C3A(19)

ECO201

Law of Demand: Schedule, Curve, Function, Assumptions and Exception

Definition: Demand is an economic term that refers to the amount of products or services that consumers wish to purchase at any given price level. The mere desire of a consumer for a product is not demand. Demand includes the purchasing power of the consumer to acquire a given product at a given period. In other words, it's the amount of products or services that consumers are willing and able to purchase.

The law of demand describes the relationship between the quantity demanded and the price of a product.

It states that the demand for a product decreases with increase in its price and vice versa, while other factors are at constant.

Therefore, there is an inverse relationship between the price and quantity demanded of a product.

Demand is a dependent variable, while price is an independent variable.

Therefore, demand is a function of price and can be expressed as follows:

$D = f(P)$

Where

D= Demand

P= Price

f = Functional Relationship

In the law of demand, other factors of demand (except price) should be kept constant as the demand is subject to various influences. If all the factors would be allowed to vary at the same time, this may counteract the law. The law of demand can be understood with the help of certain concepts, such as demand schedule, demand curve, and demand function.

Demand Schedule:

Demand schedule refers to a tabular representation of the relationship between price and quantity demanded. It demonstrates the quantity of a product demanded by an individual or a group of individuals at specified price and time.

Demand schedule can be categorized into two types, which are shown in Figure-2:

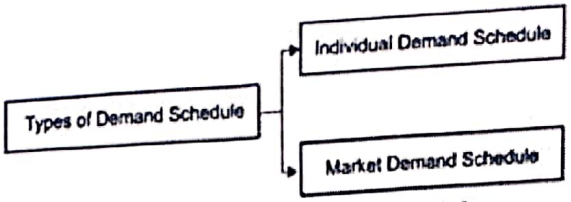


Figure-2: Types of Demand Schedules

The two types of demand schedules (as shown in Figure-2) are explained as follows:

i. Individual Demand Schedule:

Refers to a tabular representation of quantity of products demanded by an individual at different prices and time.

Table-1 shows the individual demand schedule of product a purchased by Mr. Ram:

Table-1: Individual Demand Schedule	
Price of A (per kg in ₹)	**Quantity Demanded (per week in kgs)**
10	15
15	10
20	8
25	4
30	2

Following are the characteristics of individual demand schedule:

a. Demonstrates the effect of changing price on the buying behavior of customers rather than change in the demand for a product

b. Expresses the disparity in demand with the difference in the product's price

c. Represents that at higher prices the quantity demanded reduces and vice versa

ii. Market Demand Schedule:

Shows a tabular representation of quantity demanded in aggregate by individuals at different prices and time. Therefore, it demonstrates the demand of a product in the market at different prices. The market demand schedule can be derived by aggregating the individual demand schedules.

Table-2 represents the market demand schedule prepared through the individual demand schedule of three individuals:

Table-2: Market Demand Schedule				
Price of A (per unit in ₹)	Individual Demand (per day)			Market Demand (per day)
	X	Y	Z	
4	1	3	4	8
3	3	4	5	12
2	4	5	6	15
1	5	9	9	23

Market demand schedule also demonstrates an inverse relation between the quantity demanded and price of a product.

Demand Curve:

Demand curve shows a graphical representation of demand schedule. It can be made by plotting price and quantity demanded on a graph. In demand curve, price is represented on Y-axis, while quantity demanded is represented on X-axis on the graph. R.G Lipsey has defined demand curve as "the curve which shows the relationship between the price of a commodity and the amount of that commodity the consumer wishes to purchase is called Demand Curve."

Demand curve can be of two types, namely, individual demand curve and market demand curve. Individual demand curve is the graphical representation of individual demand schedule, while market demand curve is the representation of market demand schedule.

Figure-3 shows the individual demand curve for the individual demand schedule (represented in Table-1):

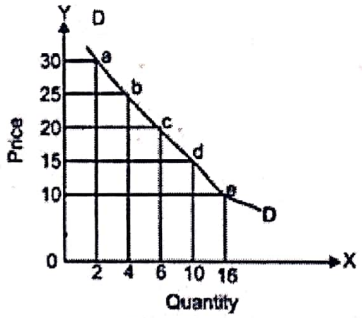


Figure-3: Individual Demand Curve

In Figure-3 points a, b, c, d, and e demonstrates the relationship between price and quantity demanded at different price levels. By joining these points, we have obtained a curve, DD, which is termed as the individual demand curve. The slope of an individual demand curve is downward from left to right that indicates the inverse relationship of demand with price.

The market demand for product P can be determined by adding the individual demand schedules, as shown in Table-5:

Table-5: Determination of Market Demand					
Price of P (per unit in ₹)	Individual Demand (per day)				Market Demand (per day)
	Ram	Shyam	Sharad	Ghanshyam	
30	2	3	1	3	9
25	4	5	4	4	17
20	6	8	6	6	26
15	7	9	7	8	31

The market demand curve for product P is shown in Figure-6:

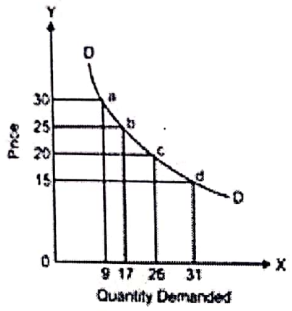


Figure-6: Market Demand Curve for Product P

In Figure-6, the DD curve represents the demand curve of product P.

Demand Function:

A function can be defined as a mathematical expression that states a relationship between two or more variables containing cause and effect relationship. Similarly, demand function refers to the relationship between the quantity demanded (dependent variable) and the determinants of demand for a product (independent variables). In other words, demand function states the influence of various factors of demand, such as price, customer's income and habits, and standard of living, on the demand of a product.

In the short run, the demand function states the relationship between the aggregate demand of a product and the price of the product, while keeping other determinants of demand at constant.

In such a case, the demand function can be expressed as follows:

$Dx = f(Px)$

Where, Dx= dependent variable

Px = independent variable

It can be interpreted from the preceding equation that quantity demanded (Dx) is the function of price (Px) for product X. This states that if there is any change in the price of product X, then the demand of product X would also show changes. However, the demand function does not interpret the amount of change produced in demand due to change in the price of the commodity.

Therefore, to understand the quantitative relationship between demand and price of a commodity, we use the following equation:

$Dx = a - b\ (Px)$

Where a = constant (represents total demand at zero price)

$b = \Delta D/\Delta P$ (constant, which represents the change in Dx produced by Px)

On the other hand, in the long run, demand function shows a relationship between the aggregate demand of a product and a number of determinants of demand, such as price, consumer's income, standard of living, and price of substitutes.

Example

XYZ Organization has launched product D at the price of Rs. 20 per unit. With the increasing demand of product D, its price has reached to Rs. 25. The change in demand for the product is noticed to be 10 per week. After that, the price continuously with the increase in demand at the same rate and has reached to Rs. 35.

Determine the following for product D (taking a = 100):

i. Demand Function Equation

ii. Demand Schedule

iii. Demand Curve

Solution:

i. The demand function for product D can be expressed as follows:

$D_D = a - b\ (Pd)$

Where, a = 20

$b = \Delta D/\Delta P$

$b = 10/5$

$b = 2$

Therefore, the demand function would be:

$D_D = 20 - 2\ (P_D)$

ii. The demand schedule for product D is shown in Table-7:

Table-7: Demand Schedule for Product D		
P_x	$Dx = 100 - 2 (P_x)$	D_x
20	100 - 2 (20)	60
25	100 - 2 (25)	50
30	100 - 2(30)	40
35	100 - 2(35)	30

iii. The demand curve for product D is shown in Figure-9:

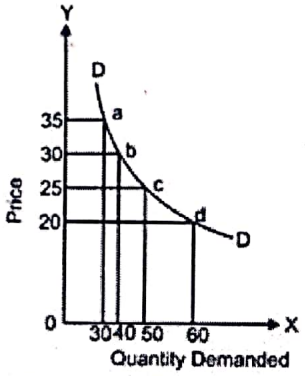


Figure-9: Demand Curve for Product D

Assumptions in Law of Demand:

The law of demand studies the change in demand with relation to change in price. In other words, the main assumption of law of demand is that it studies the effect of price on demand of a product, while keeping other determinants of demand at constant.

However there are certain assumptions underlying the law of demand, which are as follows:

i. Assumes that the consumer's income remains same. If the income of an individual increases, the demand for products by him/her also increases, which is against the law of demand. Therefore, the income of consumer should not change.

ii. Assumes that the preferences of consumer remain same.

iii. Considers that the fashion does not show any changes, because if fashion changes, then people would not purchase the products that are out of fashion.

iv. Assumes that there would be no change in the age structure, size, and sex ratio of population. This is because if population size increases, then the number of buyers increases, which, in turn, affect the demand for a product directly.

v. Restricts the innovation and new varieties of products in the market, which can affect the demand for the existing product.

vi. Restricts changes in the distribution of income.

vii. Avoids any type of change fiscal policies of the government of a nation, which reduces the effect of taxation on the demand of product.

Apart from the aforementioned points, the law of demand assumes that the world is static and people consume products in the market at a fixed rate and price. These assumptions are not valid in the changing world.

Exception to Law of Demand:

Till now, we have studied that there is an inverse relationship between demand and price of a product. The universal law of demand states that the increase in the price of a product would decrease the demand for that product and vice versa.

However, there are certain exceptions that with a fall in price, the demand also falls and there is an increase in demand with increase in price. This situation is paradoxical in nature and regarded as exception to the law of demand. In simple words, exception to law o demand refers to conditions where the law of demand is not applicable. In case of exceptions, demand curve shows an upward slope and referred as exceptional demand curve.

Exceptional demand curve is shown in Figure-10:

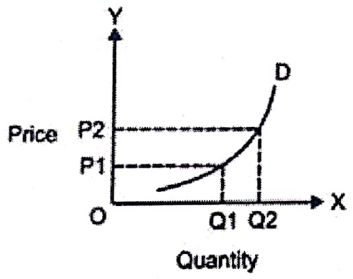


Figure-10: Exceptional Demand Curve

In Figure-10, D represents the demand curve in which OP1 is the price, and OQ1 is the initial demand. When the price rises from OP1 to OP2, then the demand also rises from OQ1 to OQ2. This implies that if the price of a product increases its demand also increases, which constitutes an exception to law of demand.

Certain cases that are exceptions to the law of demand are as follows:

i. Giffen Paradox:

Refer to one of the major criticism of law of demand. Giffin Paradox was given by Sir Robert Giffen, who classified goods into two types, inferior goods and superior goods, generally called Giffen goods. The inferior goods are those whose demand decreases with increase in consumer's income, such as cheap potatoes and vegetable ghee.

These goods are of low quality; therefore, the demand for these goods decreases with increase in consumer's income. In addition, if the price of these goods increases, then the demand for these goods increases assuming that the high price good would be of good quality tor example, coffee is considered as superior and tea as inferior. In case tile price of both of

these goods increases the consumers would increase the demand of tea to satisfy their need by paying tile same amount.

ii. Necessity Goods:

Refer to goods that are considered as essential for consumer. The demand of necessity goods does not increase or decrease with increase or decrease in their prices. For example, salt is a necessity good whose consumption cannot be increased in case its price decreases. In such a scenario, the law of demand is not applicable.

iii. Prestige Goods:

Refers to goods that are perceived as a status symbol, such as diamond and Johny Walker Scotch Whisky. The demand for these goods remains same in case of increase or decrease in their price. In such a case, the law of demand is not applicable.

iv. Speculation: Expectation

Refers to an assumption of consumers about the change in prices of a product in future. If the price of a product IS expected to rise in future, then the demand for the product increases in the present situation. However, this is against the law of demand.

v. Psychologically Bias Customers:

Refer to one of the important exceptions to the law of demand. Different customers have different perceptions about the price of a product. Some customers have perceptions that low price means bad quality of a particular product, which is not true in all cases. Therefore, if there is a fall in the price of a product, then the demand for that product decreases automatically.

vi. Brand Loyalty:

Refers to the preference of a consumer towards a particular brand. Consumers do not prefer to change a brand with increase in the price of that brand. For example, if a consumer prefers, to wear Levi's jeans, he would continue to purchase it, irrespective of increase in its price. In such a situation, the law of demand cannot be applied.

vii. Emergency Situations:

Refers to a condition for which the law of demand is not applicable. In emergencies, such as war flood, earthquake, and famine, the availability of goods become scarce and uncertain. Therefore, in such situations, consumer.' prefer to store a large quantity of goods, regardless of their prices.

'Shift in Demand Curve' and 'Movement along the Demand Curve' | Differences

The upcoming discussion will update you about the difference between 'shift in demand curve' and 'movement along the demand curve'.

Demand is the whole list of quantities that will be bought at various possible prices. Any movement of prices will lead to a different quantity demanded, but it represents the same demand. In terms of downward sloping demand curve it means moving up or down the original demand curve, dd as in Fig. 3.

Other things being equal, there is a unique schedule of supply or demand in any period of time. But, other things do not always remain unchanged.

The demand for oil is rising over the years because of growth in population and car ownership. As tastes changes, incomes vary, as the prices of substitute products (coffee in relation to tea) or of complementary goods (sugar in relation to tea) change, the demand schedule will shift.

So, in reality we must distinguish between an increase in demand — by which is meant a shift of the whole curve to the right and upward, as more is now bought at each (same) price — with an increase in the quantity demanded as a result of moving to a lower price on the same demand curve.

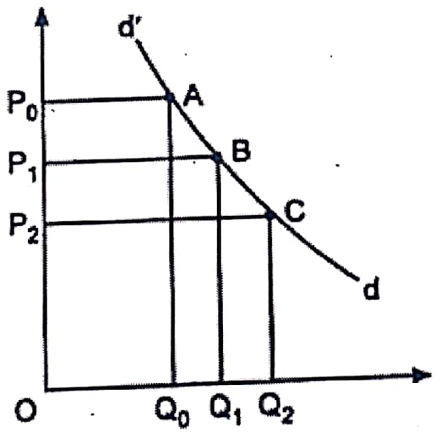


Fig. 3 : Movement along the same demand curve

Here are some factors that might lead to an increase in demand in our example: a hotter day, a larger group of people, people with more money, effective advertising on the trail by the stand owner, greater desire built up by soft drink makers through advertising.

Increases in demand (and, conversely, decreases, too) can be traced to three things:

1. More population

2. More income in buyers' hands

3. More desire for the particular good

The effect of an increase in demand is to raise the quantity demanded of any given price. On the graph in Fig. 4 the original demand for soft drinks is shown by demand curve DD. But, the demand curve DD is a curve that reflects an increase in demand.

So, by demand we mean the whole demand curve; by an 'increase in demand' is meant a shift of the whole curve in question to a new position (in this case to the right). To indicate a single point on a demand curve, we speak of the 'quantity bought' or 'the quantity demanded' at a particular price (Fig. 4). A movement along the same curve is 'a change in the quantity demanded as a result of a price change'. It does not represent any change in the demand schedule.

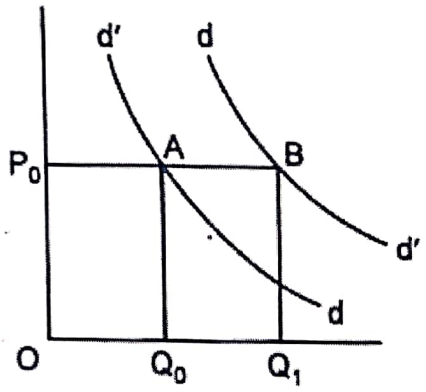


Fig. 4 : Shift of the demand curve to a viewpoint

In mixed economy, the targeted section of society gets some modifications. Here, the government can raise his voice against the production of ones. If a product is for all, then it should have to be for the majority buyers. This is the process at all. But sometimes the production cost of a product gets too higher that the price cannot be low down. In that case, the government raises funds from rich by taxation etc and redistributes to the poor by subsidies, welfare payments etc.

In command economy, The distribution of goods and services decisions takes by the govt. Social welfare is considered in this economy by the govt.

Factors of Production: There are four factors of production. They are-

1. Land
2. Labor-L
3. Capital-K
4. Organization/ Entrepreneurship

Price of factors of production: Price of factors of production are given below-

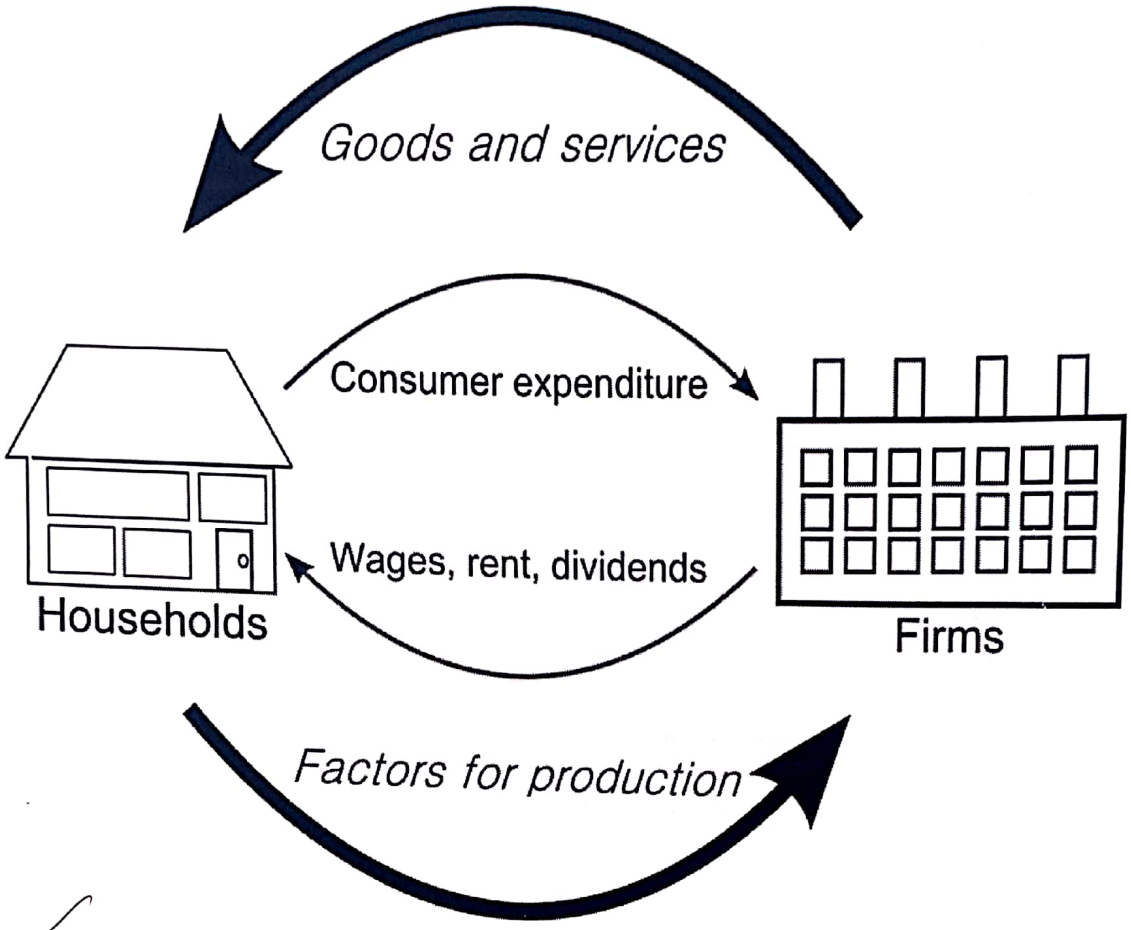
Land-Rent (R)

Labor (L)-Wage (W)

Capital (K)-Interest rate (i)

Organization-Profit (π)

Circular Flow of Income:



Demand: The affordable wants are considered as demand. In economics the following 3 conditions are-

1. Willingness for goods and commodity
2. Ability to buy the commodity
3. Willingness to pay for the commodity

Law of Demand: "Other things remaining the same, the higher the price of a commodity, the smaller the quantity of demanded and the lower the price of a commodity, the higher the quantity demanded." Economics call this inverse relationship the Law of demand.

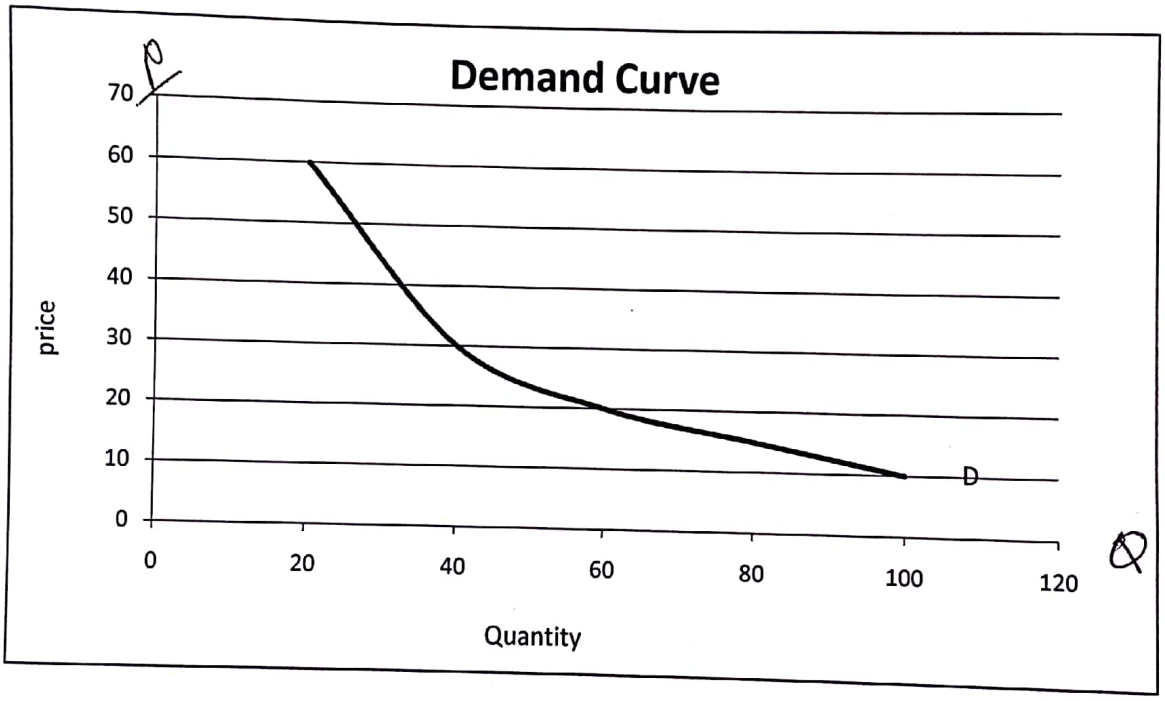
Demand schedule for biscuits (hypothetical data)

Price per Kg (TK)	Quantity demanded (Kg)
10	100
15	80
20	60
30	40
60	20

This is a numerical tabulation showing the quantity that is demanded at selected prices. The above table shows a hypothetical demand schedule for biscuits. It lists the quantity of biscuits that would be demanded at various prices on the assumption that average household income is fixed at Tk 1000, and other factors do not change. The table gives the quantities demanded for 5 selected prices, but actually there is a separate quantity that would be demanded at each possible price.

Demand curve:

The relationship between quantity demanded and price can be shown by drawing a graph. If we plot the information given in above table in a graph, we get demand curve.



In the figure horizontal axis shows quantity of demanded and vertical axis shows price. Figure shows a demand curve which represents the points corresponding to price-quantity pairs of above table. In figure D is the demand curve for biscuit at a particular price. We see that as price of biscuit rises the quantity demanded for biscuit decreases along the D curve. That is, there is an inverse relationship between the quantity demanded for biscuit and its own price.

Supply: The amount the firms are willing to sell is called supply. Supply is a schedule which shows the amounts of a product a producer is willing and able to produce and make available for sale at each price in a series of possible prices during a specified period.

Law of Supply: Other things remaining the same, the higher the price of a commodity, the higher the quantity supplied and vice versa.

Home Task

Price per Kg(TK)	Quantity supplied(Kg)
10	20
15	40
20	60
30	80
60	100

Draw a Supply Curve and Explin?