

ECONOMICS

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INTRODUCTION

1. MICRO ECONOMICS: It is a study of behaviour of individual units of an economy such as individual consumer, producer etc.

2. ECONOMY: An economy is a system by which people get their living.

3. PRODUCTION POSSIBILITY CURVE (PPC): PP curve shows all the possible combination of two goods that can be produced with the help of available resources and technology.

4. MARGINAL OPPORTUNITY COST: MOC of a particular good along PPC is the amount of other good which is sacrificed for production of additional unit of another good.

5. MARGINAL RATE OF TRANSFORMATION: MRT is the ratio of units of one good sacrificed to produce one more unit of other good.

DEMAND

Demand:- Quantity of the commodity that a consumer is able and willing to purchase in a given period and at a given price.

Demand Schedule:- It is a tabular representation which shows the relationship between price of the commodity and quantity purchased.

Demand Curve:- It is a graphical representation of demand schedule.

Individual Demand:- Demand by an individual consumer.

Factors Affecting Individual Demand For a Commodity/ Determinants of Demand:-

1. Price of the commodity itself
2. Income of the consumer
3. Price of related goods
4. Taste and Preference
5. Expectations of future price change

Demand Function:-

$$D_x = f(P_x, Y, P_r, T)$$

Law of Demand:- Other things remains constant, demand of a good falls with rise in price and vice versa .

Changes in Demand:-

They are of two types:

- 1) Change in Quantity Demanded (Movement along the same demand curve)
- 2) Change in Demand (Shifts in demand)

1) Change in Quantity Demanded: -

Demand changes due to change in price of the commodity alone, other factors remain constant; are of two types;

A) Expansion of demand : More demand at a lower price

B) Contraction of demand : Less demand at a higher price

Change in Quantity Demanded

Due to price change Movement will takes place

Extension and contraction

Change in Demand

Due to other than price change Shifting will takes place Increase and decrease

Change in demand:-

Demand changes due to change in factors other than price of the commodity, are of two types:

A) **Increase in demand:-** more demand due to change in other factors, price remaining constant.

B) **Decrease in demand:-** less demand due to change in other factors, price remaining constant

Causes of Increase in Demand:-

1. Increase in Income.
2. Increase/ favorable change in taste and preference.
3. Rise in price of substitute good.
4. Fall in price of complementary good.

Note: Increase in income causes increase in demand for normal good

Causes of Decrease in Demand:

1. Decrease in Income.
2. Unfavorable/Decrease in taste and preference
3. Decrease in price of substitute good.
4. Rise in price of complementary good.

Note: Decrease in income causes Decrease in demand for normal good

Type of Goods

Substitute Goods:- Increase in the price of one good causes increase in demand for other good. E.g., tea and Coffee

Complementary Goods:- Increase in the price of one good causes decrease in demand for other good. E.g:- Petrol and Car

Normal Good:- Goods which are having positive relation with income. It means when income rises, demand for normal goods also rises.

Inferior Goods:- Goods which are having negative relation with income. It means less demand at higher income and vice versa.

Normal goods - the quantity demanded of such commodities increases as the consumer's income increases and decreases as the consumer's income decreases. Such goods are called normal goods.

Giffen goods - a Giffen good is an inferior good which people consume more of as price rises, violating the law of demand.. In the Giffen good situation, cheaper close substitutes are not available. Because of the lack of substitutes, the income effect dominates, leading people to buy more of the good, even as its price rises.

Veblen good (aka ostentatious goods): Often confused with Giffen goods, Veblen goods are goods for which increased prices will increase quantity demanded. However, this is not because the consumers are forced into buying more of the good due to budgetary constraints(as in Giffen goods). Rather, Veblen goods are high-status goods such as expensive wines, automobiles, watches, or perfumes.

The utility of such goods is associated with their ability to denote status. Decreasing their price decreases the quantity demanded because their status-denoting utility becomes compromised.

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TYPES OF DEMAND

Cross demand: Demand primarily dependent upon prices of related goods is called cross demand. The complementary goods and substitutes are called related goods. In case of complementary goods like pen and ink demand for good is inversely related to the prices of other goods but the case in substituting goods are just opposite. Demand for substituting goods is directly related to prices.

Income demand: Demand primarily dependent upon income is called income demand.

Direct demand: Demand for goods and services made by final consumers to satisfy their wants or needs is called direct demand. For example guest of hotels make the demand for food.

Derived demand: Demand for goods and services made according to direct demand is called derived demand.

Joint demand: Demand made for two or more goods and services to satisfy single need or want is called joint demand.

Composite demand: Demand for a single commodity made in order to use for different purposes is called composite demand.

Price Elasticity of Demand (Ed): Refers to the degree of responsiveness of quantity demanded to change in its price.

Ed. = Percentage change in quantity demanded/ Percentage change in price

$Ed. = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$

P = Original price Q = Original quantity Δ = Change

Perfectly inelastic demand (Ed = 0)

This describes a situation in which demand shows no response to a change in price. In other words, whatever be the price the quantity demanded remains the same.

Inelastic (less elastic) demand (e < 1)

In this case the proportionate change in demand is smaller than in price.

Unitary elasticity demand (e = 1)

When the percentage change in price produces equivalent percentage change in demand, we have a case of unit elasticity. The rectangular hyperbola as shown in the figure demonstrates this type of elasticity.

Elastic (more elastic) demand ($e > 1$)

In case of certain commodities the demand is relatively more responsive to the change in price. It means a small change in price induces a significant change in demand.

Perfectly elastic demand ($e = \infty$)

This is experienced when the demand is extremely sensitive to the changes in price. In this case an insignificant change in price produces tremendous change in demand. The demand curve showing perfectly elastic demand is a horizontal straight line.

Cross-elasticity of demand

The responsiveness of demand to changes in prices of related goods is called cross-elasticity of demand (related goods may be substitutes or complementary goods). In other words, it is the responsiveness of demand for commodity x to the change in the price of commodity y.

e_c = Percentage change in the quantity demanded of commodity X / Percentage change in the price of commodity y

Measures of cross-elasticity of demand

Infinity - Commodity x is nearly a perfect substitute for commodity y

Zero - Commodities x and y are not related.

Negative - Commodities x and y are complementary.

LAW OF SUPPLY

Supply means the goods offered for sale at a price during a specific period of time. It is the capacity and intention of the producers to produce goods and services for sale at a specific price. The supply of a commodity at a given price may be defined as the amount of it which is actually offered for sale per unit of time at that price.

The law of supply establishes a direct relationship between price and supply. Firms will supply less at lower prices and more at higher prices. "Other things remaining the same, as the price of commodity rises, its supply expands and as the price falls, its supply contracts".

Elasticity of Supply

The law of supply tells us that quantity supplied will respond to a change in price. The concept of elasticity of supply explains the rate of change in supply as a result of change in price. It is measured by the formula mentioned below

Elasticity of supply = Proportionate change in quantity supplied / Proportionate change in price

FORMS OF MARKET AND PRICE DETERMINATION

Market: Market is a place in which buyers and sellers come into contact for the purchase and sale of goods and services.

Market structure: refers to number of firms operating in an industry, nature of competition between them and the nature of product.

Types of market

- a) Perfect competition.
- b) Monopoly.
- c) Monopolistic Competition
- d) Oligopoly.

a) **Perfect competition:** refers to a market situation in which there are large number of buyers and sellers. Firms sell homogeneous products at a uniform price.

b) **Monopoly market:** Monopoly is a market situation dominated by a single seller who has full control over the price.

c) **Monopolistic competition:** It refers to a market situation in which there are many firms who sell closely related but differentiated products.

d) **Oligopoly:** is a market structure in which there are few large sellers of a commodity and large number of buyers.

Features of perfect competition:

- 1. Very large number of buyers and sellers.
- 2. Homogeneous product.
- 3. Free entry and exit of firms.
- 4. Perfect knowledge.
- 5. Firm is a price taker and industry is price maker.
- 6. Perfectly elastic demand curve ($AR=MR$)
- 7. Perfect mobility of factors of production.
- 8. Absence of transportation cost.
- 9. Absence of selling cost.

Features of monopoly:

- 1. Single seller of a commodity.
- 2. Absence of close substitute of the product.
- 3. Difficulty of entry of a new firm.
- 4. Negatively sloped demand curve ($AR > MR$)
- 5. Full control over price.
- 6. Price discrimination exists
- 7. Existence of abnormal profit.

Features of monopolistic competition

- 1. Large number of buyers and sellers but less than perfect competition.
- 2. Product differentiation.

3. Freedom of entry and exit.
4. Selling cost.
5. Lack of perfect knowledge.
6. High transportation cost.
7. Partial control over price.

Main features of Oligopoly.

1. Few dominant firms who are large in size
2. Mutual interdependence.
3. Barrier to entry.
4. Homogeneous or differentiated product.
5. Price rigidity.

Features of pure competition

1. Large number of buyers and sellers.
2. Homogeneous products.
3. Free entry and exit of firm.

What are selling cost?

Ans.: Cost incurred by a firm for the promotion of sale is known as selling cost. (Advertisement cost)

What is product differentiation?

Ans: It means close substitutes offered by different producers to show their output differs from other output available in the market. Differentiation can be in colour, size packing, brand name etc to attract buyers.

What do you mean by patent rights?

Ans:- Patent rights is an exclusive right or license granted to a company to produce a particular output under a specific technology.

What is price discrimination?

Ans: - It refers to charging of different prices from different consumers for different units of the same product.

PRODUCTION

Production: Combining inputs in order to get the output is production.

Production Function: It is the functional relationship between inputs and output in a given state of technology. $Q = f(L, K)$
Q is the output, L: Labor, K: Capital

Fixed Factor: The factor whose quantity remains fixed with the level of output.

Variable Factor: Those inputs which change with the level of output.

PRODUCTION FUNCTION AND TIME PERIOD

1. Production function is a long period production function if all the inputs are varied.
2. Production function is a short period production function if few variable factors are combined with few fixed factors.

Concepts of product:

Total Product- Total quantity of goods produced by a firm / industry during a given period of time with given number of inputs.

Average product = output per unit of variable input.

$APP = TPP / \text{units of variable factor}$

Average product is also known as average physical product.

Marginal product (MP): refers to addition to the total product, when one more unit of variable factor is employed.

$MP_n = TP_n - TP_{n-1}$

MP_n = Marginal product of nth unit of variable factor

TP_n = Total product of n units of variable factor

TP_{n-1} = Total product of (n-1) unit of variable factor.

n=no. of units of variable factor

$MP = \Delta TP / \Delta n$

We derive TP by summing up MP $TP = \Sigma MP$

SHORT RUN PRODUCTION FUNCTION LAW OF VARIABLE PROPORTION OR RETURNS TO A VARIABLE FACTOR

Statement of law of variable proportion: In short period, when only one variable factor is increased, keeping other factors constant, the total product (TP) initially increases at an increasing rate, then increases at a decreasing rate and finally TP decreases.

MPP initially increase then falls but remains positive then 3rd phase becomes negative.

Phase I / Stage I / Increasing returns to a factor.

- TPP increases at an increasing rate
- MPP also increases.

Phase II / Stage II / Diminishing returns to a factor

- TPP increases at decreasing rate
- MPP decreases / falls
- This phase ends when MPP is zero & TPP is maximum

Phase III / Stage III / Negative returns to a factor

- TPP diminishes / decreases
- MPP becomes negative.

Reasons for increasing returns to a factor

- Better utilization of fixed factor
- Increase in efficiency of variable factor.
- Optimum combination of factors

Reasons for diminishing returns to a factor

- Indivisibility of factors.

· Imperfect substitutes.

Reasons for negative returns to a factor

- Limitation of fixed factors
- Poor coordination between variable and fixed factor
- Decrease in efficiency of variable factors

Relation between MPP and TPP

- As long as MPP increases, TPP increases at an increasing rate.
- When MPP decreases, TPP increases diminishing rate.
- When MPP is Zero, TPP is maximum.
- When MPP is negative, TPP starts decreasing.

Long-run production function - Returns to Scale

In the long run, all factors can be changed. Returns to scale studies the changes in output when all factors or inputs are changed. An increase in scale means that all inputs or factors are increased in the same proportion.

Three phases of returns to scale

The changes in output as a result of changes in the scale can be studied in 3 phases. They are

- (i) Increasing returns to scale
- (ii) Constant returns to scale
- (iii) Decreasing returns to scale

Increasing returns to scale

If the increase in all factors leads to a more than proportionate increase in output, it is called increasing returns to scale. For example,

if all the inputs are increased by 5%, the output increases by more than 5% i.e. by 10%. In this case the marginal product will be rising.

Constant returns to scale

If we increase all the factors (i.e. scale) in a given proportion, the output will increase in the same proportion i.e. a 5% increase in all the factors will result in an equal proportion of 5% increase in the output. Here the marginal product is constant.

Decreasing returns to scale

If the increase in all factors leads to a less than proportionate increase in output, it is called decreasing returns to scale i.e. if all the factors are increased by 5%, the output will increase by less than 5% i.e. by 3%. In this phase marginal product will be decreasing.

The Cobb - Douglas Production Function

The simplest and the most widely used production function in economics is the

Cobb-Douglas production function. It is a statistical production function given by professors C.W. Cobb and P.H. Douglas.

The Cobb-Douglas production function can be stated as follows

$Q = bL^aC^{1-a}$ in which

Q = Actual output **L** = Labour **C** = Capital **b** = number of units of Labour **a** = Exponent of labour **1-a** = Exponent of Capital

According to the above production function, if both factors of production (labour and capital) are increased by one percent, the output

(total product) will increase by the sum of the exponents of labour and capital i.e. by $(a+1-a)$. Since $a+1-a=1$, according to the equation, when the inputs are increased by one percent, the output also increases by one percent. Thus the Cobb Douglas production function explains only constant returns to scale.

In the above production function, the sum of the exponents shows the degree of "returns to scale" in production function.

$a + b > 1$: Increasing returns to scale

$a + b = 1$: Constant returns to scale

$a + b < 1$: Decreasing returns to scale

COST

Cost of production : Expenditure incurred on various inputs to produce goods and services.

Cost function : Functional relationship between cost and output.

$C=f(q)$ Where f =functional relationship where c = cost of production q =quantity of product

Money cost : Money expenses incurred by a firm for producing a commodity or service.

Explicit cost : Actual payment made on hired factors of production. For example wages paid to the hired labourers, rent paid for hired accommodation, cost of raw material etc.

Implicit cost : Cost incurred on the self-owned factors of production. For example, interest on owners capital, rent of own building, salary for the services of entrepreneur etc.

Opportunity cost : is the cost of next best alternative foregone / sacrificed.

Fixed cost : are the cost which are incurred on the fixed factors of production. These costs remain fixed whatever may be the scale of output. These costs are present even when

the output is zero. These costs are present in short run but disappear in the long run.

Total Variable Cost : TVC or variable cost – are those costs which vary directly with the variation in the output. These costs are incurred on the variable factors of production. These costs are also called “prime costs”, “Direct cost” or “avoidable cost”. These costs are zero when output is zero.

Total cost : is the total expenditure incurred on the factors and non-factor inputs in the production of goods and services.

It is obtained by summing TFC and TVC at various levels of output.

Relation between TC, TFC and TVC

1. TFC is horizontal to x axis.
2. TC and TVC are S shaped (they rise initially at a decreasing rate, then at a constant rate & finally at an increasing rate) due to law of variable proportions.
3. At zero level of output TC is equal to TFC.
4. TC and TVC curves parallel to each other.

Average variable cost is the cost per unit of the variable cost of production. $AVC = TVC / \text{output}$.

AVC falls with every increase in output initially.

Once the optimum level of output is reached AVC starts rising.

Average total cost (ATC) or Average cost (AC): refers to the per unit total cost of production.

Marginal cost: refers to the addition made to total cost when an additional unit of output is produced.

$MC_n = TC_n - TC_{n-1}$ or $MC = \Delta TC / \Delta Q$ **Note** : **MC is not affected by TFC.**

Relationship between AC and MC

- Both AC & MC are derived from TC
- Both AC & MC are “U” shaped (Law of variable proportion)
- When AC is falling MC also falls & lies below AC curve.
- When AC is rising MC also rises & lies above AC
- MC cuts AC at its minimum where $MC = AC$

Revenue

Revenue:- Money received by a firm from the sale of a given output in the market.

Total Revenue: Total sale receipts or receipts from the sale of given output.

$TR = \text{Quantity sold} \times \text{Price (or) output sold} \times \text{price}$

Average Revenue: Revenue or Receipt received per unit of output sold.

- $AR = TR / \text{Output sold}$
- AR and price are the same.
- $TR = \text{Quantity sold} \times \text{price or output sold} \times \text{price}$
- $AR = (\text{output} / \text{quantity} \times \text{price}) / \text{Output/quantity}$
- $AR = \text{price}$
- AR and demand curve are the same. Shows the various quantities demanded at various prices.

Marginal Revenue: Additional revenue earned by the seller by selling an additional unit of output.

• $MR_n = TR_n - TR_{n-1}$ • $TR = \Sigma MR$

Relationship between AR and MR(when price remains constant or perfect competition)

Under perfect competition, the sellers are price takers. Single price prevails in the market. Since all the goods are homogeneous and are sold at the same price $AR = MR$. As a result AR and MR curve will be horizontal straight line parallel to OX axis. (When price is constant or perfect competition)

Relation between TR and MR (When price remains constant or in perfect competition)

When there exists single price, the seller can sell any quantity at that price, the total revenue increases at a constant rate (MR is horizontal to X axis)

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