UNIT-II
(Demand and Supply)

MODULE- 2: INCOME AND CROSS DEMAND.

CONTENTS:

2.0: OBJECTIVES:

The objective of this unit is to explain the meaning of income and cross demand. After reading this unit you should be able to explain the:

Meaning of income, cross and promotional demand

Expansion and contraction of demand

Increase and decrease in demand.

2.01: MEANING:

Income demand shows the relationship between changes in demand as a result of change in income, given other things. Cross demand shows the relationship between changes in demand for A product as a result of change in the price of b product, given other things. Products A and B may be either substitutes or jointly

demanded. Promotional demand shows the relationship between advertisement expenditures and the sales, given other things.

2.02: INCOME DEMAND:

The general demand is $D_X = f(P_X\ P_{SC}\ Y,\ T, AE,\ W \ldots\ldots)$

In the above function

D_X = Demand for commodity -x (Dependent variable)

P_X = Price of

P_{SC} = Prices of substitutes and complementary goods to x

Y = Income of consumer

T = Tastes and preferences

AE = Advertisement expenditures

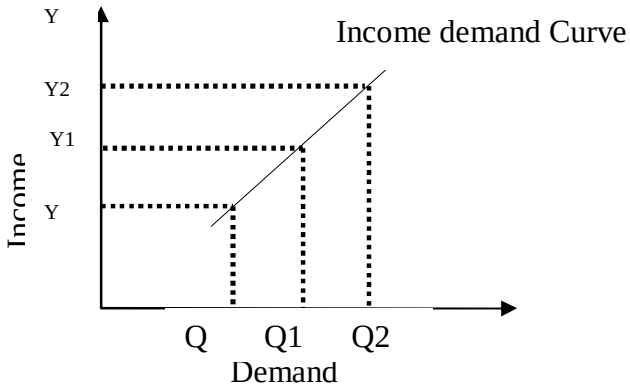
W = Weather conditions

Assuming other things remaining constant, we can write the income demand function as Dx = f (y). Here Dx is the demand for x commodity and y is the income of consumer.

While analyzing the relationship between change in income and demand for a commodity, we classify goods in to Superior and inferior.

Superior goods: In case of superior goods, there exist direct relationship between change in income and demand. We can understand this with the help of a diagram.

GRAPH-1

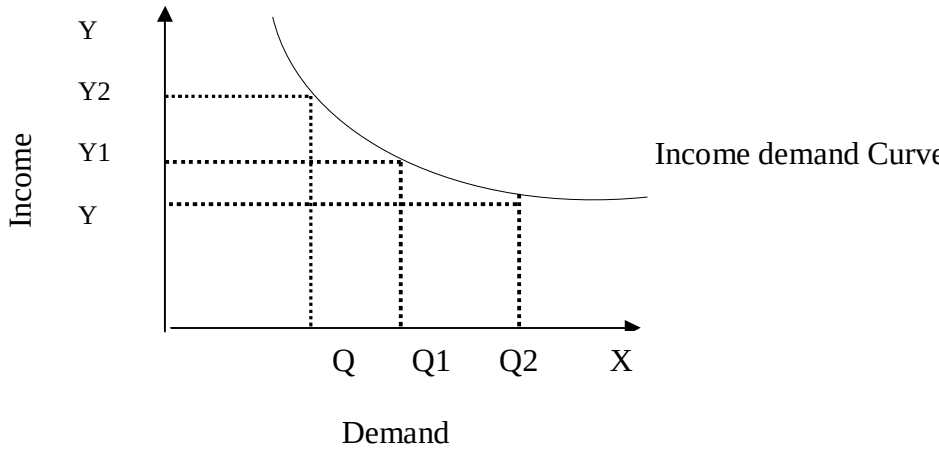


The diagram above shows that if income is OY1, the demand is OQ1. If income rises to OY2 demand increased to OQ2 and if income falls to OY, the demand is reduced to OQ. The income demand curve incase of normal goods has positive slope. Income demand curve for consumer durables represent Engel's Law. This law states as income increases, the proportion of income diverted towards purchasing durable consumer goods also increases.

Inferior goods:

Demand is inversely related to change in income with respect to inferior goods.

GRAPH-2



As shown in above diagram, original level of income is OY1 and corresponding demand OQ1. If income rises from OY1 to OY2, the demand for inferior good decreased from OQ1 to OQ. On the other hand if income falls from OY1 to OY,

the demand increased from OQ1 to OQ2. The income demand curve incase of inferior goods has negative slope.

ESTIMATION OF INCOME DEMAND:

With the help linear demand function we can understand the relationship between income and demand. For example: In case of superior goods we can specify income demand function as Qd = a +by. In this demand function, Qd is the demand, 'a'is the autonomous demand ie the demand at zero income (intercept), 'b' is the induced demand (slope) and y is the price income. In case of inferior goods we can use the demand function as Qd = a –by. The estimated income demand is Qd = 100 +. 5y (superior or normal goods) and Qd = 100- .5y (inferior goods) . Given the values of income we can construct demand schedule. Demand we can construct a demand schedule i. we can identify quantity at different prices as shown below.

ACTIVITY-I

1. List out superior goods.
2. List out inferior goods.

203: CROSS DEMAND:

This shows the relationship between changes in demand for one commodity as a result of change in the price of another commodity, assuming other things remaining constant. These two commodities may be either substitutes or complementary goods. We can write the cross demand function as shown below.

$D_A = f(P_{SC})$

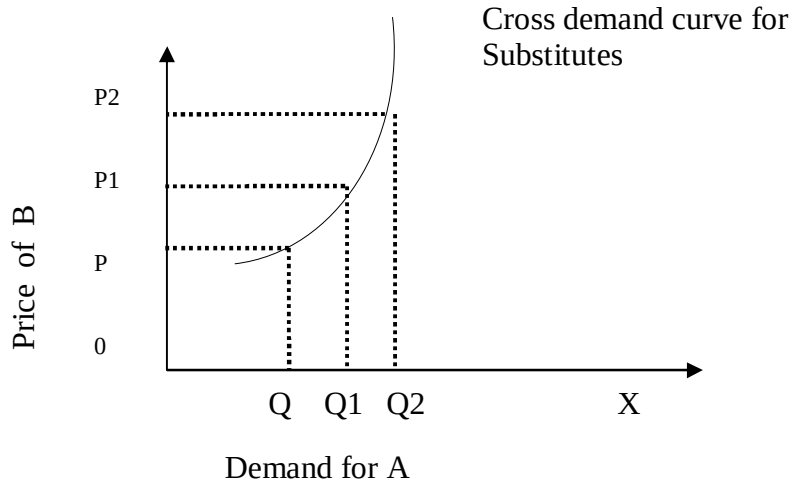
In the above function

D_A = Demand for commodity - A (Dependent variable)

P_{SC} = Prices of substitutes and complementary goods to $_A$

Substitutes: If two commodities are substitutes, then we can use A commodity or B commodity for the same purpose. Examples of substitutes are T.Vs, fans, watches, coolers, bikes, four wheelers from two companies etc. In the case of substitutes, if the price of B rises, the demand for A increases and if the price of B falls, the demand for A decreases. Cross demand curve related to substitute goods slopes upward from left to right as shown below.

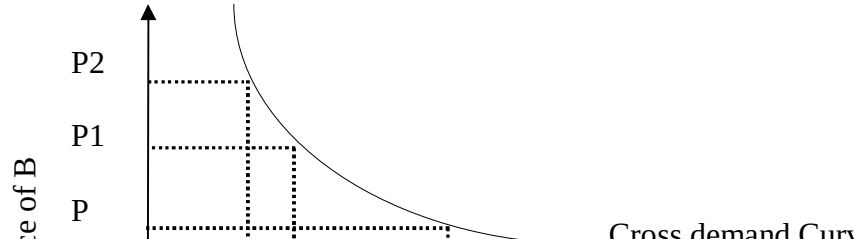
GRAPH-3



Complementary goods:

These goods also known as jointly demanded products. Examples are petrol and automobiles, pen and ink, pen and paper etc. Let us assume that A and B are complementary goods. Then, if price of B rises the demand for A falls and vice-versa.

GRAPH-4



The above diagram indicates that as the price of B rises from OP1 to OP2, the demand for A decreases from OQ1 to OQ. On the other hand if the price of B falls from OP1 to OP,the demand for A increases from OQ1 to OQ. In case of complementary goods, the cross demand curve slopes downward from left to right.

ESTIMATION OF CROSS DEMAND:

With the help linear demand function we can understand the relationship between price of B and demand for A. For example: In case of substitutes we can specify cross demand function as Qd = a +bPB. In this demand function, Qd is the demand, 'a'is the autonomous demand ie the demand at zero price of B (intercept), 'b' is the induced demand (slope) and PB is the price of B. In case of complementary goods we can use the cross demand function as Qd = a –bPB. The estimated cross demand is Qd = 10 +. 5PB (substitutes) and Qd = 10- .5PB (complementary goods) . Given the values of PB we can construct cross demand schedule.

ACTIVITY-2

1. List out substitute commodities.
2. List out jointly demanded products.

2.04: PROMOTIONAL DEMAND:

This shows the relationship between changes in demand as a result of change in advertisement expenditures, assuming other things remaining constant. It is a fact that business firms generally spend huge amount towards promoting sales of their product. We can write the promotional demand function as shown below.

$D_X = f(AE)$

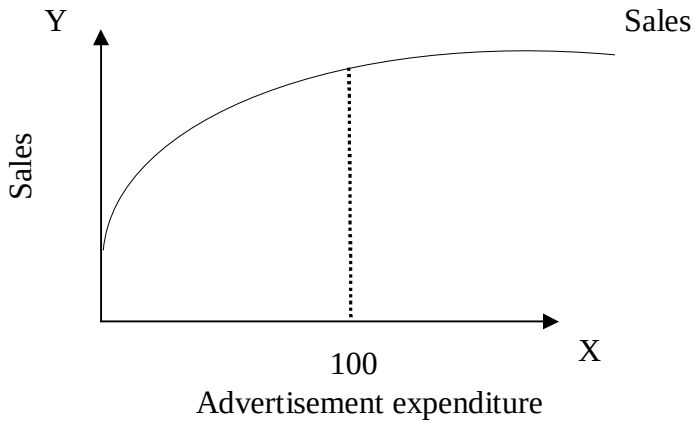
In the above function

D_X = Demand for commodity -$_X$ (Dependent variable)

AE = Advertisement expenditures.

We can show the relationship between advertisement expenditures and sales with the help of following graph.

GRAPH-5

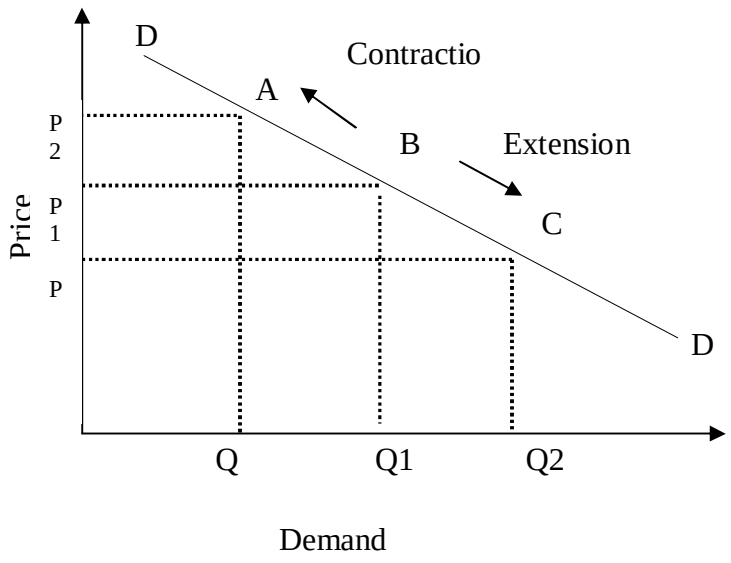


The diagram above shows that in the beginning even without advertisement a business firm can sell certain quantity of commodity. One can observe direct relationship between advertisement expenditures and sales up to a certain level of advertisement expenditure. For example up to Rs 100 crores. After that it is not possible to increase sales through advertisement. As a result, sales curve has become parallel to horizontal axis.

2.05: Extension and contraction in demand:

This refers to a movement along the demand curve. Change in demand as a result of change in price, other things remaining constant, either called as extension or contraction in demand. Extension and contraction is to be shown on the same demand curve through different points. We can see this with the help of following diagram

GRAPH-6



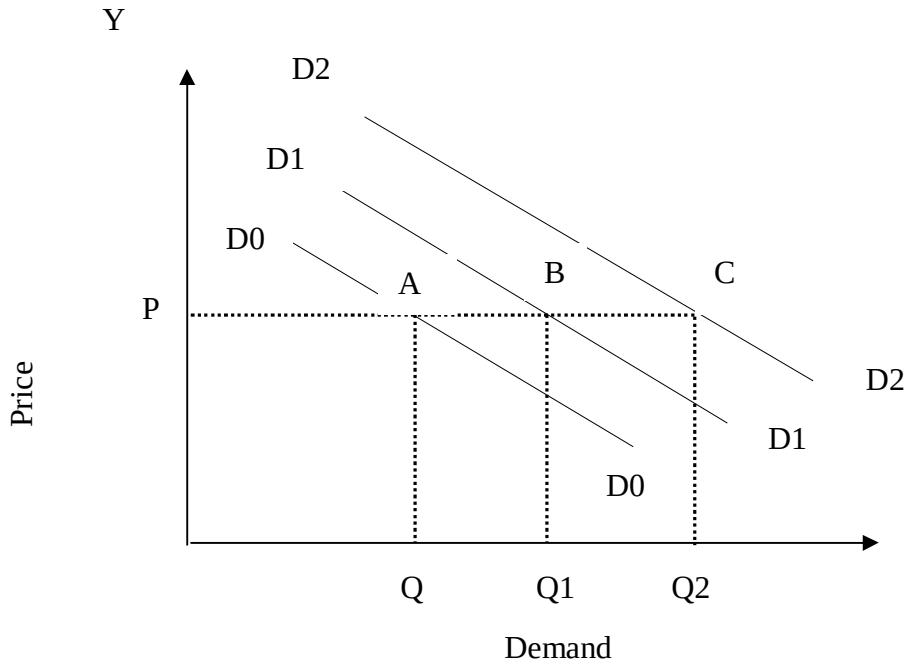
According to the above diagram, if the price is OP1, the quantity demand is OQ1. This is indicated by point B on the demand curve. If the price of the commodity rises from OP1 to OP2 the quantity demanded is reduced to OQ. This corresponds to point A on the demand curve. This reduction or fall in demand as a result of rise in price is described as contraction in demand. On the other hand, if price falls from OP1 to OP the quantity demanded rises to OQ2 which corresponds to point C on the demand curve. This is called Extension in demand. Backward movement from B to A on the demand curve, given other things , is

called as contraction in demand and a forward movement from B to C is called as extension in demand.

2.06: Increase and decrease in demand:

This refers to shift in demand curve. Given the price, if there is change in other factors which influence the demand, i.e. income, prices of substitutes and complementary goods, advertisement expenditure etc, the resulting change in demand is to be shown through a shift in demand curve. We can understand this with the help of following diagram.

GRAPH-7



The above diagram indicates that, initially if the price is OP, the demand is OQ1 corresponding to point B on D1D1 curve. Given the price assume that there is change in other factors i.e. increase in income. In such a case the consumer may buy more of the commodity i.e OQ2 at price OP. As a result of this, D1D1 shifts

toD2D2. On the other hand, given the price, if there is fall in income, then the consumer may buy less i.e.OQ of the commodity. In this case the demand curve shifts from D1D1 to D0D0. The upward shift in demand curve from D1D1 to D2D2 is called increase in demand and a downward shift in demand curve from D1D1 to D0D0 is called decrease in demand.

2.07: Summary:

Change in demand as a result of change in income, assuming other things remaining constant is known as income demand. Change in demand for one commodity as a result of change in price of other related product, ceteris paribus, is known as cross demand. Change in demand as a result of change in advertisement expenditure is called as promotional demand. Upward or downward movement along the same demand curve is known as extension and contraction where as upward or downward shift in demand curve known as increase in demand and decrease in demand.

2.08: ADDITIONAL REFERENCES:

1. Stonier and Hague: A Text Book of Economic Theory
2. K.N.Verma: Micro Economic Theory

2.09: Self Assessment Test:

1. Discuss income, cross and promotional demand.
2. Spell out the distinction between extension and contraction in demand.