of demand is said to be unitary between Rs. 3/- and Rs. 2/- since total expenditure remains same even after changes in price. Lastly elasticity of demand is inelastic since the total expenditure has fallen from Rs. 12,000/- to Rs. 8,000/- due to a decrease in price from Rs. 2/- to Rs. 1/-.

3. Arc Elasticity : This method is used to measure elasticity between two points on a demand curve. Any two points on a demand curve make an arc. The following equation is used for measuring elasticity under this method :

$$Ed. = \frac{\text{Change in demand}}{\text{Initial demmand + Present demand}} \div \frac{\text{Change in price}}{\text{Initial price + Present price}}$$

If the quotient is one, elasticity of demand is unitary or equal to one. If the quotient is greater than one, elasticity of demand is relatively elastic. If the quotient is less than one, elasticity of demand is relatively elastic. Arc elasticity of demand may be explained from the following example :

Price	Demand
Rs. 20/-	4,000 units
Rs. 4/-	20,000 units

In the above example change in price is Rs. 16/- (Rs. 20 Rs.4/-). Initial price is Rs. 20/- and present price is Rs. 4/-. Initial demand is 4,000 units. Present demand is 20,000 units. Change in demand is 16,000/- units. According to the above equation, elasticity of demand is :

16,000 / (4,000 + 20,000) ÷ 16 / (20+4)

16,000 / 24,000 ÷ 16/24

16,000 / 24,000 $ 24 / 16 = 1

POINTS TO REMEMBER

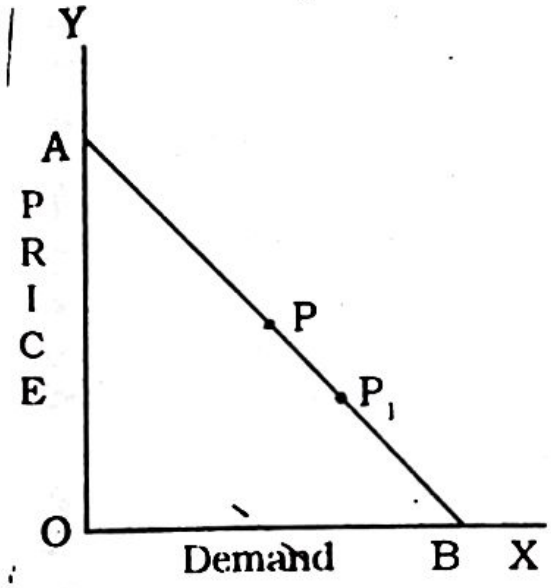
1. Elasticity of demand is an important concept in Economics. It denotes the quantitative relationship between demand and price of a commodity.

2. There are four methods of measuring elasticity of demand. They are (a) Percentage method, (b) Total outlay method, (c) Arc method, (d) Geometric method.

3. Percentage method makes a comparison between the percentage change in price and change in quantity demanded of a commodity. Total outlay method is based on the total expenditure incurred by a consumer for buying different quantities of a commodity. Arc method is used for measuring elasticity between two positions on a demand curve. Geometric or point method is employed for measuring elasticity at any point on the demand curve.

Hence elasticity is equal to one.

4. Geometric method or Point method : The measurement of elasticity at any point on the demand curve is known as geometric method or point method. This method is diagramatically explained as follows :



As shown in the side diagram, demand and price are represented along OX and OY axis respectively. AB is the demand curve. It represents the different points of elasticity between A and B. Elasticity of demand is different at different points on the demand curve AB. 'P' and 'P_1' are the two points on AB.

If we want to measure the elasticity at point P, we have to use the following equation :

Point elasticity :

$$\frac{\text{Distance from the lower segment}}{\text{Distance from the upper segment}}$$