

Subject Name -Managerial Economics

Subject Code-RAS-501

Marks-70

Topics Covered Under Unit -I

Unit -1

- Meaning and Definition of Economics
 - Nature of Economics(IMP)-
 - Is Economics is an Art or Science
Is Economics is a Positive Science or Normative Science
 - Micro and Macro Economics -Meaning,Scope,Difference between micro and macro economics(IMP).
 - Managerial Economics-Meaning ,Definition,Scope(IMP),Significance
 - Theory of Demand- Meaning of Demand(IMP), Definitions of Demand,Types of Demand, Demand Schedule ,Demand curve, Demand Functions(IMP), Determinants of Demand or Factors Affecting on Demand(IMP)
 - The Law of Demand- Meaning, Definitions ,Assumptions, Features. Explanation to the Law of Demand,Why does demand curve Slopes Downward(IMP),Exceptions to the law of Demand.
 - Elasticity of Demand-- Meaning, Definitions,Types-
 - 1)Price Elasticity of Demand(IMP)
 - 2) Income Elasticity of Demand
 - 3) Cross Elasticity of Demand
- 1) Price Elasticity of Demand**- Meaning, Definitions,Types/kinds/Degrees, Methods of Measurement of Price Elasticity of Demand(IMP), Factors Determining Price Elasticity of Demand or factors affecting on price elasticity of demand or Determinants of Price Elasticity of Demand
- 2) Income Elasticity of Demand**- Meaning, Definitions, Types/kinds/Degrees, Measurement of Income Elasticity of Demand.
- 3) Cross Elasticity of Demand**- Meaning, Definitions, Types/kinds/Degrees , Measurement of cross Elasticity of Demand.

- **Unit-III**
- **Cost Estimation**-Meaning of Cost,Cost Functions(**IMP**),Determinants of Costs/Factors effecting on costs,Classification of Cost- **Short-run costs & Long-run costs**
- **Short-run Costs**(**IMP**)-Total Cost(TC),Total Fixed cost(TFC), Variable Cost(AVC), Average Cost(AC),Average Fixed cost(TFC),Average Variable Cost(TVC), Marginal Cost(MC)
- Relationship between Marginal Cost (MC)& Average Cost(AC)

Topics Covered Under unit -IV

Unit-2 Market Structure -

Meaning of Market, Features of Market, Classification of Market

Perfect Competition –

- Meaning, Definitions ,Features, Conditions for Firms Equilibrium under Perfect Competition, Price and output determination under perfect competition market in short-run and Long-run(**IMP**)

Monopolistic competition

- Meaning, Definitions, Features, Conditions for Firms Equilibrium under Monopolistic Competition, Price and output determination under Monopolistic competition market in short-run and Long-run(**IMP**)

Oligopoly-Meaning, Definitions, Features, Classification of Oligopoly, Price and output Determination under Oligopoly , Kinked Demand Curve(**IMP**)

Duopoly-Meaning, Definitions, Features, Duopoly Model

Monopoly - Meaning, Definitions, Features, Price and output Determination under Monopoly in Short-run and Long-run. (**IMP**)

>Revenue-Concept,Types of Revenue(Total Revenue,Marginal Revenue,Average Revenue)

UNIT 1 :ECONOMICS

Evaluation of Economics

The word economics has been derived from two Greek words ‘ OIKOS’ (A House) and ‘ NEMEIN ‘(To Manage). Thus, economics means ‘Household Management ’.

Earlier , it used to be called as ‘ Political Economic’ following this approach, renowned Indian statesman **Chanakya or Kautilya** in his famous book ‘ Arthashastra’ has examined both kind of activities that is economic and political. Since then economics has developed as the most logical science, helping humanity in solving different kinds of problems relating to consumption, production, exchange , distribution & economic growth.

Definitions of Economic:-

Different economists have defined economics in their own words .The set of definitions given by various economist have been broadly divided into four parts.

1. Wealth definition- Adam Smith
2. Welfare definition- Dr. Marshall
3. Scarcity definition –Prof Robbins
4. Science of dynamic growth and development definition- Paul A . samuelson

1. Wealth definition- Adam Smith – Economics as a science of wealth

Adam Smith , Who is commonly known as the ‘ Father of Economics’ in his famous book ‘ Wealth of Nation’ 1776 , has defined economics as ‘ An enquiry into the nature and causes of the wealth of Nations’.

Followers of Adam Smith who supported his view like J.S.Mill , J.B.Say , Senior and Prof. Walker .

Features:-

- 1) Creation of wealth is very important problem.
- 2) Wealth is the only base of human pleasure
- 3) Central point of the subject matter is wealth.

Criticism:-

- I. Ignored creation of immaterial wealth like services of Doctors , CA’s , Dancer , Teacher
- II. Ignored social welfare

2. Welfare definition- Dr. Marshall: Economics as a science of material welfare

Marshal gave the following definition of economics in his famous book ‘Principles of Economics’- 1890.

According to ‘ Marshall’- Economics is the study of man’s actions in the ordinary business of life. It enquires how he gets his income & how he uses it. Thus, it is on one side a study of wealth , and on the other and more important side , a part of the study of man .

Followers of Dr. Marshall like Pigou , Carnan , Bevridge , etc.

Features:-

- 1) Study of wealth and man both
- 2) Social welfare

Criticism:-

- 1) Study of immaterial goods: - In economics we study not only material thing but also immaterial things, such as services of a Doctors, CA’s , Singer & Dancer, A Teacher & A Lawyer. Which have an economic value.
- 2) Very difficult to state the word ‘ welfare’
- 3) Limited scope- This definition has limited the scope of economics to the study of material goods only, which promote human welfare.

3. Scarcity definition –Prof Robbins:- Economics as a science of scarcity

He has given this definition in his famous book 'Nature & significance of Economic Science'-1932
According to Robbins – Economics is the science which studies human behavior as the relationship between ends & scarce means which have alternative uses.

Features:-

- 1) Ends –unlimited wants:- 'Ends' here refers to human wants. Our wants are unlimited in number. As one's want is satisfied immediately, another crops up. This chain of wants is endless.
- 2) Scarce means:- Most of the means or resources which can be used to satisfy wants are limited in supply.
- 3) Alternative uses:- Another important reason for the existence of the economic problem is the alternative uses of resources. Man is always faced with the problem of allocation of limited resources.
- 4) Wants differ in urgency:- All the wants are not equally urgent. Some wants are more urgent than others, some need immediate satisfaction, others can wait. For example –if a man needs medicine & fruit for his sick child, he will try to obtain the medicine first. Thus, a man is forced to choose between wants due to their different urgency.

Criticism:-

- 1) Concept of welfare not explicitly mentioned.
- 2) The definition makes economics a human science instead of social science
- 3) The definition is narrow & restricted in scope. It doesn't talk about economic growth or economic development.
- 4) It fails to deal with what is good or bad for society is welfare & what should be done to attain good ends.

4. Science of Dynamic Growth & Development – ' Paul A. Samuelson':-

According to Prof. Paul A. Samuelson : "Economics is the study of men & society choose , with or without the use of money, to employ scarce productive resources which could have alternative uses , to produce various commodities over time, & distribute them for consumption now and in the future among various people & groups of society.

Merits:-

- 1) Like Robbins , Samuelson has also stressed the problem of scarcity of means in relation to unlimited ends. Not only the means are scarce, but also they could be put to alternative uses.
- 2) The great merit of Samuelson's definition is that it takes note of the dynamic changes taking place both in 'the means 'as well as 'the ends' with the passage of time. It has therefore, been rightly termed as the growth-oriented definitions of economics.
- 3) It is not only dynamic in contents, it is also wider in scope.
- 4) Samuelson studies the problem of an economy not at a point of time but over a period of time. The definition has the glamour of universality.

Conclusion:-

Thus, Economics is a science that studies those activities which are concerned with the efficient consumption, production, exchange & distribution of scarce means which have alternative uses. Economics is a science of human behavior concerned with the allocation of scarce means in such a manner that consumers can maximize their satisfaction , producers can maximize their profits and the society can maximize its social welfare.

CONCEPT OF REVENUE

What is Revenue?

By selling a commodity whatever money a firm receives is called its revenue.

Money receipts by a firm from the sale of the product is called its revenue.

According to Dooley :

The revenue of a firm is its sale receipts or money receipts from the sale of a product.

The concept of revenue is different from the concept of Profit.

$$\text{Profit} = \text{Revenue} - \text{cost}$$

$$\text{Revenue} = \text{Profit} + \text{Cost}$$

CLASSIFICATION OF REVENUE

TOTAL REVENUE
 $TR = Q \times P$
OR, $TR = \sum MR$

MARGINAL REVENUE
 $MR = \frac{\Delta TR}{\Delta Q}$

AVERAGE REVENUE
 $AR = TR / Q$

Revenue has 3 forms:

- 1) Total Revenue(TR)
- 2) Marginal Revenue(MR)
- 3) Average Revenue(AR)

Total Revenue(TR) :-

Total revenue refers to the total amount of money that a firm receives from the sale of its products.

Or, it is sum total of marginal revenue.

It depends upon a firm's total sales. We may show total revenue as a function of the total quantity sold as below :

$$TR = f(Q)$$

Where , TR= Total revenue

f=Function

Q=Quantity sold.

To calculate total revenue, either average revenue (or price per unit) is multiplied by the number of units sold or marginal revenue of all the units is added up.

TR=Average Revenue/ or (Price) x Quantity
Or
TR=Price x Quantity , since AR = Price.
Or, $TR = \sum MR$.

Here, TR = Total revenue , MR = Marginal Revenue, Q = Quantity sold , P = price

Average Revenue(AR) :-

Average revenue is the per unit revenue received from the sale of one unit of commodity.

Average revenue is obtained by dividing total revenue by the number of units sold. It can also be written as $AR = TR/Q$.

Here,

AR = Average Revenue, TR = Total Revenue, Q = Quantity Sold,

It can easily be shown that average revenue for a firm is the price of the commodity.

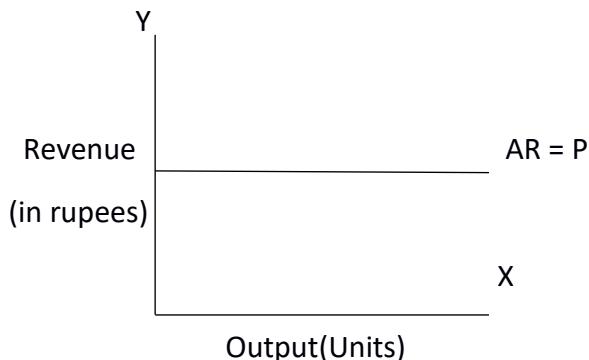
AR = TR/Q

and TR = Price X Quantity

Therefore, AR = (Price X Quantity)/Q = P

Hence, average revenue is equal to the price of the commodity or $AR = P$.

If a seller sells various units of a product at the same price then, average Revenue would be same as the price. Then the shape of average revenue will be parallel to the X axis .



Ex : Suppose a seller sells 2 units of a product both at a price of Rs. 10 per unit . Total revenue of the seller will be Rs. 20 and the average revenue will be $20/2 = 10$ Rs.

Here, $AR=P$

But when producer sells different units of a given product at different prices than the average revenue will not be equal to the price , then average revenue curve will slope downwards



Ex: Suppose that the seller sells the 2 units of his product one unit at price Rs. 12 to consumer A and one unit at price Rs. 10 to consumer B. His total revenue from the sale of two units will be Rs. 22 and average revenue will be $22/2 = 11$ Rs.

Marginal Revenue(MR): Marginal revenue is the addition made to the total revenue(TR) by selling one more unit of output is sold .

Marginal Revenue is the change in total revenue on account of the sale of one more unit of output.

If all the units of the commodity are sold at the same price marginal revenue will be equal to average revenue i.e. $price=AR=MR$.

Formula for calculating MR is given below :

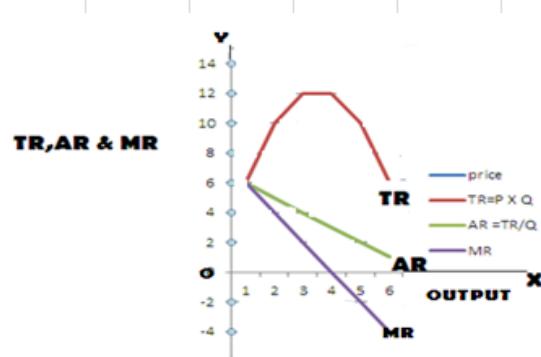
$$MR = TR_n - TR_{n-1} \quad \text{OR} \quad MR = \Delta TR / \Delta Q$$

Here , MR = Marginal Revenue, Δ = Change in, TR = Total Revenue, Q = Quantity sold, TR_n = Total Revenue of n units, TR_{n-1} = Total Revenue of n units -1

Relationship Between TR , AR and MR:

The concept of TR , AR and MR can be explained in the table

Quantity Sold	Price(P)	(TR)	(AR)	MR
-1	-2	-3	-4	-5
1	6	6	6	6
2	5	10	5	4
3	4	12	4	2
4	3	12	3	0
5	2	10	2	-2
6	1	6	1	-4



In Table,

- Total revenue has been obtained by multiplying price of a commodity to the unit Sold.
- AR has been obtained by dividing total revenue by the number of units sold.
- Average Revenue is also equal to the price of the commodity as it clear from colum(4) & col (2) in the above table.
- Marginal revenue has been obtained by calculating change in total revenue with respect to change quantity sold.

Relationship between Marginal Revenue and Total Revenue:-

1. $TR=AR$ or $\text{Price} \times \text{Quantity}$
2. $AR=TR/Q$
3. $MR = TR_n - TR_{n-1}$ OR $MR = \Delta TR / \Delta Q$
4. MR is an addition to TR when one more unit of output is sold.
5. When MR is positive, (i.e. greater than zero) TR rises at diminishing rate. (it is up to 3 units in schedule).(MR+ve, TR Increase)
6. When marginal revenue is zero, total revenue becomes maximum (it is up to 4th units in schedule).(MR=0,TR Max)
7. When MR becomes negative, Total revenue starts falling (it is after 5th unit in the schedule). (MR-ve, TR decrease)
8. When MR is constant, TR will increase at a constant rate.(In Perfect Competition Market)
9. If AR is constant, MR is equal to AR. (AR=MR, In Perfect Competition Market)
- 10 When AR falls, MR also falls but MR falls at twice the rate at which AR falls.

UNIT –III

COST ANALYSIS

Introduction

Every Producer has to decide what quantity of the commodity he should produce. He has to decide the Quantity of his Product also. His decisions depend on his cost of Production of the Commodity. The Producer has to employ factors of Production (Land , Labour , Capital , Machines, Tool & Technology, etc.)The Payments made to the factor of Production are known as cost of Production. In managerial economics, cost is normally considered from the producers or firm's point of view. In order to produce goods / commodity a firm uses factors of Productions are called inputs. The expenditure incurred on these inputs is called the costs of production.

Or,The concept of cost refers to all expends incurred by the firm on the production of commodity.

Costs of Production mainly depend on Quantity of Output. cost of Production increases with the increase in output.it can, therefore, be said that cost of Production is a function of output i.e.

$$C = f (o)$$

Here , Output O = & C = Cost

Cost and Managerial Decision Making/Importance of Cost Analysis

1.Study of Costs is essential for making a Choice from among the competing Production Plans. Production Decisions are not possible without their respective cost consideration.

2.The solution of various economic Problems needs cost figures different from what are available in the balance sheets, income statements etc. of the firm.

3.The Production resources are scarce with any firm and also since these have alternative uses.

Cost Function

A Cost function expresses the functional or mathematical relationship between cost and its determinants

Its shows least cost combinations of inputs corresponding to different levels of output.

Symbolically, $C = f (S, O, P, T....)$

Here, C= Cost, F= Function, S=Size of Plant, O=Level of Output, P=Price of Inputs, T=Technology

Determinants of Costs

- 1. Level of Output**
- 2. Size of the plant**
- 3. Prices of inputs**
- 4. Technology**
- 5. Managerial and Administrative Efficiency.**
- 6. Level of capacity utilization**
- 7. Time period**

1. Level of Output-

Total output and total cost are positively related to each other. As the level of output increases total cost also rises. However this is not apply to average cost and marginal cost. As the level of output increases marginal cost and

average cost decline initially, and rise thereafter.

2. Size of the Plant-

Size of the plant or the scale of operation is inversely related to cost. As the size of the plant increases costs decline and vice - verse. How much the costs will decline as a result of increase in the scale of operation depends upon the different sizes of plants.

3. Prices of Inputs-

Increases in the input prices bring a simultaneous rise in the cost.

4. Technology-

The nature of technology also influences cost. Modern technology is cost efficient and cost saving.

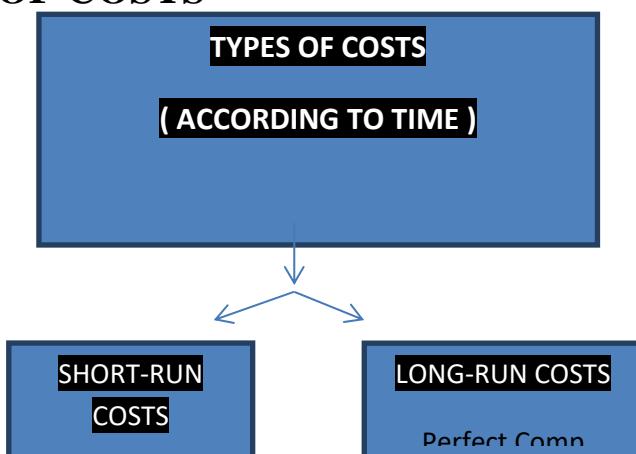
5. Managerial and Administrative Efficiency-

Managers are the controllers and monitors of the firm. Through Efficient Supervision, control and Administration they can improve efficiency and productivity of factors inputs and thus economies the cost.

6. Level of capacity utilization

7. Time period

TYPES OF COSTS



1. Short-run Costs.

Short period is a period of time during which some factors are fixed and some are variable.

The Short run costs are divided into two types

- I) Fixed Costs
- II) Variable Costs

Fixed Costs:

Fixed Costs are the sum total of expenditure incurred by the producer on the purchase or hiring of fixed factors of production.

Or, Fixed Costs are those costs that do not change with the size of its output. Fixed costs remain the same whatever the level of output is zero or maximum.

Examples: - Rent of the factory, insurance premium, salaries of the permanent employment, depreciation of plant & machinery, maintenance of building , license fee and related expenses.

These are also called supplementary costs or overhead cost or indirect costs.

Variable costs :

Variable costs are the expenditure incurred by the producer on the use of variable factors of production. Variable costs are zero when output is zero. These costs increases when output increases and decreases when output decreases.

These costs are called **prime cost** or **direct cost**.

Examples: - cost of raw materials, wages of temporary laborers, fuel , electricity , transportation cost , etc.

Short run costs are as follows:-

- (i) Total Costs (TC)
- (ii) Total Fixed Costs (TFC)
- (iii) Total Variable Costs (TVC)
- (iv) Average Costs (AC)
- (v) Average Fixed Costs (AFC)
- (vi) Average Variable Costs (AVC)
- (vii) Marginal Costs (MC)

➤ **Total Costs**

Total Costs (TC) the sum of all expenditures incurred by the firm in producing a given level of output.

If the production function is $Q = f(a, b, c, \dots, n)$, then, $TC = f(Q)$ which means total cost varies with output.

Conceptually .Total cost includes all kinds of money costs, Explicit as well as implicit costs.

Total cost viewed as the sum of total fixed cost and total variable cost at each level of output.

Symbolically,

$$TC = TFC + TVC$$

Here,TC=Total Cost,TFC=Total Fixed Cost, TVC=Total Variable cost

For Your Knowledge

Explicit costs- All those Expenses that a firm incurred to make payment to others are called explicit costs.

Ex- Wages paid to labourers, Rent Paid for Premises, cost of raw Materials, Interest on loans, Depreciation charges, Premium paid towards insurance against fire, theft etc.

Implicit costs- Cost of self-owned, self-employed, and Self-employed resources. (These are the costs of Entrepreneurs own factors or resources) Example-**Rewards for the Entrepreneur self-owned land buildings, wages of his own labor and normal profits for his entrepreneurial functions.**

The concept of TotalCost, Total Fixed Cost & Total VariableCost is explained with the help of a schedule given in table and a diagram.

Table No -1

Total Cost

output	Fixed Costs (In Rs.)	Variable costs (in Rs.)	Total Cost: (inRs.)
0	10	0	10
1	10	10	20
2	10	18	28
3	10	24	34
4	10	28	38
5	10	32	42
6	10	38	48
7	10	46	56
8	10	56	66
9	10	68	78

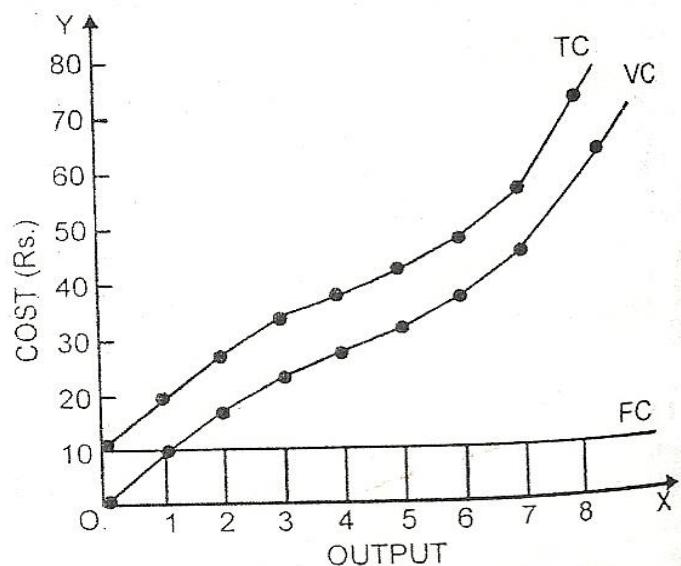


Fig. 12.3 Total Costs

In the above table total costs are calculated by aggregating fixed costs and variable cost.it is clear from the table that the total costs of production increases with an increase in the level of output. At different levels of output total costs follow total variable costs, because total fixed costs always remain constant.

Fig-1 Shown units of output in ox-axis and costs on oy-axis.

- ✓ TFC represents total fixed costs curve, it is horizontal straight line, parallel to OX axis, showing total fixed cost is constant at all levels of output.it is rupees 10, even when output is zero.
- ✓ TVC is total variable costs curve, it increases with increase in output .initially, it increases at decreasing rate. Eventually it increases at increasing rate because diminishing returns to a factor start operating.
- ✓ Total Cost curve represents the aggregate of Total fixed cost and Total Variable costs curves. $TC = TFC + TVC$
- ✓ TC is parallel to TVC, its shows that the difference between TC & TVC ($= TFC$) is constant.
- ✓ TC and TVC curves similar Shapes, the only difference is TVC curve Starts from origin and TC curve starts above the origin.

Average Cost

Per unit cost of a good is called its average cost.

In the words of Dolley "The average cost of production is the total cost per unit of output produced. "Average cost of a commodity can also be found by dividing total costs by the number of units produced.

$$AC = TC / Q$$

Here, AC = Average cost. TC = Total cost. Q = Quantity of output.

The average cost of production can also be obtained by adding average fixed cost and average variable cost or.

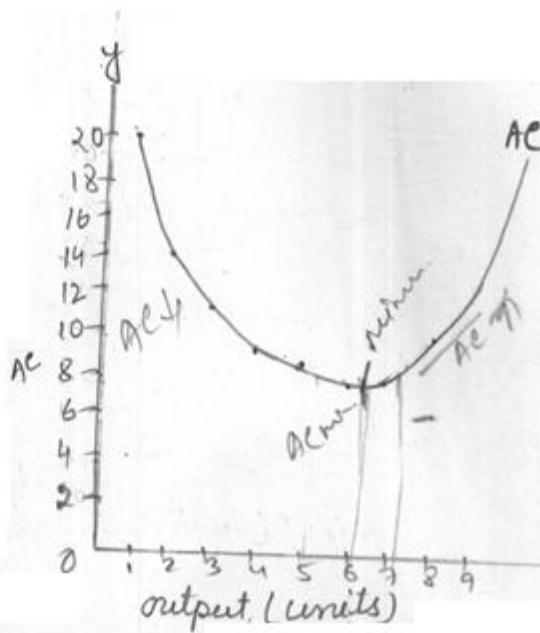
$$AC = AFC + AVC$$

Here, AC = Average cost, AFC = Average fixed cost, AVC = Average variable cost.

Table No -4

Average Cost

Output (Rs.)	TC	Average Cost (Rs.)
0	10	∞
1	20	20
2	28	14
3	34	11.3
4	38	9.5
5	42	8.4
6	48	8
7	56	8
8	66	8.2
9	78	8.6



Behavior Of Average Costs Curve

Average Costs Curve is "**U shaped**" because of the application of the law of variable proportion. Initially law of increasing returns or diminishing costs applies. After a point when production is increased, law of diminishing returns or increasing costs sets in. Consequently the curve rising upward.

As output increases the value of average costs falls continuously till it reaches a minimum point, beyond this point, the average cost starts rising.

➤ **Average Fixed Cost**

Average fixed cost is the fixed cost per unit of output.

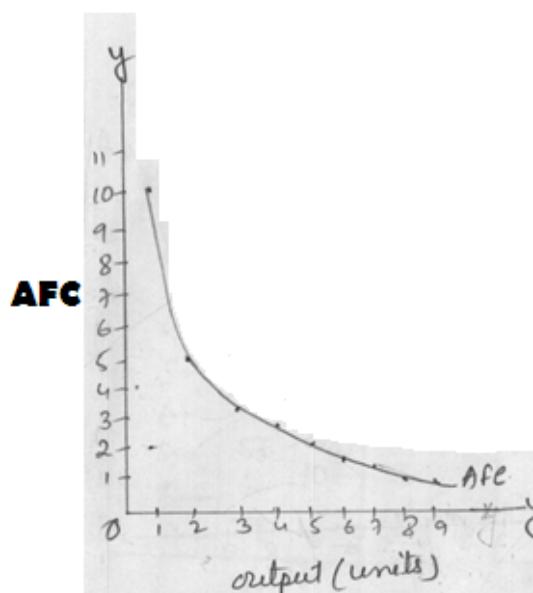
Average fixed cost can be obtained by dividing total fixed cost by the total output.

$$AFC = TFC / Q$$

Here, AVC = Average variable cost, TFC = Total fixed cost, Q = Quantity

Table No -5
Average Fixed Cost

Output (Rs.)	TOTAL FIXED COST (TFC)	Average Cost (Rs.)
0	10	∞
1	10	10
2	10	5
3	10	3.3
4	10	2.5
5	10	2
6	10	1.6
7	10	1.4
8	10	1.2
9	10	1.11



Behaviour Of Average Fixed Cost Curve

- 1.The average Fixed costs curve derived from TFC.
2. Average fixed costs curve will be a downwards sloping curve/rectangular hyperbola.it shows that AFC decrease as output increases.
- AFC X Quantity at any level of output is the same.
Because, $AFC \times \text{Quantity} = TFC$
Which is Constant at all level of Output. Thus: $4 \times 2.5 = 10$, $5 \times 2 = 10$
3. AFC curve will never touch the x-axis, because Total fixed cost cannot be zero, however, large the level of output may be.
- 4.AFC curve never touches y-axis because TFC is a positive value at zero level of output and any positive value divided by zero will provide infinite value.

➤ Average Variable Cost

Average Variable cost is variable cost per unit of output.

The average variable cost is found by dividing the total variable costs by the total units of output.It is the per unit cost of the variable factor of production.

Symbolically, $AVC = TVC / Q$

Here,

AVC = Average variable cost.

TVC = Total variable cost.

Q = Quantity.

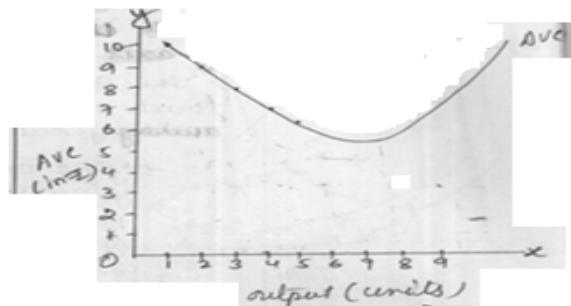
Total variable cost, as we already know, are determined by the law of variable proportions. Consequently, average variable cost also shows the same tendency. Average variable cost falls initially and rises after the point of normal capacity has been reached.

Average variable cost can be explained with the help of table and graph:

Table No -6

Average Variable Costs

output	Total Variable Cost (Rs.)	Average Variable Cost (Rs.)
0	0	0
1	10	10
2	18	9
3	24	8
4	28	7
5	32	6.4
6	38	6.3
7	46	6.6
8	56	7
9	68	7.5



Behavior of AVC

- Graphically, AVC curve is U shaped because of the operation of law of variable proportions. Initially AVC tends to fall, then gradually it tends to rise.
- It is clear from table that initially upto 6th units of output, AVC has been falling but it begins to rise from the 7th units. It is so because in the initial stages of production law of increasing returns operates which causes the cost to diminish. But after a point law of diminishing return sets, as a result AVC begins to rise.

➤ Marginal cost

Marginal cost is the addition made to total cost by the production of one more unit of a commodity.

Marginal cost is the change in total cost when additional unit of output is produced.

$$MC = \Delta TC / \Delta Q$$

$$\text{Or , } MC_n = TC_n - TC_{n-1}$$

$$\text{Or, } MC = \Delta TVC / \Delta Q$$

$$\text{Or, } MC = TVC_n - TVC_{n-1}$$

$$\text{Also, } \sum MC = TVC.$$

Here, **MC** = Marginal cost, **ΔTC** = Change in total cost, **ΔQ** = Change in quantity production , **TVC** = Total Variable Costs , Δ = Refers for change, **MC n**= Marginal cost of ' n ' units of output, **TC** n =Total cost of 'n' units of output,**TC $n-1$** = Total cost of 'n-1' units of output.

Marginal cost is illustrated in Table & Graph

Table No -7

Marginal cost

Output	Total Cost	Marginal Cost
1	10	10
2	19	9
3	27	8
4	34	7
5	41	7
6	49	8
7	60	11
8	72	12

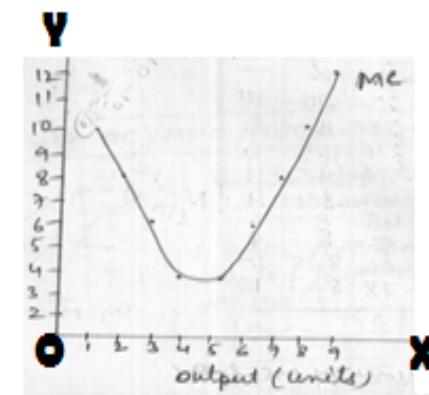
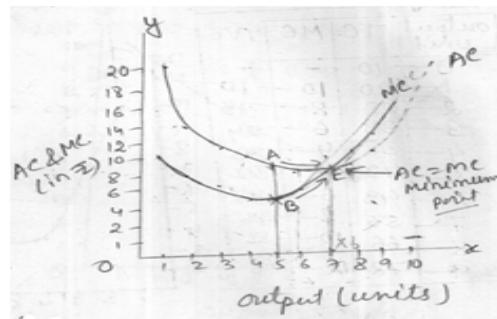


Table shows that , $MC_n = TC_n - TC_{n-1}$ When 4 unit of output are produced , $MC_n = TC_4 - TC_3 = 38 - 34 = 4$

Marginal cost curve is also ' U' Shaped because of the law of variable proportion signifying that initially it falls and ultimately it rises.

Relationship between average cost and marginal cost:

Output	Total cost (TC)	Average cost (AC)	Marginal cost (MC)
0	10	α	-
1	20	20	10
2	28	14	8
3	34	11.3	6
4	38	9.5	4
5	42	8.4	4
6	48	8	6
7	56	8	8
8	66	8.25	10
9	78	8.67	12



The relationship between Average Cost and Marginal Cost.

1. Both Average Cost and Marginal Cost are derived from TC by the formulas,

$$AC = TC/Q \text{ & } MC = TC / Q$$

2. Both average cost and marginal cost curves are 'U' shaped , reflecting the law of variable proportions.
3. Average Cost includes both variable cost & fixed cost. Since, $AC=AFC + AVC$. But marginal cost (MC) is addition made only to variable cost when output is increased by one more unit.
4. When average cost falls marginal cost also falls but to the comparison of marginal cost average cost falls faster ($AC > MC$).
5. When average cost rises , marginal cost also rises but to the comparison of average cost marginal cost rising faster ($MC > AC$).
6. When average cost is minimum , then marginal cost is equal to average cost ($MC=AC$).In other words , marginal cost curve cuts to average cost curve at its minimum point (i.e., optimum point)
7. Marginal cost is always to the left of average cost, and cuts ac from its lowest point.
8. There is also abnormal situation when average cost falls and marginal cost rises. In the given diagram from "A to E " average cost falls but from "B to E" marginal cost rises. But opposite never happened.

Demand Analysis(Unit-1)

- ❖ Essentials of demand analysis
- ❖ Concept of Demand
- ❖ Definitions
- ❖ Demand Functions
- ❖ Types of Demand
- ❖ Demand Schedule
- ❖ Demand Curve
- ❖ Factors Affecting on Demand/Determinants of demand

Essential for demand analysis

Demand analysis is essential for a business in the following ways:-

- ✓ It is required to identify and measure the forces that determine sales.
- ✓ Extent of production and cost allocation depend upon demand analysis.
- ✓ It is essential for pricing and inventory holdings.
- ✓ It helps in sales forecasting and profit planning.
- ✓ New product policy and advertisement policy can't be drawn without the analysis of demand.
- ✓ Research & Development strategy can't be framed without the demand analysis.
- ✓ It is the basis of tracing the trend of the firm's competitive position in the market.

In nutshell, we can say that demand analysis is primarily used for forecasting and promote of sales. Production can be better planned if future demands are identified.

Meaning of Demand:-

Demand refers to the quantities of a commodity which a consumer is willing and able to purchase at any given price, during some specific period of time. Therefore, there are seven essentials of demand.

1. Desire for a commodity
2. Capacity to pay for it
3. Willingness to pay for it
4. Quantity bought and sold
5. At a given price
6. At a given time, it may be a day or month
7. At a given place

Demand therefore, is an effective desire.

Definitions of Demand:-

In the words of " Edward"

Demand is defined as the amount of commodity or service bought per unit of time at a given price.

According to " Veera Anstey"

The demand for a particular good is the amount that will be purchased at a given price & at a given time.

Demand is , thus Demand defined as the quantity of a commodity which a person is willing to buy at a certain price, at a particular time & a particular place.

Types of Demand:-

1. Price demand
2. Income demand
3. Cross demand
4. Joint or Complementary Demand
5. Composite Demand
6. Direct & Derived Demand
7. Competitive Demand
8. Consumer's goods & Producer's goods demand
9. Perishable & Durable goods demand
10. Company & Industry Demand

- 1. Price Demand:-** Price demand expresses the relationship between the price & demand of a commodity, other things remaining constant.

This can be shown in terms of an equation, known as Price demand function. $D_x = f(P_x)$
Price Demand function establishes an inverse relationship between price & demand of a good.
As shown in fig.

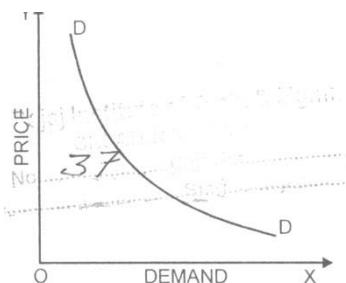


Fig. 5.1 Price Demand

- 2. Income demand:** - It expresses the relationship between income of the consumer & quantity demanded of a commodity .other things remaining constant.

Things that are assumed to remain constant are

- a) Price of the commodity
- b) Price of related commodities
- c) Taste, Nature & Habits of the consumer.

So, income demand function will be as under. $D_x = f(y)$

Here, D_x =Demand for x commodity, y = consumer income

The income Demand relationship is usually direct. The demand for the commodity increases with the rise in income & decreases with the fall in income.

1. Demand for Normal goods
2. Demand for inferior goods / giffen goods

1.Demand for normal Goods:- Normal goods are those goods whose demand increase with the rise in income & decrease with the fall in income.

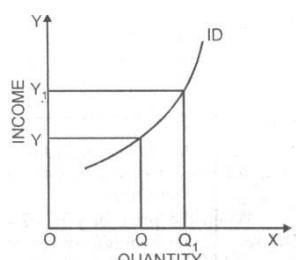
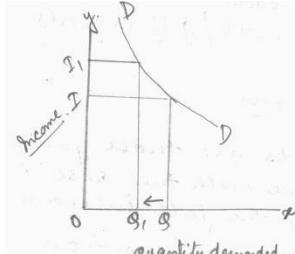


Fig. 5.2 Income Demand (Normal goods)



2.Demand for inferior goods / giffen goods:- Consumer who is in the habit of consuming an inferior good. So long as his income remains below a particular level of his minimum subsistence, he will continue to buy more of this inferior good.

But when his income rises above that level, he reduces his demand for the inferior goods. Fig . shows , At income level of OI , demand is OQ . With rise in income from OI to OI₁, demand has fallen from OQ to OQ₁.

In this case there is inverse relationship between income & demand and the income demand curve has a negative slope. Examples- Coarse grain, coarse cloth, vegetable ghee, Toned milk etc.

3. **Cross Demand :-** It is a situation, where in change in the price of one commodity results in the change of the demand of other commodity.

It can be expressed in terms of the following equation: $D_x = f(P_y)$

Here, D_x =Demand for x commodity, P_y = Price of Y commodity

Or, Demand for good 'X' is function of the price of good 'y'.

Related goods are two types

- i) Substitute goods
- ii) Complementary goods

I) Substitute goods:- Commodity which can be used in place of other commodities are known as substitute goods. (Substitute is those goods which can be used for one another)

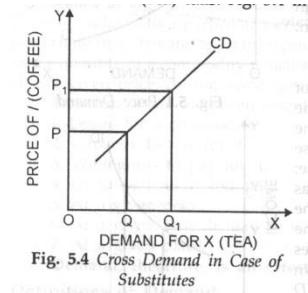


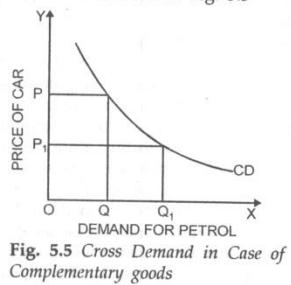
Fig. 5.4 Cross Demand in Case of Substitutes

Ex- Tea & Coffee.

When the price of good 'Y' (Coffee increases from O_p to O_p1 the quantity of good 'X' (Tea also increases from OQ to $OQ1$.

The cross demand curve DD for substitute for positive sloping.

- ii) **Complementary goods:** - Commodity which are required jointly are termed as complementary goods. (Goods which are jointly demanded are also known as complement).



Ex- Pent & Shirt, Pen & Paper , Car & Petrol

In case of complementary goods fall in the price of ' X' (Car) commodity bring a rise in the demand for 'Y' (Petrol) commodity. Conversely, a rise in the price of X (Car) commodity bring a fall in the price of 'Y' (Petrol) commodity.

Fig., shows when the price of 'X' (Car) fall from OP to OP₁ , the demand for 'Y'(Petrol) increases from OQ to OQ₁.

The cross demand curve in case of complementary goods DD is negatively sloping.

4. **Joint Demand:** - When to satisfied a particular want, two or more than two goods are demanded simultaneously, then such a demand is called Joint demand.

Ex- To drive a car we need a petrol, tyre, Service station , Good road etc.

5. **Composite Demand:-** Composite demand refers to the demand for one commodity in order to satisfy two or more wants.

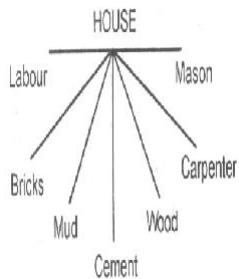
Ex- Demand for electricity is a composite demand.

Demand of electricity for lighting, for factories, for railways, For Agriculture etc.

Total demand for electricity is known as composite demand.

6. **Direct & Derived Demand:-** When a commodity is demanded for its direct consumption , it is called **direct demand**.

Ex- Demand for bread to eat, cloth to wear, pen to write is direct demand.



Derived demand refers to the demand for one commodity as a result of demand for another.

Ex- Demand for bricks, cement, timber, iron etc. is derived demand as these items are needs for house construction.

7. **Consumers Goods & Producers goods Demand-** Consumers goods are used for final consumption, ex-food items, readymade cloths, houses

Producers goods are used for production of other goods, such as machine, tools, raw materials etc

8. **Perishable & durable good:-** Perishable goods are those goods which can be consumed only once. Ex-Sweets, bread, fruits, milk, vegetables etc

Durable goods are those which can be used more than once over a period of time. EX-Furniture, refrigerator, car etc

9. **Company and Industry Demand**-Company demand denotes the demand for the products of a particular company

Industry demand means the demand for the product of a particular industry-Demand for steel produced by Tata iron and steel company is a company demand. While demand for steel produced by all companies in India is industry demand for steel in India

Demand schedule

It is a schedule which shows different quantities of a commodity purchased at different prices.

Or ,it is a list of prices & quantities.

Or,it explains the functional relationship between price & demand of a commodity.

Demand Schedule is two type

- i) Individual demand schedule
- ii) Market demand schedule

Individual demand schedule

It is a schedule or a list of various quantities of a commodity which an individual consumer purchases at different prices in the market.

Individual demand Schedule

<u>Price of Ice-Cream (Rs. Per Cup)</u>	<u>Quantity Demanded (Units)</u>
<u>5</u>	<u>1</u>
<u>4</u>	<u>2</u>
<u>3</u>	<u>3</u>
<u>2</u>	<u>4</u>
<u>1</u>	<u>5</u>

The price of ice-cream goes up increasing the quantity demanded goes on falling .when price is rs 5 per cup,then the consumer demanded 1 cup, but when price falls to rs 1 per cup,the demand of the consumer goes up to 5 cups.

Market Demand Schedule

It is a schedule which represents different quantities of commodity which all consumers will buy at all possible prices at a given time.

The Market demand Schedule can be obtained by adding up all the individual demand Schedules.

Symbolically, the Market demand Schedule can be Expressed as Follows

$$(DM = DA + DB + \dots + Dn)$$

Where DM is the market demand schedule & DA+ DB+..... Dn are individual demand schedules. Following table represents market demand schedule. The schedule is based on the assumptions there can be two consumers Mr.A & Mr.B of ice cream in the market. By summing up there individual demands, the market demand schedule has been drawn.

Price of ice cream per unit (Rs.)	Demand of Mr. A	Demand of Mr. B	Market Demand
5	1	2	1+2=3
4	2	3	2+3=5
3	3	4	3+4=7
2	4	5	4+5=9
1	5	6	5+6=11

Demand curve

Demand curve is simply a graphic representation of demand schedule.

It is a diagrammatic presentation of the relation between different quantities of a commodity demanded at different prices at given time in the market.

Like demand schedule, demand curve is also two types-

1. **Individual demand curve**
2. **Market demand curve**

1. **Individual demand curve** – Individual demand curve is a curve which represents different quantities of a commodity demanded by a consumer at different prices.
Individual demand curve shown in the fig.

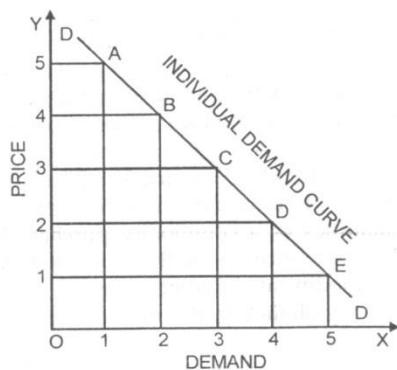


Fig. 5.9 Individual Demand Curve

- ❖ OX axis shows quantity of the commodity.
- ❖ OY axis shows price of the commodity.
- ❖ DD is the demand curve. Expresses the relation between price and demand.
- ❖ When price is Rs.5, Demand is 1 unit.
- ❖ When price is Rs.1, Demand is 5 units.

Thus, demand curve slopes downward from left to right indicating that at higher price demand is less & at lower price demand is more.

2. Market Demand curve - It is a curve that represents the total quantities of a commodity demanded by all the consumers in the market at different prices.

It is a horizontal summation of all the individual demand curve concerning homogeneous commodity.

Fig shows the market demand curve is shown which is based on the market demand schedule straced in table no. 2.

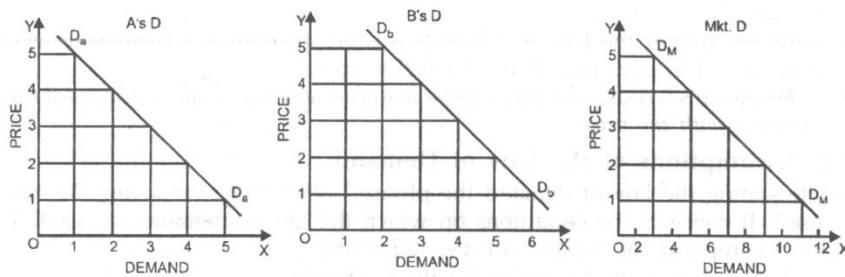


Fig. 5.10 Market Demand Curve

- ❖ OX axis shows quantity of the commodity.
- ❖ OY axis shows price of the commodity in all fig (i), (ii), (iii).
- ❖ When price of Rs 1 per ice cream cup Mr. 'A' Demand is for 5 cups & Mr. 'B' demand is for 6 cups.
- ❖ Horizontal summation of individual demand of both the consumer constitutes market demand that is 11 cups.
- ❖ D_x and D_y are the individual demand curve & D_m is the market demand curve, which has been obtained by the lateral summation of the individual demand curves. Its slope is also negative.

Determinant of demand/Factors affecting Demand

The Important demand determinants are as follows:

- ❖ Price of the commodity.
- ❖ Price of related goods (which include prices of substitutes & complements).
- ❖ Income of the consumer.
- ❖ Expectation of future price
- ❖ Tastes & preference of the consumers.
- ❖ Consumer's expectation of future income.
- ❖ Size & compositions of the population.
- ❖ Distribution of income.
- ❖ Discoveries.
- ❖ Climate & weather.
- ❖ Reduction in taxes.
- ❖ Advertisement effect.
- ❖ Consumers credit facility.

1. **Price of the commodity** - Basically, demand for a commodity depends upon its price, if the price rises the demand falls & if the price falls the demand rises.
2. **Price of related goods** – When a change in the price of one commodity influences the demand of the other commodity, we say the two commodities are related. These related commodities are of two types: Substitutes & Complements. When a want can be satisfied by alternative similar goods, they are called Substitutes – For Example - Tea and coffee, apple and pears, Ground nut oil and til oil etc. EX- The demand for tea depends not only on its price but also on the price of its substitute, coffee . If the price of coffee falls, while that of tea remains the same, the demand for tea falls. When in order to satisfy a given want, two or more goods are needed in combination, these goods are referred to as complementary goods. Ex- Car & Petrol, Pen & Ink, Pen & Paper, Shoes & Shocks. Complementary goods are always in joint demand. When the price of one commodity decrease, the demand for its complementary product will tend to increase and vice versa. For Ex- a fall in the price of cars will lead to an increase in the market demand for petrol.
3. **Income of the consumer** – Income level determines the demand to a great extent. Normally, there is direct relationship between income and demand. In case of normal goods, if income rises demand increases & if income falls demand decreases. On the other hand, demand for inferior goods falls with increase in income & rises with decrease in income.

4. **Expectation of future price** – Demand is also influenced by expected changes in prices. If people anticipate a rise in price in future, they buy more now and stare the commodities then demand increases.
If they expect a fall in price, they may postpone their purchases. Then demand decreases.
5. **Tastes & Preferences of the Consumers** – these terms are used in broad sense. They include fashion, habit, custom etc.
Tastes & Preferences of the consumers are influenced by advertisement, climate & new inventions etc.
Demand for those goods goes up for which consumers develop taste on the other hand, demand for a particular good will go down if people have no liking for that.
6. **Consumers' Expectations for future income** – In case the consumer expects a higher income in future, he spends more at present, and there by the demand for the good increases, opposite will be the case, If he expects lower income in future. Similarly, if the consumer expects future prices of the goods to increase, he would rather like to buy the commodity now than later. This will increase the demand for the commodity.
7. **Size & Composition of the Population** – Demand for commodities depends upon the size of population. Increase in population leads to more demand for all types of goods & decrease in population leads to a fall in demand.
Composition of population also affects the demand. Composition refers to the ratio of males, females, adults & children & the no of old in the population.
8. **Distribution of Income** – Demand is also influenced by the distribution of income in the society. If Income is equitably distributed there will be more demand.
If income is not Equitably distributed there will be less demand .
In the latter case the rich becomes richer & the poor becomes poorer, & because of the low income of the larger group of the society i.e the poor the demand will also be low.
9. **Discoveries** – If new substitutes are discovered, they may decrease the demand for original products. Synthetic fibre has reduced the demand for cotton cloth.
10. **Climate & Weather** – Demand for commodities also depend upon the climate of an area & Weather. In cold hilly areas woolens are demanded. During summer demand for Umbrellas may rise, in winter ice is not so much demanded.
11. **Reduction In Taxes** – Reduction in taxes & duties will allow more persons to enter a particular market and thus raising the demand for a particular product.
12. **Advertisement Effect** – A lot of money is spent on Advertisement to influence the tastes & Preferences of the consumers in their favour. This increases their sales.

- 13. Consumer Credit Facility- Availability of credit to the consumers from the sellers banks, relations & friends or from other sources , enduces the consumer to buy more than what they would buy in the absence of credit availability .**

DEMAND FUNCTION(imp)

A Mathematical expression / functional relationship between quantity demanded of the commodity & its determinants is known as the demand function.

We may express demand function, as follows:

$$D_x = f(P_x, P_1 \dots P_{n-1}, Y, T, A, E_Y, E_P, \dots \text{etc}) \dots \dots \dots \text{Equation 1}$$

Here,

D_x = Refers to the quantity demanded of product X.

P_x = Refers to the price of product X.

Y = Refers to the level of household income.

T = Refers to the tastes of the consumers.

A = Refers to advertising.

E_Y = Consumers expected future income.

E_P = Refers to consumers Expectation about future prices.

P₁.....P_{n-1} = Refers to the prices of all the other ‘related’ Product in economy ‘related’ Product include substitutes & complements.

Elasticity of demand unit-1

- **Concept of elasticity of demand.**
- **Definition of elasticity of demand**
- **Type of elasticity of demand**
 1. **Price elasticity of demand**
 - a. **Meaning**
 - b. **Degree/Types of price elasticity of demand**
 - c. **Methods Measurement of price elasticity of demand**
 - d. **Factors determining the price elasticity of demand**
 2. **Income elasticity of demand**
 - a. **Concept**
 - b. **Definition**
 - c. **Types**
 3. **Cross elasticity of demand**
 - a. **Concept**
 - b. **Definition**
 - c. **Types**

Elasticity of demands

The concept of elasticity of demand was developed by Marshall in his book "Principles of Economics" 1890.

Meaning

Elasticity of demand measure the degree of change in demand of a commodity in response to a change in the price of the commodity , or change in the income of the consumer or change in the price of related goods.

According to dooley

The elasticity of demand measure the responsiveness of the quantity demanded of a good, to change in its price, price of other goods & change in consumer's income.

Types of elasticity of demand

1. Price elasticity of demand
2. Income elasticity of demand
3. Cross elasticity of demand

1. Price elasticity of demand

The variation in demand in response to a variation in price is called the price elasticity of demand.

According to prof lipsey

Price elasticity of demand may be defined as the ratio of percentage change in demand to the percentage change in price. It may be written as

$$P_E = (\text{percentage change in amount demanded}) / (\text{percentage change in price}) \text{ In}$$

the words of Boulding

Price elasticity of demand measures the responsiveness of the quantity demand to the change in price.

According to Antol Murad

Elasticity of demand is the ratio of relative change in quantity to relative change in price.

Degrees of elasticity of demand

A change in demand is not always equal to change in price. A small change in price may lead to a great change in demand is said to be elastic.

On the other hand even a big change in demand is called inelastic demand. There are Five degrees of price elasticity of demand .

1. Perfectly elastic Demand ($e_D=\infty$)
2. Perfectly inelastic Demand ($e_D=0$)
3. Unitary elastic Demand ($e_D=1$)
4. More elastic Demand/ elastic Demand ($e_D>1$)
5. Less elastic Demand/ inelastic Demand ($e_D<1$)

1. Perfectly elastic Demand ($e_D=\infty$)

When the demand for a commodity rises or falls to any extent without any change in price, or very small change in Price.

It is shown in table where quantity demanded keeps on changing at the same price of RS=10.

Perfectly elastic Demand Schedule

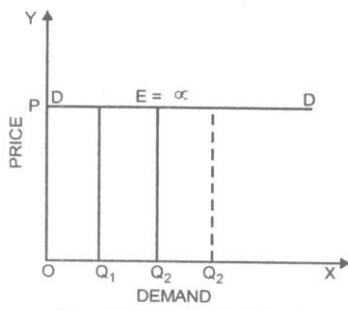


Fig. 5.18 Perfectly Elastic Demand

Price (in Rs)	Demand (Units)
10	10
10	5
10	20

Here elasticity of Demand is equal to infinity & demand curve become horizontal or parallel to ox axis. It means that at price OP, quantity demanded can be OQ , or OQ₁ or OQ₂. EX-it exists under perfect competition, which is an imaginary situation.

2. Perfectly inelastic Demand ($e_D=0$)

It refers to that situation in which there is absolutely no change in demand as a result of change in price.

The Perfectly inelastic Demand curve is vertical line parallel to oy-axis as shown in figure As it is clear from the diagram, price may be OP or OP1 or OP2, but the demand will be constant at OQ. In other words there is no effect of changes in the price on the quantity demanded.

Perfectly Inelastic Demand Schedule

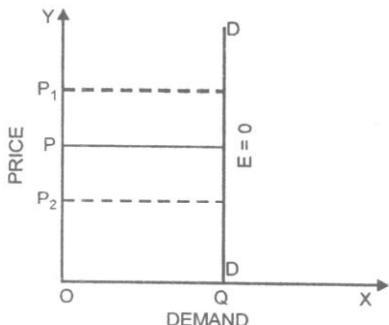


Fig. 5.19 Perfectly Inelastic Demand

Price (in Rs)	Demand (Units)
15	10
10	10
20	10

Example-Essentials like life saving drugs, Banded commodity, Rare medicine

- Demand for acute diabetic patient for insulin. He has to get the prescribed dose of insulin for week whatever its price.

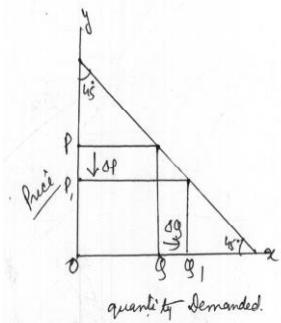
3. Unitary elastic Demand /unit elastic demand($e_D=1$)

When percentage change in demand is equal to the percentage change in price.

Or Demand changes in exact proportion to the changes in price.

It is shown in table when price falls by Rs5, demand increase by 10 units.

Unit elastic Demand Schedule



Price (in Rs)	Demand (Units)
10	20
05	30

The shape of the unitary demand curve is a straight downward sloping line forming 45° angles with both the axis. Semihorizontal or semi vertical. ex- articles of 'comforts' ,In case of normal goods The unitary elastic demand curve shows that when price falls from OP to OP1, demand rises from OQ to OQ1. The change in demand (OQ1) is equal to the change in price (PP1).

4. Elastic Demand / More than elastic demand($e_D>1$)

Elastic Demand Schedule

Price (in Rs)	Demand (Units)
10	20
09	40

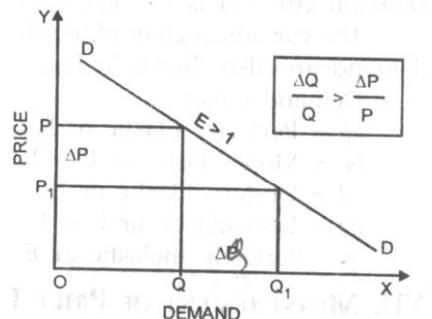


Fig. 5.21 More Elastic Demand

When a small change in price leads to a more than proportionate change in demand.

It is shown in table, when price falls by Rs1 demand increase by 40 units. The elasticity is more than unity.

➤ The shape of the demand curve downward sloping & flatter & more horizontal.

➤ The elastic demand curve shows that when price fall from OP to OP1 , demand rises. From OQ to OQ1. The change in demand (QQ1) is more than the change in price (PP1).

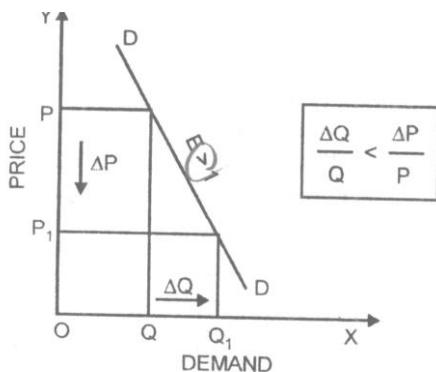
E.X Articles of Luxuries

5. Less than unit elastic demand(Inelastic Demand)

When a considerable change in price does not lead to much change in the demand.

Here the elasticity of demand is said to be less than unity. Or the proportionate change in demand is lesser than the proportionate change in price.

Table & diagram



Price (in Rs)	Demand (Units)
10	20
02	21

It is shown in table, where price falls by rs 8 quantity demanded increase by only 1 unit

The slope of an inelastic demand curve is sharp steep.

Ex- Necessities like food , fuel etc.

It indicate that when price falls by PP1 demand extend by QQ1.

2. INCOME ELASTICITY OF DEMAND Meaning

Income elasticity of demand is the rate at which quantity brought change, as a result of change in the income of the consumer. Other thing being equal.

It shows how the quantity demanded will change, when the income of the consumer changes, other things remaining constant. **Definition**

Income elasticity of demand means the ratio of the percentage change in the quantity demanded to the percentage change in income.

Measurement of income elasticity

Income elasticity of can be measured with the help of the following formula....

$$E_y = \frac{\text{Proportionate change in Demand}}{\text{Proportionate change in Income}} = \frac{\% \Delta Q}{\% \Delta Y}$$

or, Symbolically

$$E_y = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta Y}{Y}} = \frac{\text{Change in Demand}}{\text{Original Demand}} \times \frac{\text{Change in Income}}{\text{Original Income}}$$

$$E_y = \frac{\Delta Q}{Q} \div \frac{\Delta Y}{Y} = \frac{\Delta Q}{Q} \times \frac{Y}{\Delta Y}$$

$$\text{or } E_y = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$$

T.P.D.A

Types /Degree /kinds of income elasticity of demand

1. Positive income Elasticity of demand .

(a) More than unit elastic / high income elasticity($E_y > 1$)

(b) Unitary income elastic($E_y = 1$)

(c) Less than unit elastic / low income elasticity($E_y < 1$)

2. Zero income elasticity($E_y = 0$)

3. Negative income elasticity($E_y < 0$)

1. Positive income elasticity of demand

In case of normal / luxury good there will be positive relation between incomes & demand because as income increases demand increases & vice versa.

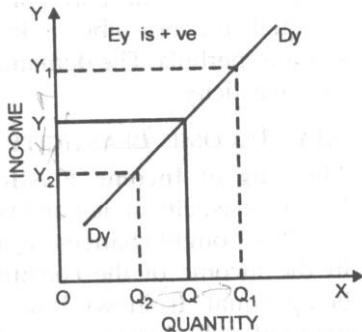


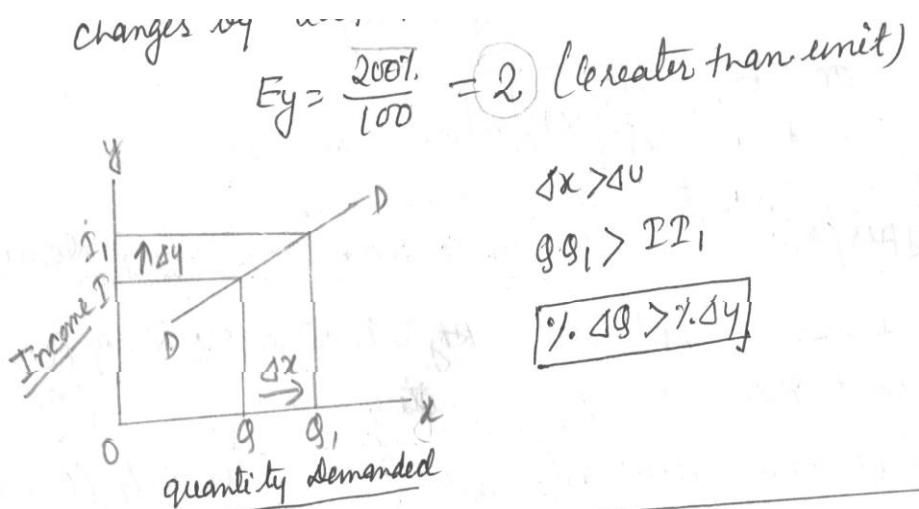
Fig. 5.37 Positive Income Elasticity of Demand

Positive income elasticity may be of three types

- More than unit elastic / high income elasticity ($E_y > 1$)
- unitary income elastic ($E_y = 1$)
- Less than unit elastic / low income elasticity ($E_y < 1$)

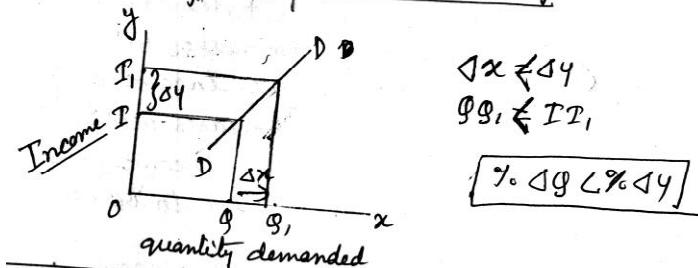
(a) More than unit elastic ($E_y > 1$)

When percentage change in demand is more than percentage change in income. For example if income changes by 100% & demand changes by 200% then,



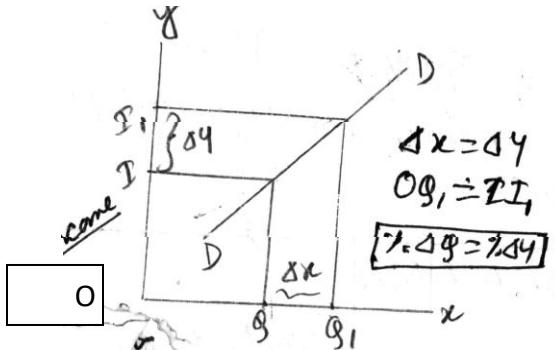
(b) Less than unit elastic ($E_y < 1$)

$$E_y = \frac{50\%}{100\%} = \frac{1}{2} \text{ (less than unity)}$$



Income elasticity of demand is less than unity when percentage change in demand is less than percentage change in income. For example -if income change by 100% & demand change by just 50% then $E_y = 50\% / 100\% = 1/2$ (less than unity).

(c) Unitary income elasticity of demand ($E_y=1$)



Income elasticity of demand is unitary when a given percentage change in demand is equal to the percentage change in money income. for example-If income changes by 100% & demand also changes by 100 % thus $E_y = 100\% / 100\% = 1$ (Unitary Elasticity of demand)

2. Zero income elasticity ($E_y=0$)

When a change in income will have no effect on the quantity demanded.

The income elasticity of demand is zero.

Ex- necessities goods, generally, goods which are very cheap & important like postcard, salt, newspaper, candles, buttons, kerosene etc.

DD is demand curve. it is parallel to y axis, signifying that when income of the consumer increases from OY to OY₁, or falls to OY₂, demand remains unchanged at OQ.

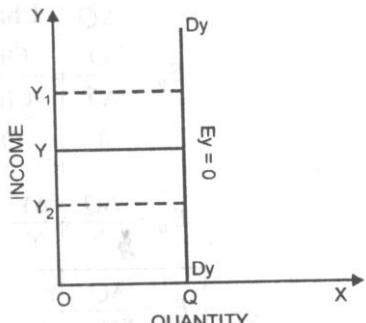


Fig. 5.39 Zero income Elasticity of Demand

3. Negative income elasticity of demand ($E_y<0$)

When the amount demanded of a commodity diminishes with an increase in the income of the consumer & increases with a fall in income , the income elasticity of demand is said to be negative.

Ex--inferior goods ,known as giffen good(coarse grain, jawar , bajara & dalda)

In fig DD demand curve

Slope downwards from left to right.

It signifies that when income increase from OY to OY₁ demand falls from OQ to OQ₁.

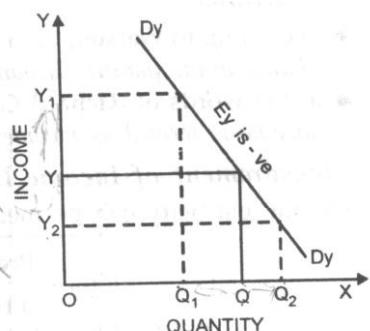


Fig. 5.38 Negative Income Elasticity of Demand

3.Cross Elasticity of Demand

The concept of cross elasticity was initially evolved by Mr. Moore in his famous book, "synthetic Economic".

Later on it was developed by Sir Robert Tiffin in his book "The Theory of Value". **Meaning**
Cross elasticity of demand is defined as the ratio of the percentage change in demand for one good to the percentage change in the price of some other related good. **or**

When the demand for a commodity changes with a change in the price of another related commodity, the case is of cross demand.

According to R.G. Lipsey

Cross elasticity of demand is the responsiveness of demand for good 'A' to change in the prices of good 'B'.

According to Ferguson

The cross elasticity of demand is the proportional change in the quantity of x good demanded resulting from a given relative change in the price of the related good.

Measurement of cross Elasticity of demand

Cross elasticity of demand can be measured with the help of the following formula.

$$E_c = \frac{\text{Proportionate change in the demand of Good } X}{\text{Proportionate change in the price of Good } Y}$$

writing in symbol

$$E_c = \frac{\frac{\Delta Q_x}{Q_x}}{\frac{\Delta P_y}{P_y}} = \frac{\Delta Q_x}{Q_x} \div \frac{\Delta P_y}{P_y} = \frac{\Delta Q_x}{Q_x} \times \frac{P_y}{\Delta P_y} \text{ or, } = \frac{\Delta Q_x}{\Delta P_y} \times \frac{P_y}{Q_x}$$

Here : P_y = original price of good y

ΔP_y = change in the price of good y

Q_x = original quantity demanded of good x

ΔQ_x = change in the quantity demanded of good x.

Kinds / Types/ degree of cross elasticity of demand

Cross elasticity of demand can be three types

- A.Positive cross elasticity
- B.Negative cross elasticity
- C.Zero cross elasticity

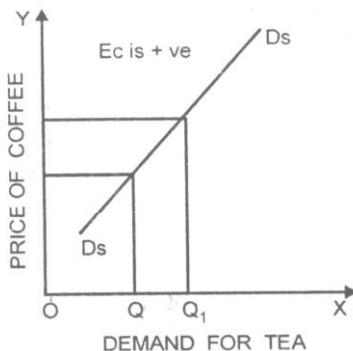
1. Positive cross elasticity of demand

With the rise or fall in the price of commodity the quantity demanded of the related commodity increases or decreases accordingly, then the cross elasticity of demand is positive(or E_c is +ve).

Ex- In case of substitute goods ,as tea or coffee ,butter & jam, cocacola& thums up etc.

In the figure quantity demanded of tea is shown on x-axis & price of coffee on y- axis. When price of coffee is OP ,demand for tea is OQ.

When price of coffee rises to OP1, demand for tea increase to OQ1.



DD is the demand curve of the substitute, which rises upwards from left to right.

It signifies that rise in price of coffee will lead to increase in demand for tea & fall in the price of coffee will decrease the demand for tea.

Fig. 5.40 Positive Cross Elasticity of Demand

2. Negative cross elasticity of demand

When with a rise in the price of a commodity , the demand for related good decrease ,& with a fall in the price of a commodity ,the demand for other related good increase , then the cross elasticity of demand is said to be negative(or E_c is -ve).

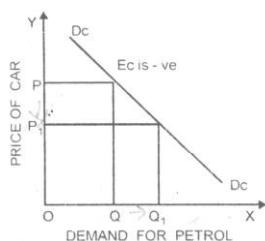


Fig. 5.41 Negative Cross Elasticity of Demand

Ex-- In case of complementary goods car & petrol , pen & ink, Bread & butter etc.

In figure demand for butter is shown on ox-axis & price of bread on oy-axis.

When the price of bread falls from OP to OP1, the quantity demand of butter increases from OQ to OQ1.

The shape of the demand curve is downward sloping from left to right.

3. Zero cross elasticity of demand

When with the change in the prices of a commodity there is no change in the demand of the other commodity, then the cross elasticity of demand is said to be zero (E_c is zero).

Ex--- When two goods are independent goods. Change in the price of butter will have no effect on the demand of petrol.

In the figure , if price of butter rises from OP to OP1, demand for petrol remains the same i. e. OQ.

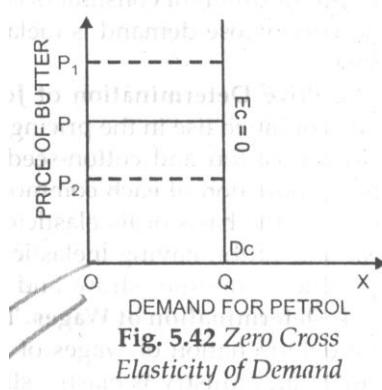


Fig. 5.42 Zero Cross Elasticity of Demand

Measurement of price Elasticity of demand

The measurement of elasticity of demand is to know whether price elasticity of demand (1.) unitary or (2.) greater than unity or (3.) less than unity.

There are four main methods of measurement of price elasticity of demand

1. Percentage or proportionate method
 2. Total expenditure method
 3. Point method
 4. Arc method
- } graphic method
5. Revenue method

1. PERCENTAGE OR PROPORTIONATE METHOD/Mathematical METHOD/ FLUX METHOD

This method was propounded by Dr. Flux hence it is also known as flux's method. it measures elasticity of demand by using mathematics , therefore it is also known as mathematical method.

According to this method elasticity of demand is calculate by the following formula

Percentage change in demand / Percentage change in price = Proportionate change in demand / Proportionate change in price
 Symbolically, it can be written as

$$E_p = \frac{\Delta Q}{Q} \text{ or } E_p = \frac{\Delta Q}{Q} = \frac{\Delta P}{P}$$

Change in quantity demanded / original demand = Change in Price / original Price

Where Δ (delta) stands for change, ΔQ = Change in quantity demanded
 Q = original demand
 ΔP = $(P_i - P)$ Change in price
 P = original price

2. TOTAL OUTLAY/EXPENDITURE METHOD / UTILITY METHOD

This method was evolved by Dr. Marshall.

This is also known as utility method.

According to this method, there can be three measures of elasticity of demand

1. Greater than unity ($E > 1$)
2. Equal to unity ($E = 1$)
3. Less than unity ($E < 1$)

1. Greater than Unity ($E > 1$) When the total expenditure increases with a fall in price and decreases with a rise in price, elasticity is said to be greater than unity or ($E > 1$).
2. Equal to unit ($E = 1$) When the total expenditure remains the same, weather the price rises or falls, elasticity is said to be equal ti unity or ($E = 1$).
3. Less than unity ($E < 1$) When the total expenditure decreases with a fall in price and increases with rise in price elasticity is said to be less than unity or ($E < 1$).

Measurement of Elasticity of demand by total outlay method can also be explained with the help of the following table and diagram.

Table 5.3 Total Expenditure Method

Case	Price	Demand	Total Expenditure	Description	Elasticity of Demand
I	10 9 8 7	1 2 3 4	10 18 24 28	$P \downarrow \rightarrow TE \uparrow$ $P \uparrow \rightarrow TE \downarrow$	$E > 1$
II	6 5	5 6	30 30	$P \downarrow \rightarrow$ No Δ $P \uparrow$ in TE	$E = 1$
III	4 3 2 1	7 8 9 10	28 24 18 10	$P \downarrow \rightarrow TE \downarrow$ $P \uparrow \rightarrow TE \uparrow$	$E < 1$

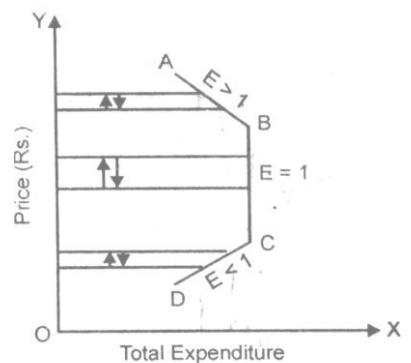


Fig. 5.25 Total Expenditure Curve

In this scheduled, **case I** indicates elasticity of demand as greater than unity because the total expenditure increases from Rs.10 to 28 when price falls from Rs.10 to 7, and total expenditure decreases from Rs. 28 to 10, when price rises from Rs. 7 to 10.

Case II indicates elasticity of demand as equal to 1 or unity because the total expenditure spent remains the same i.e. Rs. 30 when price changes from Rs. 6 to 5 or from Rs. 5 to 6/

Case III indicates price elasticity of demand as less than unity, because the total expenditure decreases from Rs. 28 to 10, when price falls from Rs. 4 to 1, and total expenditure increases from Rs. 10 to 24, when the price rises from Rs. 1 to 4.

Diagram: In this diagram total expenditure is shown along x axis and price on y axis. Line ABCD represents total expenditure lines AB part of TE line represents elasticity of demand greater than unity, because on this portion total expenditure increases with a fall in price and decreases with a rise in price. BC part of TE line represents unitary elasticity ($E=1$). It points out that on this segment total expenditure remains constant either with fall or rise in the price. CD part of the TE line represents less than unitary elasticity of demand ($E<1$). It signifies that total expenditure decreases with a fall in price and increases with rise in price.

Defect The main weakness of total expenditure method is that it does not assist us to measure elasticity in term of numerical numbers. It simply classifies price demand into elastic, in elastic or unitary elastic demand.

3.POINT METHOD/ GEOMETRIC METHOD

This method suggest by Dr. Marshall , used to find out the elasticity of demand at a particular point on a demand curve. It is also known as Geometrical method .

When there are infinitely small changes in price & demand then elasticity of demand is computed at a single point on a demand curve which is known as point elasticity.

Accordingly to this method point elasticity can be measured with the help of the following formula..

$$E \text{ at point} = (\text{Lower sector of demand curve}) / (\text{Upper sector of demand curve})$$

If,

1. Lower sector>upper sector, $E>1$ 2.

Lower sector=upper sector, $E=1$ 3.

Lower sector<upper sector, $E<1$

With the help of formula price elasticity of demand can be measured on two types of demand curves

1. In case of linear demand curve
2. In case of non linear or curvi linear demand curve

1.In case of linear demand curve

The elasticity of demand is measured by using the formula...

$$\text{Elasticity of demand} = (\text{lower sector of demand curve}) / (\text{upper sector of demand curve})$$

By use of above formula we can calculate the elasticity of demand at any point on a straight line demand curve.

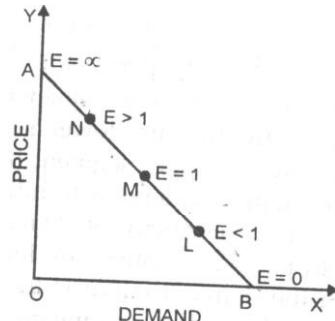


Fig. 5.27 Elasticity at different Points on straight line demand curve

In fig AB is the straight line demand curve joining the two axis.

Let us take point on M the middle point on the

demand curve AB Now E at point M

$$= MB/MA$$

Using the numerical example of AB being equal to 4 cm.

$$\text{Then, } E \text{ at point M} = MB/MA = 2\text{cm}/2\text{cm} \text{ or } E=1$$

Similarly, we can compute the E at points N & L

$$E \text{ at point N} = NB/NA = 3\text{cm}/1\text{cm} \text{ or, } E>1$$

$$E \text{ at point L} = LB/LA = 1\text{cm}/3\text{cm} \text{ or, } E<1$$

Finally ,let us take two extreme cases , one where the point coincide with A on the y-axis ,& the other where point coincides with B on the x-axis. E at point A=AB/0=4cm/0 or E= infinity

(Any number divide by zero is equal to infinity)

In the second case

$$E \text{ at point B} = 0/BA = 0/4\text{cm}, \text{ or } E=0$$

(zero is devided by any number is equal to zero)

3. Non-linear or curvi- linear demand curve

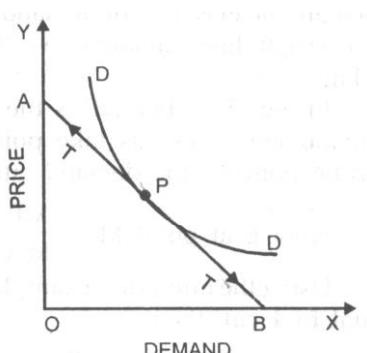


Fig. 5.28 Elasticity when Demand Curve is a curve

When demand curve is non-linear we can measure the elasticity at any point of the demand curve with the help of this formula
 $EP = \text{lower segment of demand curve}$

upper segment of demand curve

$$E \text{ at Point} = PB$$

$$PA$$

$$= 2 \text{ cm}$$

$$2 \text{ cm}$$

$$\text{Or, } E = 1$$

Similarly , we can compute the elasticity of demand at different points of demand curve D.

4. Arc method

The concept of arc elasticity was given by Dalton at first. It was further developed by Watson & Lerner.

According to Watson

"Arc elasticity at the mid point of an arc of a demand curve".

In the words of Leftwitch

"When elasticity is computed between two separate points on a curve, the concept is called arc elasticity".

Arc method is very useful when the change in price & demand are very large.

In this method, we make use of the mid points between the old & the new figures in the case of both price & demand.

Arc signifies a segment of curve between the two points.

Arc elasticity of demand can be calculated with the help of the following formula....

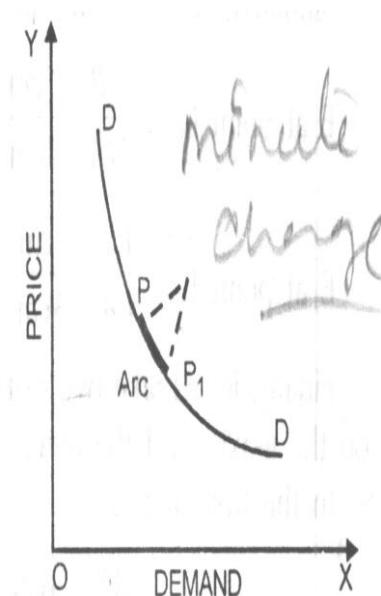


Fig. 5.29 Art Elasticity of Demand

$$E = \frac{Q_1 - Q_2}{Q_1 + Q_2} \div \frac{P_1 - P_2}{P_1 + P_2}$$

Or

$$E = \frac{\frac{Q_1 - Q_2}{Q_1 + Q_2}}{\frac{P_1 - P_2}{P_1 + P_2}}$$

$$= \frac{\text{Original quantity} - \text{New quantity}}{\text{Original quantity} + \text{New quantity}} \div \frac{\text{Original Price} - \text{New Price}}{\text{Original Price} + \text{New Price}}$$

$$E = \frac{\text{Change in Quantity demanded}}{\text{Original quantity} + \text{New quantity}}$$

$$\div \frac{\text{Change in Price}}{\text{Original Price} + \text{New Price}}$$

$$E = \frac{\Delta Q}{Q_1 + Q_2} \div \frac{\Delta P}{P_1 + P_2}$$

Where Q_1 = Original Quantity,
 Q_2 = New Quantity
 P_1 = Original Price, P_2 = New Price
 Δ = (Delta) = change
 ΔQ = Change in demand
 ΔP = Change in price.

Example: A numerical example can be given to illustrate the arc elasticity of demand. Suppose, the price of a commodity is Rs. 10 and the quantity demanded at this price is 100 units. If the price falls to Rs. 8, and the quantity demanded increases to 140 units. Arc elasticity then will be :

$$E = \frac{100 - 140}{100 + 140} \div \frac{10 - 8}{10 + 8}$$

$$= \frac{-40}{240} \div \frac{2}{18}$$

$$= \frac{-40}{240} \times \frac{18}{2} = -1.5$$

(Minus sign is ignored as it only represents the inverse relationship between price and quantity).

The area P & P1 on the demand curve DD in fig is an arc which measures elasticity over certain range of price & quantities.

5. Revenue Method

$$E = \frac{PB}{PA}$$

ΔANP is similar to ΔPQB so that the ratio of their sides is also equal i.e.,

$$E = \frac{PB}{PA} = \frac{PQ}{AN} \quad \dots(1)$$

ΔANK and ΔKPL are congruent so that their sides are also equal i.e., $PL = AN$. By putting PL in place of AN in equation I we get

$$E = \frac{PQ}{PL} \quad \dots(2)$$

Since $PQ = AR$ and $PL = PQ - LQ$ or $PL = AR - MR$

$$E = \frac{AR}{AR - MR} \quad \text{or} \quad E = \frac{A}{A - M}$$

If by using this formula $E = 1$, price elasticity of demand is unity, if it is greater than one, price elasticity is greater than one. Similarly if $MR = 0$, price elasticity of demand is one. If MR is positive, price elasticity of demand is greater than one and if MR is negative, price elasticity of demand is less than one.

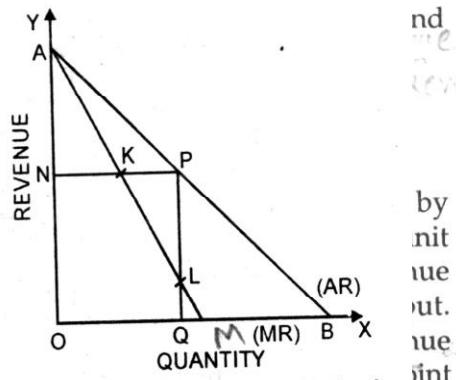


Fig. 5.30 Revenue Method of Measuring Elasticity of Demand

Factors determining the price elasticity of demand

Elasticity of demand for any commodity is determined or influenced by a number of factors which are discussed as under.

1. Nature of the commodity

- Necessities & conventional necessities -> less elastic/inelastic

Because the demand for necessities like food, salt, medicine etc. Does not change much with the rise or fall in their price. Similar in the case with conventional necessities, which are required at the time of marriage, death ceremonies etc.

- Luxuries -> more elastic/elastic

The demand for luxuries like Ac's, gold & diamond jewelry, cellular phone, artistic furniture, costly cars etc. is more elastic because with a small change in their price, there is a large change in their demand.

- Necessities of efficiency & comforts -> Moderately elastic

The demand for necessities of efficiency such as milk, eggs, butter etc. & for comforts like cooler, fans, transistors etc. is moderately elastic because with the rise or fall in their price, the demand for them decrease or increases moderately.

2. Substitutes

Having substitutes - More elastic demand/Elastic

Because with the change in the price of one commodity, the demand for its substitute is immediately affected. Ex-if price of coffee rises, the demand for coffee will decrease & that for tea will increase & vice versa.

Commodities having no substitutes-Less elastic Demand/Inelastic

The demand for commodities having no substitutes like cigarette, liquor & uniform dress etc. is inelastic.

3.Variety of uses Having variety of uses -more elastic /elastic demand

The demand for goods, having variety of uses such as milk ,coal,elasticity etc is more elastic. For Ex-coal is used for cooking heating & power generation , in factories & in locomotives etc. if the price of coal falls, its demand will increase from all quarters.On the other hand , a rise in its price will bring a considerable decrease in its demand for less important uses.

4.Postponement of uses

Commodities whose consumption can be deferred have an elastic demand /more elastic demand For Ex-it demand for constructing houses can be deferred , then demand for building material, such as bricks, cement, steel, timber etc. Will become elastic.

Goods whose demand can not be postponed -Less elastic/Inlastic demand

Ex-Demand for meals when Hungry or for drink when feeling thirsty have inelastic demand /less elastic.

5.Range of prices A very high & very low range of prices -inlastic/Less elastic demand Middle range of price - elastic /more elastic demand

Elasticity of demand depends upon the range of price. At very high & very low range of prices demand tends to be Inelastic . on the other hand at middle range of price demand will be elastic because a rise or fall in price will affect the demand of a large number of persons.

6.Proportion of the income spent on a commodity consumer spent a very small

proportion of his income ->Inelastic/Less elastic demand .

Ex-Newspaper ,toothpaste, saving blades, soap ,boot-polish ,pen-pencil, thread, needle etc. Rise in their prices does not contract their demand.

consumer spent a large proportion of his income->elastic demand/More elastic demand Ex-Cloth ,desert cooler, nutritive food etc. Rise in their price causes contraction of their demand.

7.Habits-(Inelastic demand /Less elastic demand)

Demand for those goods is inelastic to which people are habitual like cigarette ,coffe etc.

Despite rise in their price, people demand such goods is more or less same quantity,

8.Durability of goods

Durable goods-Inelastic demand /less elastic demand

Elasticity of demand also depends upon durability of the commodity, When goods are durable like scooter, T.V set, car etc. the demand is inelastic because people do not buy more of these goods when their price falls.

9.Fashion(Inlastic demand)

Commodity which is in fashion will be inelastic , because it becomes more or less necessary for a consumer to purchase it.

10.Class of Buyers

Wealthy & well to do class- Inelastic demand poor

people to do class-elastic demand

The elasticity of demand for a commodity depends upon the class of buyers, commodity consumed ordinary by wealthy & well to do class of people have inelastic demand because little rise or fall in the price of such commodities does not produce any appreciable response on the part of the well to do.

The commodities which are consumed by the poor section of society are of elastic demand as the poor always run after cheaper substitutes.

11.Income of the consumer

High level of income -less elastic /inelastic low income level-more elastic /elastic demand

UNIT-1 Law of Demand

Concept:

This law is also known as the first law of purchase. It indicates the functional relationship between the price of a commodity and its quantity demanded in the market.

Law of demand states that other things remaining constant, the consumers will demand lesser quantity of goods at higher prices and more quantity of goods at lower prices.

Symbolically , law of demand illustrated as under

$$\begin{array}{l} P \uparrow D \downarrow \\ P \downarrow D \uparrow \end{array}$$

The law of demand can be given in the form of a formula as under

$$P = 1/Q$$

It is read as Q is inversely related to P.

Here , P = price of good

Q = quantity demanded

It can further be classified with the help of the following equation :

$$D_x = f(P_x, \bar{P}_r, \bar{Y}, \bar{T}, \bar{U}, \dots)$$

Here,

The demand for commodity X i.e. (D_x) is a function (f) of price of commodity X (P_x)

While , (\bar{P}_r) = price of related goods

(\bar{Y}) = consumers income

(\bar{T}) = consumers taste

(\bar{U}) = other determinants of demand like size of population , its composition , distribution of income etc. remains constant.

Here, by putting bar on P_r , Y , T and U it is assumed that these determinants of demand are held constant and a functional relationship is established between the quantity demanded of a commodity and its price. In simple words , law of demand explains the inverse relationship between price and demand of a commodity.

Definitions of law of demand

According to professor marshall

“ The amount demanded increases with a fall in price and decreases with a rise in price “

In the words of sumuelson

“ law of demand states that people will buy more at low prices and buy less at higher prices , other things remaining the same.”

In ferguson's words

“ According to the law of demand the quantity demanded varies inversely with the price “

Assumptions of the law of demand

While stating the law of demand the phrase, “ other things remaining constant ”, is used . it keep secret from the conditions on which the law of demand is based.

The law of demand will apply if there is

- 1- No change in the consumer's income.
- 2- No change in the prices of related goods.
- 3- No change in the consumers taste , fashion , preferences and choices .
- 4- No, expectation of any change in the future price of the commodity.
- 5- The commodity in a question is not of any prestigious value , such as diamond etc.
- 6- No substitutes for the commodity .

Features of the law of demand / main points of law of demand

Following are some of the important facts concerning law of demand ,

- 1- Inverse relationship
- 2- Qualitative not quantitative
- 3- No proportional relationship.
- 4- Comparison with the game of see-saw.
- 5- One sided.

Inverse relationship- the law of demand states the inverse relationship between the price & quantity demanded .its simplify affirms that rise in price would tend to reduce demand and a fall in price would tend to increase in demand.

Qualitative not quantitative – law of demand makes a qualitative statement only. It indicates the direction of change in the amount demanded and the law speaks nothing about the magnitude of the upward and downward swings.

No proportional relationship- it should be clearly understood that the law of demand does not establish a proportional relationship between change in price and resultant change in demand. If the price rises by 10% , the demand may fall by 5% or by 95%.

Comparison with the game of see-saw – demand and price are like the two ends of a see - saw .When the one end says price goes down and the ‘other’ one say demand goes up, and vice versa.

One sided- law of demand is one sided . it explain only the effect of change in price on the demand. It speaks nothing about the effect of change in demand on the price of the commodity.

Explanation of the law of demand

The law of demand can be illustrated with the help of the following demand schedule and demand curve.

Demand schedule of an individual consumer

Price of 'tea' (per cup)	Quantity demanded
5	10
4	12
3	15
2	20
1	30

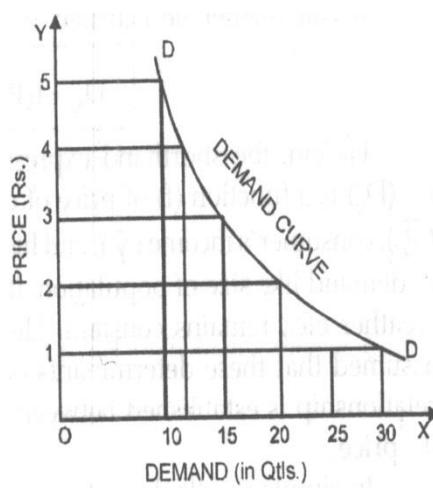


Fig. 5.11 Demand Curve

Table presents five alternative prices of tea and the corresponding quantities (number of cups of tea) demanded per day.

At each price, a unique quantity is demanded . As the table shows , as price of tea per cup decreases , daily demand for tea increases.

This relationship between quantity demanded of a product and its price is the bases of the law of demand.

The law of demand can also be presented through a demand curve . a demand curve is a locus of points showing various alternative price-quantity combinations.

By plotting the data given in table we obtain an individual demand curve for tea . it represent that as the price of tea goes down from Rs 5 to 1 per cup , the demand for no. of cups goes up from 1 to 5 cups and when the price of tea per cup goes up its demand comes down.

Exceptions to the law of demand

There are certain exceptions to the law of demand. It means that under certain circumstances , consumers buy more when the price of a commodity rises and less when the price falls.

In such cases the demand curve slopes upward from left to right . i.e demand curve have a positive slope.

Many causes can be attributed to an upward sloping demand curve.

1- Ignorance- when the consumer haunted by the phobia that high priced goods are always superior in quality. It may not be true.

Superior / deceptive packing and high price deceive the people. they may purchase more because of this price situation.

2- The giffens paradox / inferior goods (IMP)- A fall in the price of inferior goods tends to reduce its demand and a rise in its price tends to extends its demand . because the consumer will wish to buy superior brand of the same commodity. This phenomenon was first observed by sir Robert giffen , popularly known as giffens paradox.

3- Expected change in price – There are many commodities whose price are expected to change in near future, under such circumstances , consumers may behave opposite to the law of demand.

4- Prestigious goods (Veblen's effect) – This is explained by Economist Veblen . The law of demand will not apply in case of costly items such as diamond, jewelry and big cars etc, are such prestigious goods.

5- Conspicuous necessities – Another exception occurs in such commodities as due to their constant use have become necessities of life. For example inspite of the fact that the prices of television sets, refrigerators, washing machine, cooking gas etc. have been continuously rising their demand does not show any tendency to fall. More or less same tendency can be observed in case of most of other commodities that can be termed as upper sector commodities.

6- Change in fashion , habits , attitudes and preference – Such changes in the behavior of the consumer is also responsible for making the law of demand ineffective.

7- Extra ordinary situations – wars, famine riots are the extra ordinary situations , when consumers behaviour becomes abnormal and they may purchase commodities at any price. Law of demand does not operate in these situations.

8- Speculative effect – when the price of a commodity goes up, people may buy larger quantity than before, if they anticipate or speculate a further rise in its price. On the other hand , when the price falls , people may not react immediately and may still purchase same quantity as before, waiting for another fall in the price . In both the cases , the law of demand fails to operate . This is known as speculative effect.

9- Demand for necessities- in case of necessities , people have to consume the minimum quantity , whatever is the price.

10- Irrational and impulsive purchases- impulsive purchases means ' purchases by impression'. At times consumers tend to make impulsive (without cool calculation about price and usefulness of the product) purchases the law of demand fails.

Why does demand curve slope downwards (IMP)

Following are the main causes for downward sloping of demand curve .

1-Law of diminishing marginal utility- The law of diminishing marginal utility is at the root of the law of demand. The law of diminishing utility states that as one goes on consuming more and more units of a commodity its utility to him goes on diminishing . in order to get maximum satisfaction , a consumer buys a commodity in such a way that marginal utility of the commodity is equal to its price. It means that an individual consumer comes to an equilibrium where marginal utility is equal to price. A rational consumer always tries to equate the marginal utility and the price.

When the price come down, he buys more quantity to bring the marginal utility to the level of price. The price paid for a good therefore , must be lowered if consumers are to be induced to take large quantities. And this is what the law of demand states.

Thus the law of diminishing marginal utility is the basis of the law of demand.

2-Income effect – The working of the law of demand can be explained in terms of income effect. A fall in the price of a commodity results in a rise in consumers income. he can therefore, purchase more of it.

On the contrary , a rise in the price of a commodity results in a fall in his real income. He is , therefore force to purchase less of it.

Thus when price falls , amount demanded increases and vice-versa represents the operation of the law of demand due to income effect.

3. Substitution effect :- The fall in the price of a commodity (Remaining the prices of its substitute constant) makes it more attractive to the consumers who know substitute it for the comparatively costly substitute, leading to an extension to its demand. This can be attributed to the substitution effect. Conversely, a rise in the price of a commodity , (While the prices of its substitute remain constant) will make it unattractive to the consumers , who will know demand less of it. They will know use other commodities (whose prices have not risen) in place of the commodity in question. Consequently, there will be a contraction in demand, which can be attributed to the substitution effect. For example with the fall in the price of tea , the price of the coffee remaining the same , tea will be substituted for coffee and thereby , the demand for tea would go up .

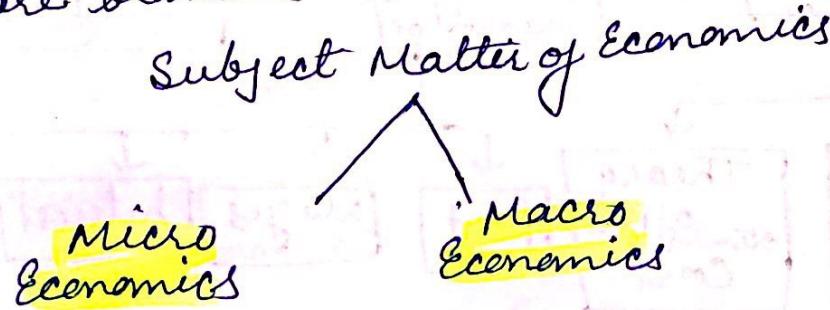
4.New Buyers: When the price of a commodity falls , the demand for that increases two-fold (i) The existing buyers buy more

(ii) New buyers also start purchasing it, because with the fall in the price the commodity will come within the reach of lower income group of the people.

5. Different uses: Many goods have several uses, some of which are more important than others . If the price of the commodity is high its use will be restricted to the most important purpose. The demand of the commodity will , therefore , be small, but when the price declines , the consumer will use it in less important uses also. Consequently, the demand for the commodity will rise.

Subject Matter of Economics

In recent years the subject matter of Economics has been divided into two core branches.



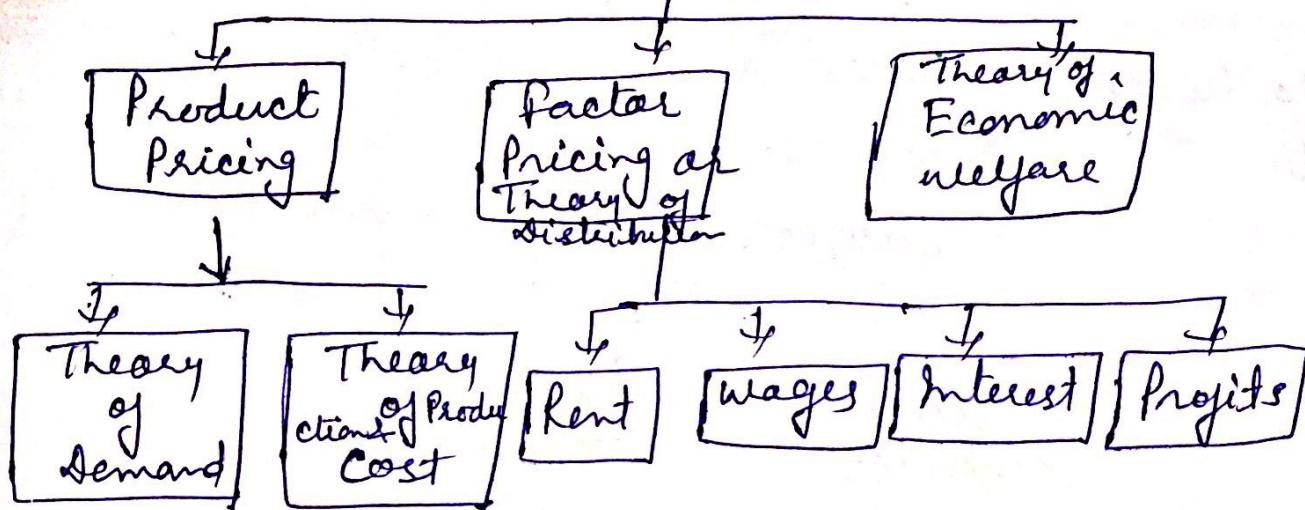
Micro Economics

The term 'micro' is derived from Greek word 'MIKROS', which means small.

Micro Economics is that branch of Economic theory that focuses on the study of the individual unit.

- MC is the study of particular firms
 - particular households
 - individual prices
 - wage
 - incomes
 - individual industries
 - particular commodities.

Scope of Micro Economics



Macro Economics

The term 'macro' has been derived from the Greek word 'Makros' which means large.

→ Macro Economics is the study of Economy as a whole in its totality.

→ it is concerned with the Study of → National income

→ National Saving

→ aggregate consumption

→ Expenditure

→ Total Production

→ General price level etc.

→ It also studies national

Economic problems like

→ Inflation

→ unemployment

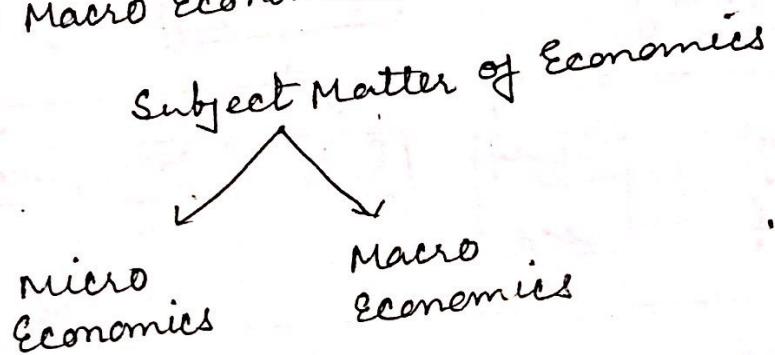
→ Poverty &

→ the issues of

Subject Matter of Economics (unit-I) ①

In recent years the subject matter of Economics has been divided into two core branches.

- (i) Micro Economics
- (ii) Macro Economics



(i) Micro Economics -

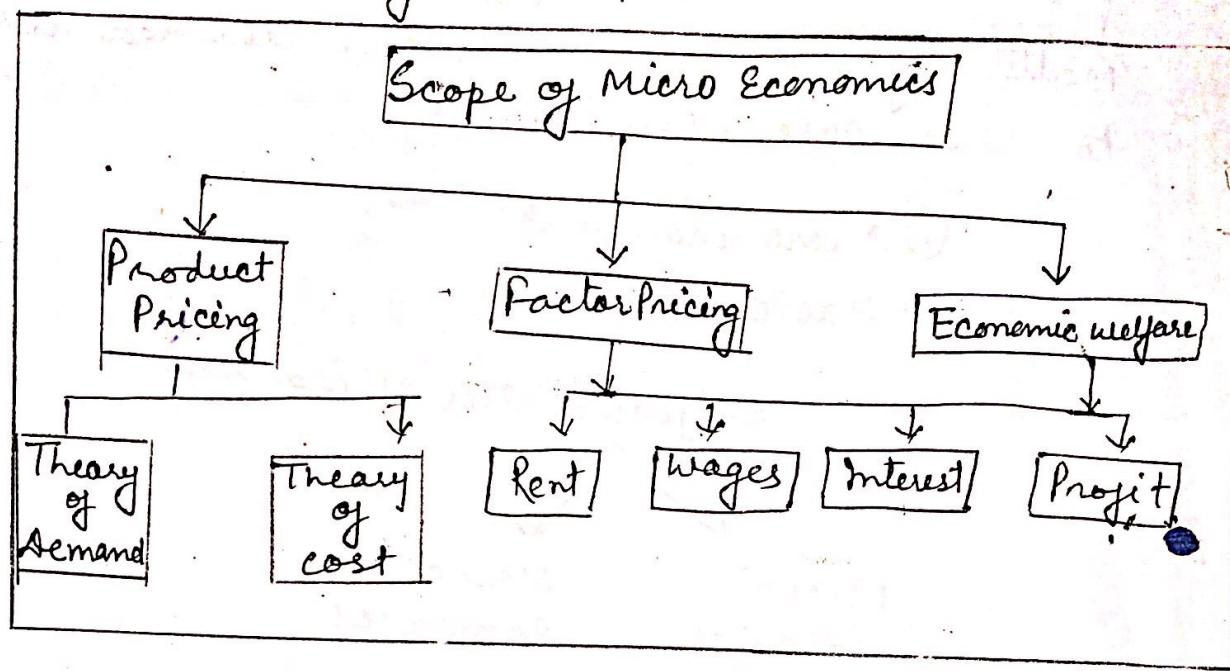
The term 'micro' is derived from Greek word 'MIKROS' which means small. Micro Economics is that branch of Economic theory that focuses on the study of the individual unit.

Micro Economics is the study of particular firms, particular households, individual prices, wage & incomes, individual industries, particular commodities.

It concerns with the detailed study of individual units e.g. how a consumer maximises his satisfaction with his limited income or how a firm maximise its profits or how the wage of a worker

(2)

is determined are all instances of micro analytical approach.



ii) Macro Economics

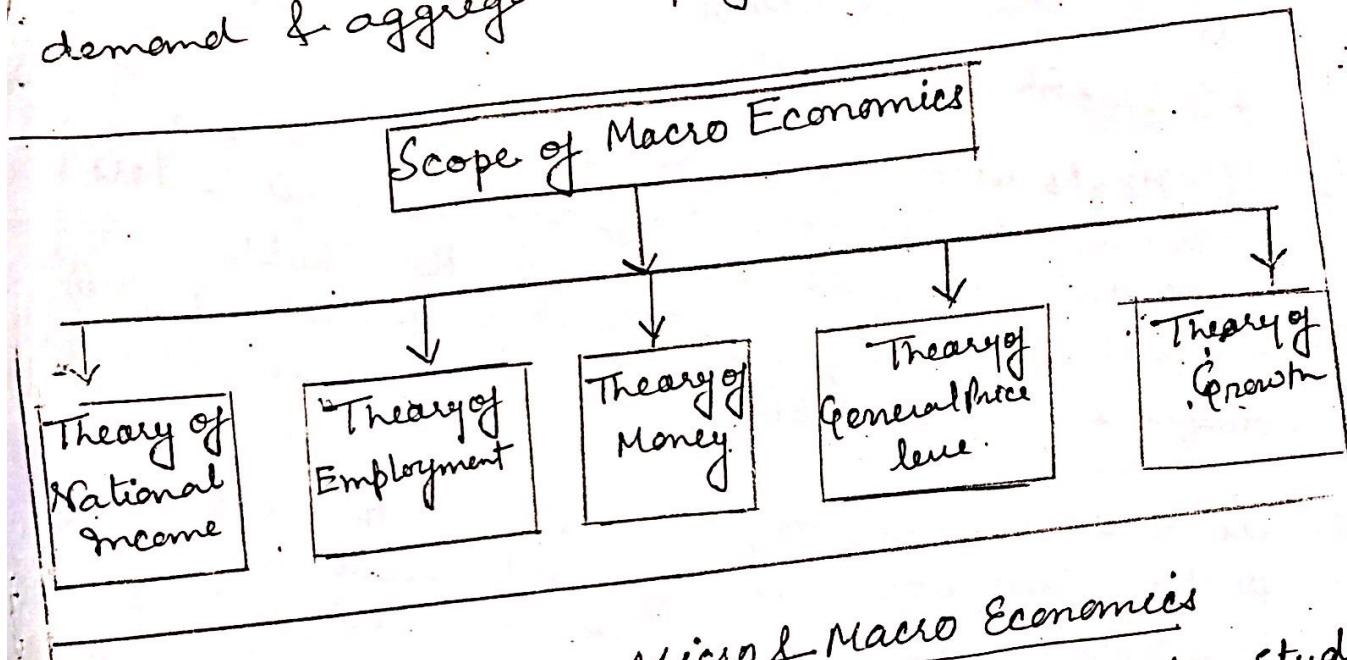
The term 'macro' has been derived from the Greek word 'MAKROS' which means large.

Macro Economics is the study of Economy as a whole in its totality.

it is concerned with the Study of National income, national saving, aggregate consumption, Expenditure, total Production, general price level etc.

it also studies national Economic Problems like inflation, unemployment, poverty & the issues connected with Economic development.

Sense the subject matter revolves around determination of income & Employment - ③
 it is also known as 'Theory of Income & Employment'. its main tool are aggregate demand & aggregate supply.



Difference Between Micro & Macro Economics

Both micro & macro economics study problems relating to scarcity & choice. yet there are differences, as under-

Micro Economics

- Evolution of micro economics took place earlier than macro economics.

Macro Economics

- it evolved only after the publication of keyne's book 'The General Theory of Employment, Interest & Money', 1936.

Q

Micro Economics

2. it studies about individual economic unit like households, firms, consumers etc.
3. it deals with how consumers or Producers make their decisions depending on their given budget & other variables.
4. it uses the method of Partial Equilibrium, i.e. Equilibrium in one market.
5. The major microeconomic variables are Price, individual consumer's demand, wages, rent, profit, revenues etc.
6. Various theories studied are
 - Theory of consumer's Behaviour & Demand
 - Theory of Producer's Behaviour & Supply

Macro Economics

2. it studies about an Economy as a whole.
3. it deals with how different Economic Sectors such as households, Industries, government & foreign Sector make their decisions.
4. it uses the method of general Equilibrium, i.e. equilibrium in all markets of an Economy as a whole.
5. The major macroeconomic variable are aggregate Price, aggregate demand, aggregate supply, Inflation, Unemployment etc.
6. Various theories Studied are.
 - Theory of National Income.
 - Theory of Money

→ Theory of Price
determination under
different Market conditions

→ Theory of Price level ⑤

→ Theory of Employment

→ Theory of International
Trade & globalisation.

7. Micro means Small

8. As it analyses
individually it provides
a partial concept or
partial figure of a country

micro & macro economics
it is
branches of Economics are, despite being different
one another. Micro variables have their impact
on macro level decisions.

For Example - Aggregate Saving & aggregate
investment in the Economy are greatly influenced
by the saving pattern of the households & firms.
likewise, macro variables have their
impact on micro level decisions Ex - consumption
& saving pattern of the households is greatly
influenced by the overall taxation policy of
the government.

7. Macro means large.

8. As it analyses overall it
provides full figure or
complete reflection of a
country.

important to note that

, despite being different

interdependent & complement

each other.

Micro variables have their impact

on macro level decisions.

Macro variables have their impact

on micro level decisions.

Ex - consumption

pattern of the households is greatly

influenced by the overall taxation policy of

the government.

Macro variables have their impact

on micro level decisions.

Ex - consumption

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the government.

UNIT 1 : MANAGERIAL ECONOMICS

INTRODUCTION: - In a General Sense Managerial Economics refers to the integration of Economic theory with business practices. It is that branch of Economics which serves as a link between abstract theory and Managerial or Business Practices.

Economics is a Science ,it concerned with the problem of allocation of scarce resources among competing ends. These problems of allocation are regularly faced by individuals, firms and business corporations. Economics provides the tools and concepts which explain the behavior pattern of economic variables such as demand, supply, price and competition etc.

On other hand managerial economics applies these tools and concepts to the management of business.

It is concerned with the application of economics in decision making. It is always goal-oriented. Several Firms in the world have used the well-established principles of business economics to improve their efficiency and hence Profitability.

WHAT IS MANAGERIAL ECONOMICS?

Managerial Economics is the application of Economics theory and Methodology to decision making problems faced by the business firms.

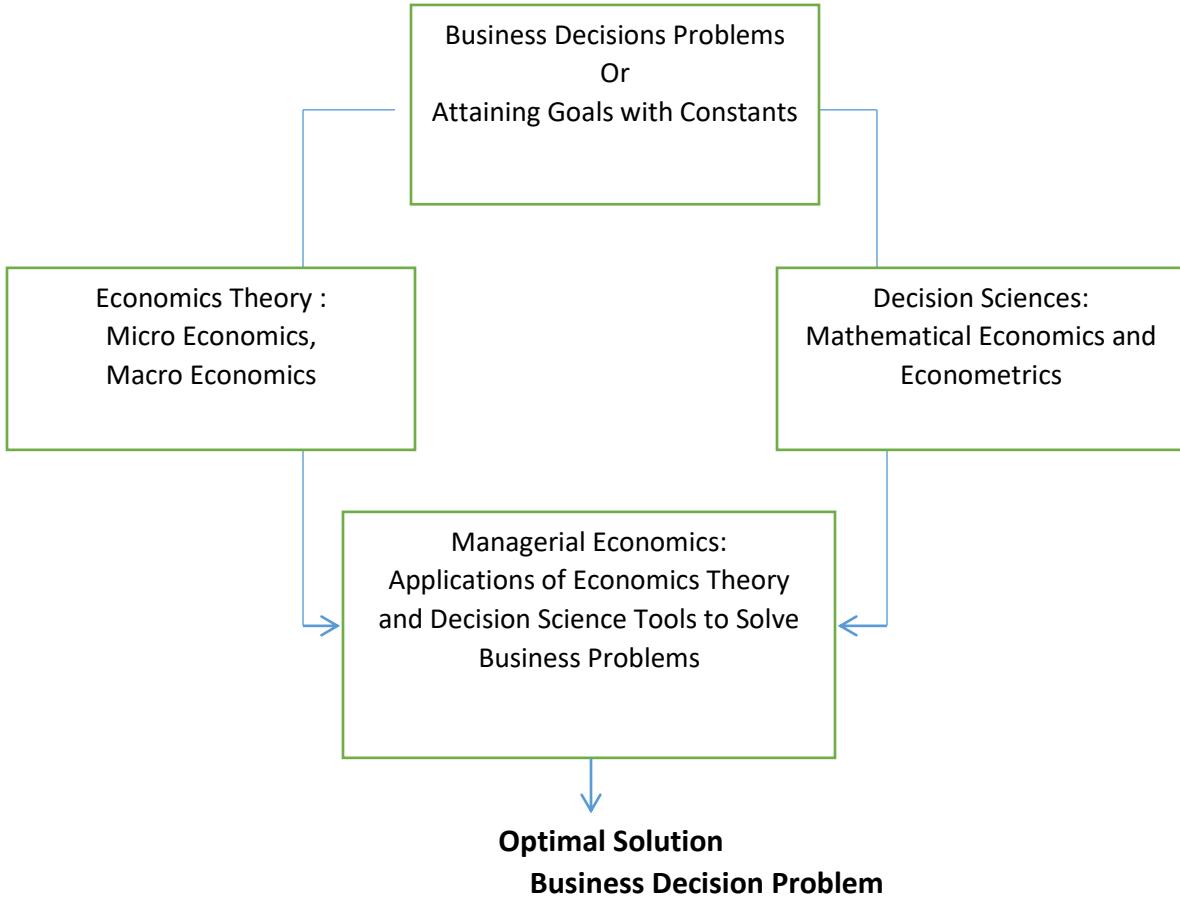
DEFINITIONS:-

In the Words of Spencer :- “Managerial Economics is the Integral Economics theory with the business for the purpose facilitating decision making and forward planning by Management . ”

MC Nair and Meriam Say that:- - “**Managerial Economics** is the use of Economics Models of thought to analyses Managerial Situations.”

According to Joel Dean: - “The Purpose of Managerial Economics is to show how economics analysis can be used in formulating Managerial Policies”

Managerial Economics refers to the application of Economics Theory and Decision Science Tools to find the Optimal Solution to Business Problems.



Business Decision Problems Can be Solved by the application of Economics theory and tools of decisions Sciences. Economics theory refers to Micro and Macro Economics and decisions Science include the tools of mathematical Economics and Econometrics which are used for determining the optimal behavior of the Organization.

Prof. Even Dangels Says: - “Business Economics is concerned with the application of economic principals of methodology to the decision making process with in the firm or organization under the conditions of Uncertainty.

Brigham and Pappas: - Believe that, “Managerial Economics is the application of Economics theory and Methodology to Managerial administrative Practices”

We may, therefore, define Managerial Economics as the discipline which deals with the application of Economics theory business Management.

Managerial Economics thus lie on the border line between Economics and Business Management and Serves as a bridge between the two disciplines.

This Basic Theme of Managerial Economics is shown in a given chart 1 .

FEATURES OF MANAGERIAL ECONOMICS:-

1. Managerial Economics is concerned with decision making of economic nature. it deals with identification of economics choices and allocation of scarce resources
2. Managerial Economics is goal oriented and prescribed it deals with how decision should be made by manager to achieve the organizational goals.
3. Managerial economics is pragmatic it is concerned with those analytical tools which are useful in making decision making.
4. Managerial Economics is both conceptual and metrical
Managerial economic to bring forth solution of problems provide necessary conceptual tools and helps the decision maker by providing measurement of various entity and their relationship this metrical dimension of business economics is complementary to its conceptual framework.
5. Business economics has perspective nature it indicate what should be done and what not
6. Business economics establishes coordination between theoretical and practical aspects of the various analysis of micro and macro economics

SCOPE OF MANEGERIAL ECONOMICS(IMP)

The scope of Managerial economics is very wide as it involves the application of economics concepts and analysis of all the problems and areas of manage the firm.

The Scope of business economics covers the following areas:-

1. Theory of Demand analysis and forecasting
2. Theory of production and production decisions
3. Analysis of market structure and pricing theory
4. Cost Analysis
5. Profit Analysis and Project Management
6. Theory of capital and investment decisions
7. Inventory Management

1. **Theory Of Demand Analysis and Forecasting:** - Demand analysis covers demand determinants, and demand distinctions and demand forecasting . Following aspects constitute the subject matter and scope of managerial economics
Demand Theory explain the consumer behavior it answers the questions: how do the consumers decide whether or not to buy a commodity? How do the consumer behave when price of the commodity , income , taste and fashion etc. change?
Demand forecasting is essential for managerial planning
2. **Theory of Production and production Decisions:-** Theory of production determining the size of the firm , size of the total output and the amount of capital and labor to be employed.
3. **Analysis of Market Structure and Pricing Theory:-** Price theory can be helpful in determining the price policy of the firm . it also explain ,how price are determined under different market conditions , when price discrimination is desirable and feasible and profitable , to what extend at advertising can be helpful in explain sales in competitive market .

4. **Cost Analysis:** - Cost Analysis is yet another function of business economics . for instance , the determination of costs the method or estimating costs ,the relationship between cost and output .
5. **Profit analysis and profit management:-** Profit theory guides firms in the measurement and management of profit , in making allowances for rest premium , in calculating the pure return on capital and pure profit and also for future profit planning.
6. **Theory of capital and investment decision:-** Capital like all other inputs is scarce and expensive factor . Capital is the fundamental of business. It efficient allocation and management is one of the most important task of the manager and determinant of the success level of the firm. Knowledge of capital theory and contribute a great deal In investment decision making , choice of project , maintain capital intact , capital budgeting etc
7. **Inventory Management:-** an inventory refers to stock of raw material or finished goods. Which a firm keeps. Now the question is, How much of inventory is the ideal stock if it is high , capital is unproductably tied up , which might , if the stock of inventory is reduced be useful for others productive purpose. On the other hand, if the level of inventory is low, production will be hampered.

Thus Managerial Economics will use such methods which are helpful in minimizing the inventory cost. Thus managerial economics tries to find whatever is likely to be best of the firm under a given set of conditions.

SIGINIFICANCE OF MANAGERIAL ECONOMICS

Managerial economics helps the decision making process in the following way .

1. In order to enable the manager to become a more competent model builder , managerial economics provide the number of tools and techniques with the help of these , the manager can capture the essential relationship that represents the real situation while eliminating the relatively less important details .
2. Managerial Economics provide most of the concepts that are needed for the analysis of business problems. Over the year these concepts have proved their value in solving various kinds of managerial problems.
Concept of elasticity of demand ,fixed and variable cost, short and long run cost , opportunity etc. all help in understating and solving decision problems , they not only increase the vipers of managers thinking but also provide the common terminology and way of the thought for managers
3. Managerial economics is helpful in making decision such as what should be the product next? which is the production technique and input mix that is least costly ? what should be the level of output and price for the product ? how to take investments decision ? How much should the firm advertise and how to allocate an advertisement fund between different media?

Through one may agree that one cannot take good decisions only by studying the subject and that one need to learn mainly by practical decision making. Yet , one has to consider that good decision also required ability to analysis problems logically and clearly . it is here that managerial economics helps.

Unit - 4

Market Structure

- ❖ Concept of Market
- ❖ Definitions
- ❖ Characteristics of market/ features of Market
- ❖ Classification of market

Market

Meaning/concept of market:

The term market refers to a place or an area where goods are bought and sold.

But in Economics, market is more than a particular place or an area, it (market) refers to the whole area in which buyers and sellers of a commodity are spread over and are in direct contact each other.

In this way, the term market includes the entire area where buyers and seller contact each other to purchase and sell commodities at a certain price. It is important to note that a market is established irrespective of time and place.

Definitions:-

Prof Chapman- "The term market refers not necessarily to a place but always to a commodity and the buyers and sellers who are in direct competitions with one another"

According to cairncross-

The Market In Economics is simply the network of dealing in any factor or product between buyers and sellers.

Characteristics of Market/Features of Market-

- 1) Area
- 2) Commodity to be bought and sold
- 3) Buyers and sellers of the commodity
- 4) Close contact with buyers and sellers
- 5) Perfect knowledge of market
- 6) Competition

1. Area- There must be an area where buyers & sellers of the commodity must reside . It is not necessary that buyers and sellers should visit a particular place to transact business personally.
2. Commodity to be bought and sold- Commodity is the soul of the market. Every market must have commodity to be bought and sold. There cannot be a market without commodity.
3. Buyers and sellers of the commodity – The presence of buyers and sellers directly or indirectly in the market is essential for conducting business transactions.
4. Close contact with Buyers and Sellers: There must be close contact between buyers and sellers, so that actual transaction of the purchase and sale of the commodity could take place.
5. Perfect knowledge of market: Buyers and sellers are fully aware of the price prevailing in the market. Buyers know it fully well at what price sellers are selling a given product.

6. **Perfect Competition:** One price of a commodity in the whole market is not possible without perfect competition in the market. "Prof Coornot"- has declared perfect competition as one essential factor for a market.

Classification of Market

1. According to place or area:

There are four kinds of market on the basis of area:

- i) Local market
- ii) Regional market
- iii) Nation market
- iv) International market

i) Local Market-

Some commodities either very heavy or unpreseravable (perishable) like brikcs, stones, milk , curd and vegetables.These are in demand among the buyers and sellers of a particular place. The market of such commodities is called the local market.

ii) Regional Market-

The demand of certain commodities is restricted to a particular or specific area.

For example- bangles of lakh , banarsi saries etc.

Belonging to a particular region. Market of such commodities is called regional market.

iii) National Market-

The market of such commodities which are in demand in a particular country only is called 'national market'.

Ex- sarees, Dhotis , Bangles and therefore their demand is limited.

iv) International Market-

The demand of some commodities is world wide. They are bought and sold through ought the world, Ex-Gold,silver , food grains , cloth and medicines etc.

2. According to time:

There are four kinds of market on the basis of time:

- i) Daily market/ very short period market
- ii) Short period market
- iii) Long period market
- iv) Very long period market or secular market

i) Daily market/ very short period market-

The supply in these markets is limited to the stock of the commodity in godowns. The supply cannot be increased or decreased because of the shortage of time according to the demand of the commodity.

Therefore, the demand situation determines the prices mainly. Prices go higher when the demand is more and come down when the demand is low. These very short period prices are called 'market prices'

The market of perishable commodities like milk, curd and vegetables are often very short period market.

ii) Short period market-

As in the short period, the productive capacity and not the output(production), is constant , the supply can only be increased up to the limits of the productive capacity.

The producer does not have enough time to change the plant or the machinery used for production with the change in demand.

The production, therefore can be increased up to a certain limit. So demand plays an important role in determining the price. With the increase and decrease in the demand the price increases or decreases. These changes are some what less in comparison to those in the very short period markets.

The price in these markets is called short period price or short period normal price/subnormal price

iii) Long period market-

In the long period market the producer enough time to increase the supply not only up to the productive capacity of present factors of production but also by increasing plants and the scale of production.

Thus the supply can be increased or decreased in accordance with the changes of demand.

So the supply plays an important role in determining the price comparatively more than the demand. The price in these market is called normal price.

iv) Very long period market or secular market-

Changes in both, the demand and supply are possible in very long period market. Whereas there is a change in demand due to the changes in population, interests of consumer and fashions, there is also so much time at the disposal of producers that they can not only increase the factors of production but also increase the supply, by increase the working capacity of the labour and population on the other hand. Thus, the process of coordination between the demand and supply goes on and the price is determined by the permanent equilibrium of the forces of demand and supply. The price in this market is called 'very long period price' or 'secular price'

3. According to function:

There are four kinds of market on the basis of Functions :

- i) Mixed or General market
- ii) Specialised market
- iii) Marketing by Samples
- iv) Marketing by Grades

i) Mixed or general market-

Different kinds of commodities are purchased and sold in these markets.

ii) Specialised market-

In specialised market, only one type of commodity is bought or sold . As fruit market, grain market, jewellery market, cloth market and book market etc.

iii) Marketing by Samples-

Many times it is not possible for a seller to keep all his goods at the sales centres and for the buyers to examine the same.

So the selling and purchasing is done on the basis of samples, as grains ,oilseeds or cotton are purchased by buyers by samples.

Similarly the owners of cloth mills put different types of samples in the sample book, on the basis of which sales and purchases are executed.

iv) Marketing by grades-

Some commodities are given separate names, trademarks or brand names as per their grades. Such as engine brand mustard oil, postman brand groundnut oil etc.The purchasing and selling of these commodities is dispensed even only by their names.

4. Market on the basis of legality:

There are two kinds of market on the basis of legality:

i) Open or fair market

ii) Black market

i) **Open or fair market-**

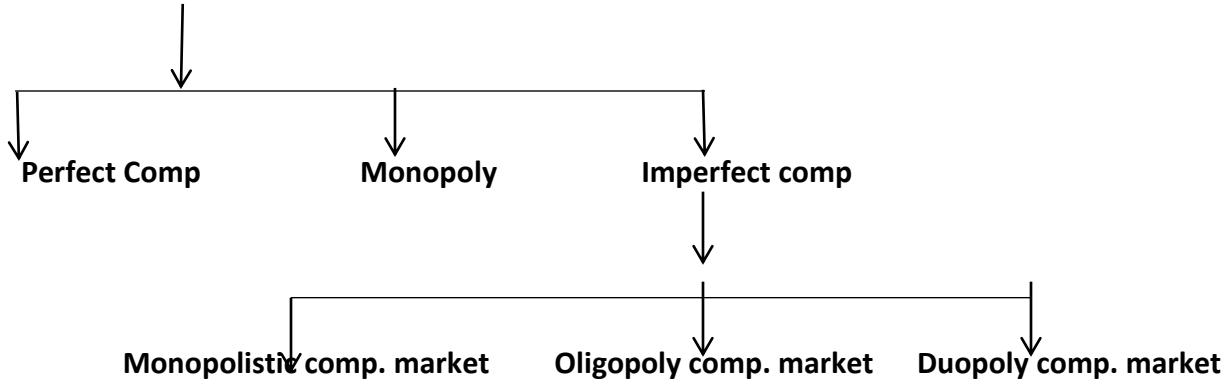
In an open market the fair price are imposed by the government. In a fair market goods are sold at controlled price in the market.

ii) **Black Market-**

In a black market, more than the fair price is charges under such market goods are sold above the controlled price.

It happens at the time of scarcity of the commodities. The goods are stored by merchants for an extra profit and sold by them at higher prices.

5. According to competition



UNIT 4 :Monopolistic Competition

CONTENTS :

1.Concept

2.Definitions

3.Features

4.Producer's Equilibrium

5.Price and output determination under Monopolistic Competition in short run and long run equilibrium (imp...)

Imperfect competition is the actual market structure which we encounter in our daily life. In all kinds of imperfect competition the most important is the monopolistic competition.

However the terms imperfect competition and monopolistic competition should not be confused. Infact, imperfect competition is wider terms that include the following situations of the market.

- 1- Monopolistic competition- Large number of sellers
- 2- Oligopoly – Few (4,5,6) sellers
- 3- Duopoly – Only two sellers

Monopolistic competition may be described as a combination of both perfect competition and monopoly or blending of two.

Monopolistic refers to that market situation in which there is large numbers of producer's produces goods which are close substitutes of each other, goods are similar, but not exactly identical or homogeneous but their use is the same.

The product differentiation is found due to difference in name, brand, trade mark, colour, quantity, packing design, fragrance, etc.

Example of Monopolistic Competition:- Many firms producing a variety of toothpaste such as Pepsodent , Colgate , Cibaca , Forhans , Close- up , Babool etc.

According to J.S.Bian :-

‘Monopolistic competition is found in the industry where there is large numbers of sellers selling differentiated but close substitute products.

According to C.R. Mo Connell :-

Monopolistic competition is refers to that market situations in which a relatively a large number of small producer's or suppliers are offering similar but not identical products.

Thus monopolistic competition refers to competition among a large number of sellers of similar but differentiated products which means that the products sold by different firms are close, but not perfect substitute for one another.

Features of monopolistic competition:

The following are the main features of monopolistic competition.

1. Large number of firms / Sellers / Producers
2. Product differentiation
3. Free exit and entry of firms
4. Selling / Advertisement costs
5. Non price competition
6. Sales techniques
7. Demand curve under monopolistic(AR & MR Curve Under Molopolistic Competition)

1. Large Number of firms / Sellers / Producers :-

In monopolistic competition, the number of firms is large i.e. 25, 40, 50 or 70. They are “many and small enough”. Individual firm has not to bother about the reactions of the rival firms. It can follow an independent price and output policy.

2. Product Differentiation:-

Product differentiation refers to that situation where in the buyers can distinguish one product from the other. Through trade mark, name, design, packing, colour, fragrance etc. for ex- there are different brand of bathing soaps like Lux, Dove, etc.

3. Free exit and entry of the firms:-

Firms under monopolistic competition are free to join and leave the industry.

4. Selling / advertisement costs:-

Every firm spends a lot of funds on advertisement and publicity of its product with a view to promote and push up the sale of its product through newspaper, journals, radio, TV, cinemas , hoarding etc. The expenses incurred are called selling / advertisement costs.

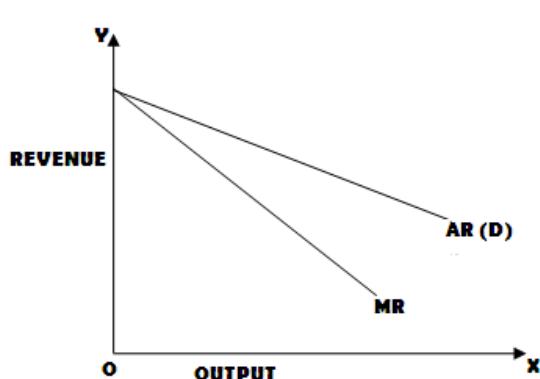
5. Non-Price competition:

Another important features of monopolistic competition is the non-price competition through which firms in the market try to win over customers. There are definite methods of competing rivals other than price. it may be a guarantee for repairs within a particular time, after sales-services, a gift scheme with particular purchases.

6. Sales techniques:

Sellers can create demand for the products by skilfully displaying their salesman's effective advertising techniques, attractive showrooms, home delivery system, credit payment facilities are some examples of the sales promotion.

7. Demand curve under monopolistic competition:-



Demand curve / Average revenue (AR) & Marginal revenue (MR) curve is downward sloping and marginal revenue curve is below to the average revenue curve as shown in figure. However demand curve (AR curve) under monopolistic competition is more elastic than monopoly . It is because of the fact that if a producer raises the price of his product, then some of the customers stop buying from him and shift to other producers who have not raised the price. On the contrary if lowers the price of his product he succeeds in attracting large number of customers of other producers to buy his product

Producers Equilibrium of the firm under monopolistic competition

A monopolistic will be in equilibrium when following two conditions are full filled i.e

- 1) $MC=MR$
- 2) Marginal cost (MC)curve must cuts Marginal Revenue(MR) curve from below.

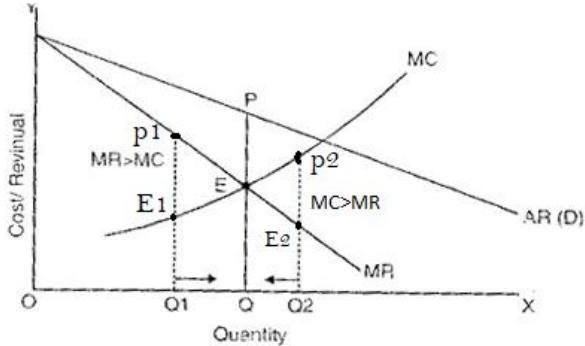


Fig. 19.2 State of Firm's Equilibrium

In this fig point E is an equilibrium point where the two conditions of equilibrium are satisfied.

Output = OQ and Price = PQ.

In case the firm decides to produce OQ₁ output which is less than equilibrium output, $MR > MC$. Hence, the firm must increase output till it reaches output level OQ.

If the firm produces OQ₂ output, at this level of output $MC > MR$. now the firm should reduce the output till equilibrium level of output is at OQ.

Price and Output Determination under monopolistic competition:-

Study of firm's equilibrium under monopolistic competition is made under two different time periods-

- 1- Short period Equilibrium
- 2- Long period Equilibrium

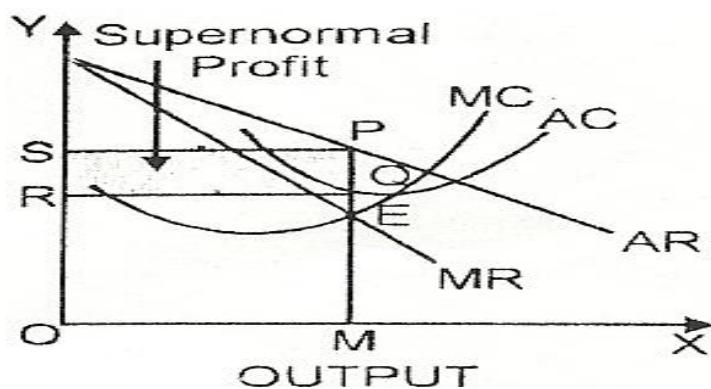
Short period equilibrium in monopolistic competition:

Short period refers to that time period in which production can be increased only up to existing production capacity in response to increase in demand. There is no time available either to increase or decrease the fixed factors of production like machines, plants, factory & building etc.

In the short period a firm may earn-

- 1- Supernormal profits ($AR > AC$)
- 2- Normal profits ($AR = AC$)
- 3- Minimum losses ($AR < AC$)

1. Supernormal Profits:



In this fig

- Equilibrium point= E (where $MC = MR$ curve & MC curve should cut MR from below)
- Equilibrium output= OM
- Average revenue (= price) = OS or MP

At equilibrium output average cost=MQ

Total Revenue= Price x Quantity

$$= OS \times OM$$

Total Revenue = area $OMPS$

Total Cost=Average Cost x Quantity

$$= MQ \times OM$$

$$= \text{area } OMQR$$

Total Profit=Total Revenue-Total Cost

$$= \text{area } OMPS - OMQR$$

$$= \text{area } RQPS$$

Profit per unit= price per unit - cost per unit

$$= OS \text{ or } MP - MQ$$

$$= QP$$

2. Normal profit:

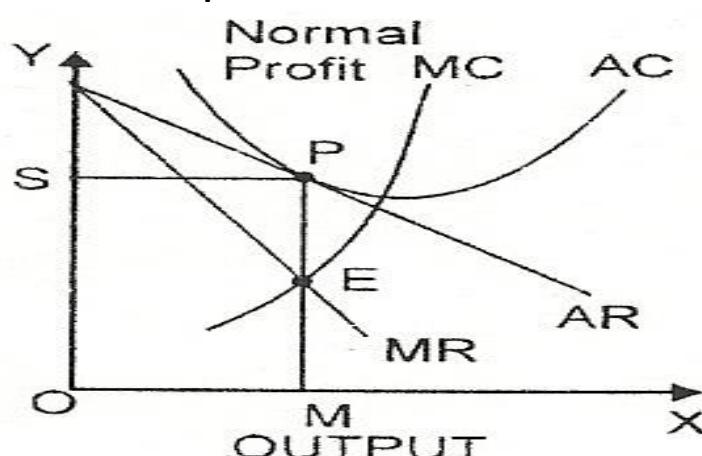


Fig explains the equilibrium position of firm B for where $AR=AC$. The firm is earning only normal profits.

Equilibrium point= E

Equilibrium output= OM

Average revenue (=price) =OS or MP

Average cost = MP

Since average revenue= average cost. The firm earns only normal profit.

3. Minimum Losses:

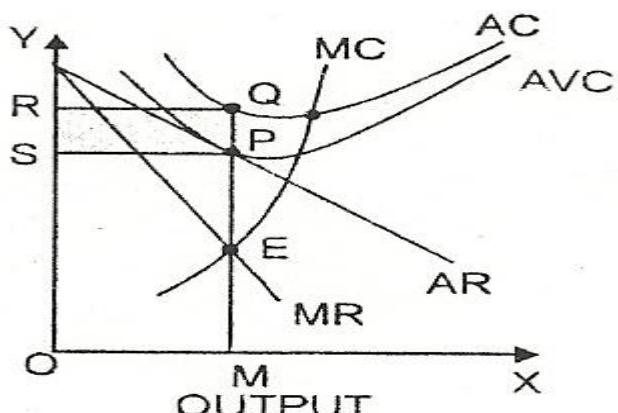


Fig explains the equilibrium position of firm. Here $AR < AC$. The firm is incurring losses.

- Equilibrium point= E (where $MC = MR$ and MC curve should cut MR from below)
- Equilibrium output= OM

- Average revenue (=price) =OS or MP
- Average cost = MQ
- Total revenue=Price x quantity
= OSxOM
= OMPS

Total Cost=Average cost x Quantity

$$=MQxOM$$

$$=OMQR$$

Total Loss=Total Cost-Total Revenue-Total

$$=\text{area } OMQR - \text{area } OMPS$$

$$=SPQR$$

Loss per unit= price per unit-cost per unit

$$=OS \text{ or } MP - MQ$$

$$=PQ$$

A firm incurring losses will continue to produce in the short run so long as at the equilibrium price, it is in a position to recover its average variable cost .if the average revenue or price falls short of the average variable cost, the firm will be forced to shut down.

Conclusion:

- 1- MC=MR it will represent the profit maximisation equilibrium of a firm. The firm should not raise production beyond this limit.
- 2- If AR>AC , the firm wil receive supernormal profits.
- 3- IF AR=AC the firm will receive normal profits
- 4- If AR<AC the firm will suffer losses but it will continue production operation because it manages to recover average variable cost.
- 5- If price (AR) and AVC the firm should stop production even in short period because it fails to recover the average variable cost.

Long run equilibrium of the firm

The long-run equilibrium of firm can be explained with the help of Fig. 19.4

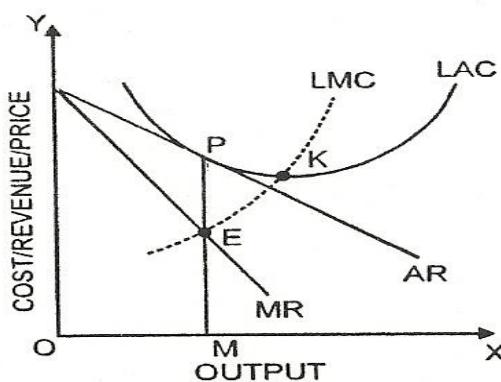


Fig. 19.4 Pricing under Monopolistic Competition : Long-run

.Equilibrium point is E where the LMC curve intersects the MR curve, the

equilibrium price i=PM and the equilibrium output = OM. Average cost =MP,averagre revenue =MP. The firm earns only the normal profits because the average cost of the firm is equal to the average revenue or price.

A closer study of the diagram reveals a very significant point. The monopolistic firm under equilibrium does not produce at its fullest capacity. In other words, **the level of production is not optimum at the equilibrium point**. It is so because negative AR curve is not tangentto U-shaped LAC curve at its

minimum point. In perfect competition, AR curve is a horizontal line parallel to x-axis, as such it touches LAC curve at its minimum point. But under imperfect or monopolistic competition, AR curve is of negative slope and so touches the 'U' shaped AC curve at high cost point. Therefore, the average cost is not the minimum at the equilibrium point under imperfect competition.

UNIT4 :MONOPOLY

CONTENTS :

1.Concept

2.Definitions

3.Features

4.Revenue Curves (TR,AR,MR)

5.Producer's Equilibrium

**6.Price and output determination under monopoly in short run and long run equilibrium
(imp...)**

The word monopoly has been derived from two Greek word ' Monos & Polus' , Monos means Single & Polus means Seller. So, the word Monopoly means a single seller.

Thus, monopoly is the market situation in which there is a single seller of a good and it has no competitor in the market and no close substitute for its product.

A monopolist has complete control over price and can also practice price discrimination.

Definitions:-

According to ' P.C .Dooley'

Pure monopoly is the market situation with one seller .

According to 'M.C. Connell ':-

Pure or absolute monopoly exists when a single firm is the sole producer for a product for which there are no close substitute.

Features of Monopoly

- ❖ One (single) seller & large number of buyers
- ❖ No close substitute
- ❖ Restriction on the entry of new firms
- ❖ Full control over price / price maker
- ❖ Possibility of price discrimination
- ❖ Downward sloping supply curve
- ❖ Informative selling costs

The main features of monopoly are as follows:-

1. One (single) seller & large number of buyers:-

Under monopoly there should be a single producer of a commodity. But the buyers of the product are in large number .consequently, no buyers can influence the price of the product.

2. No close substitute:-

A monopoly firm produces a commodity that has no close substitutes. So, the buyers have no alternative choice. They have either to buy the product or go without it.

3. Restriction on the entry of new firms:-

Under monopoly market , there is strict barrier on the entry of new firms .Monopolist faces no competition.

4. Full control over price / price maker:-

Since he alone produces the commodity in the market, a monopolist has full control over its price.

A monopolist is a price marker and not a price taker. He is in a position to fix the price for the product as he likes. He can vary the price from buyer to buyer.

5. Possibility of price discrimination:-

Many time, a monopolist charges different price from different consumers.it is called price discrimination.

6. Downward sloping supply curve:-

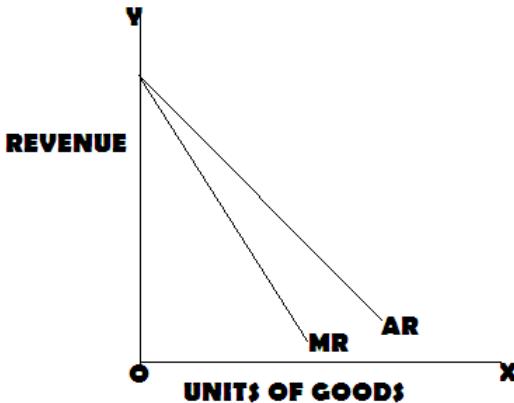
A monopoly firm itself being the industry , it faces a downward sloping demand curve for its product. That means it can't sell more output unless the price is lower.

7. Informative selling/ Advertisement costs:-

In monopoly selling costs are incurred in the beginning .these are done to give information to the buyers about the product.

Average Revenue & Marginal Revenue Curve / Demand Curve under Monopoly

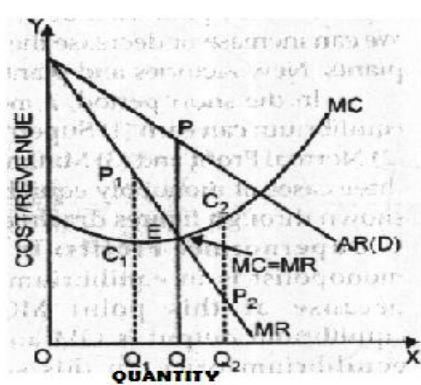
Average Revenue & Marginal revenue curve is downward sloping implying that in order to sell more units the firm would have to reduce its price .On the other hand if the monopolist desires to charge high price , he will be able to sell less units of output .



Equilibrium of Monopoly Firm

There are two conditions for producer's equilibrium

1. Marginal costs(MC) = Marginal revenue(MR)
 2. Marginal costs curve must cut MR from below
- It is explained with the help of diagram



OX axis shows quantity , OY axis = Cost / Revenue , AR= Average Revenue Curve , MR = Marginal Revenue Curve, MC= Marginal Costs Curve, Point E = Equilibrium Point where , Marginal costs = Marginal Revenue and also Marginal Costs curve cut MR from Below. OQ = Equilibrium Output
In case the Monopoly firm decides to produce OQ₁ output which is less than the equilibrium level of output.

Here , Marginal Revenue = P₁Q₁ & Marginal costs = C₁Q₁, Marginal revenue > Marginal Costs . However the monopolist can earn larger profits , in case it decides to produce output more than OQ₁.

If the monopolist produces OQ₂ output at this level of output Marginal Costs = C₂Q₂ & Marginal Revenue = P₂Q₂.

Here , Marginal Costs > Marginal Revenue.

The firm will reduce the output till equilibrium level OQ output is reached.

Price & Output determination under Monopoly

Price & output determination under monopoly can be studied under two different time periods .

1. Short Run Equilibrium
2. Long Run Equilibrium

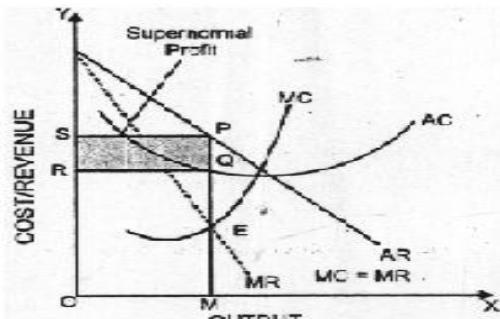
1. Short Run Equilibrium :-

The short run is a period of time in which the firm can alter its output by changing the variable factors of production such as labour , raw materials etc. while fixed factors like capital , equipment remain unchanged.

A firm in equilibrium may faces any of three situations

1. Super normal profit
2. Normal profit
3. Minimum losses

Super normal profit :-



A monopolist is in equilibrium at point E because at this point Marginal Costs = Marginal Revenue and Marginal Costs Curve must cut MR from below

Equilibrium output = OM

Equilibrium Price = OS

Average Revenue = MP

Average Costs = MQ

Total Revenue = Price X Quantity

$$TR = OSX OM = \text{area } OMPS$$

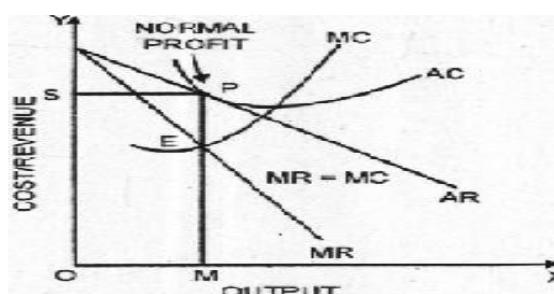
Total costs = Average Costs X Quantity

Total Costs = MQX OM = Area OMQR

Super normal profit = Total Revenue (TR) - Total Costs (TC)

$$= \text{area } OMPS - \text{area } OMQR = \text{Area } RQPS$$

Normal Profit:-



E is the equilibrium point.

Where, Marginal Revenue = Marginal Costs,

OM is the equilibrium output ,

Price = OS or MP ,

Average costs=MP

Average Revenue=MP

Marginal Revenue=MR

Marginal Cost=MC

Total Revenue = Price X Quantity

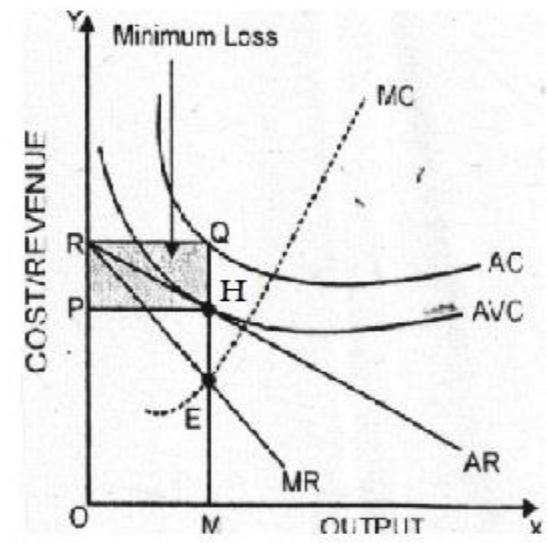
TR= OSX OM = area OMPS

Total costs = Average Costs X Quantity

Total Costs = MPX OM= Area OMPS

Implying that Total Revenue = Total cost or Average revenue = Average Cost. It is a no profit no loss situations. The firm is earning normal profit in equilibrium situation

Minimum Loss:-



In the short run firm may incur loss also . but in case of losses monopolist price must be covering at least the Average Variable Costs (AVC) , otherwise the firm will stop production or shut down.

In the diagram Point E = Equilibrium Point where , Marginal Costs (MR) = Marginal Revenue (MR) & Marginal costs Curve cut Marginal Revenue(MR) from below.

Output = OM , Price= OP , Average Costs =MQ , Average Revenue = MP , Marginal Costs= ME ,Marginal Revenue=ME.

Total Revenue = Price X Quantity

$$TR= OP \times OM = \text{area } OMHP$$

Total costs = Average Costs X Quantity

Total Costs = MQ \times OM = Area OMQR

Minimum loss = Total Costs (TC) -Total Revenue (TR)

$$= \text{Area } OMQR - \text{Area } OMHP = \text{Area PHQR}$$

Here , Average Costs > Average Revenue, Firm earned minimum losses .

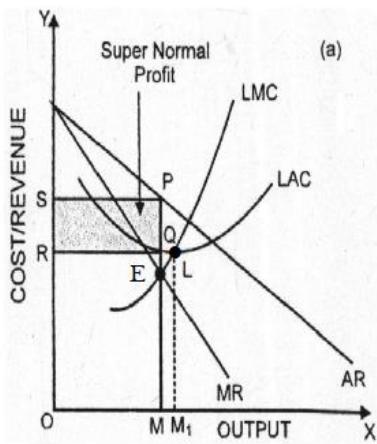
But here, the losses are minimum because in this situation the equilibrium price (AR) = Average Variable Costs (AVC) & the monopolist bear the loss of fixed costs.

2. Long Run Equilibrium Or Price output determination in long period:-

Long run is a period which is enough long to fully adjust the supply to the changes in demand of a product. In this period, all factors of production are variable, volume as well as capacity of production can be changed.

Monopolistic firm in the long run also is in Equilibrium at a point where its marginal revenue is equal to its long run marginal cost. (MR =LMC).

In the long run , a monopolistic firm earns only profits.



In the fig at point E is the equilibrium point because here in $MR=LMC$.

OM is the equilibrium output and OS or PM is Equilibrium price

Firm is earning supernormal profits to shaded area PQRS since its Average Revenue (AR) exceeds Average Costs (AC) by PQ .

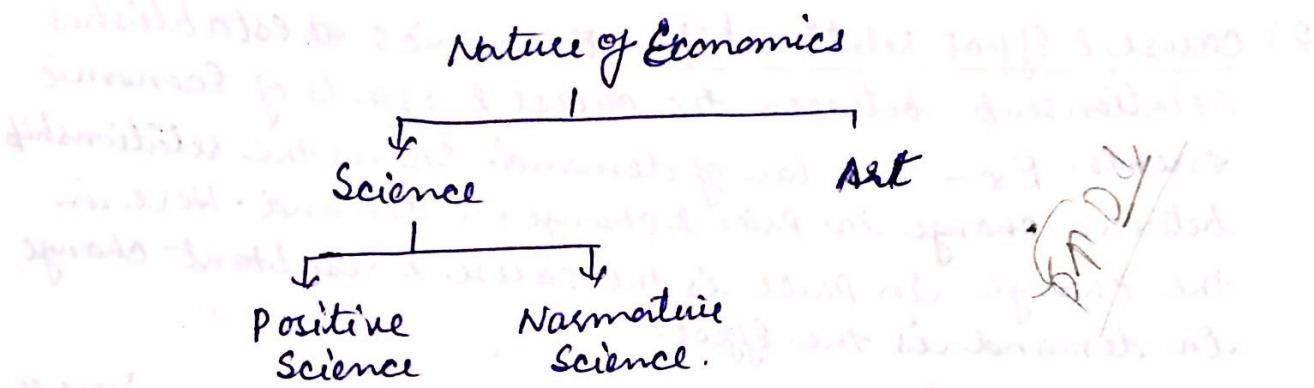
It is earning supernormal profits even in long period.it is evident from the fig that the monopolist is producing less than optimum output.

The optimum level is OM_1 which is produced at the lowest Average Costs (AC) which is point L.

Nature of Economics

By Nature of a Subject is means whether it is a Science or Art or both a Science & Art. In order to reach at a conclusion about the nature of Economics we must answer the following.

- ✓ 1) Is Economics a Science or an Art ✓
- 2) Is Economics a positive Science or a normative Science.



Is Economics a Science : Arguments in favour of Economics as a Science

what is Science?
Science is a systematic study of knowledge which traces (establishes) relationship between cause & effects. It is a systematic collection, classification & analysis of effects.

Features of Science / Following are the essentials of science

- 1) Systematised study of subject/facts.
- 2) Science establishes the relationship between cause & effect
- 3) The laws of science are universal.
- 4) Experiments are possible in science.
- 5) Scale of Measurement.

we shall now study how these features of Science are applied to Economics.

(2)

1) Systematic Study of Facts -

Economics involves the systematic collection, classification & analysis of facts. The study of Economics is systematically divided in to consumption, Production, Exchange & Distribution of wealth, which have their own laws & theories. Therefore, Economics can be treated as a Science.

2) Cause & Effect relationship - Economics establishes relationship between the cause & effects of economic events. Ex - The law of demand shows the relationship between change in price & change in demand. Here in the change in price is the cause & resultant change in demand is the effect.

3) Universal law - Most of the Economic laws are universally true in almost all the countries at all the times and in all the circumstances.

Ex - The Law of Demand, The law of Supply, The law of Variable Proportions, Law of Diminishing Marginal utility.

4) Experiments - Economist, like scientist carry several experiments with the laws of Economics. Capitalism, Socialism & Mixed Economy are the experiments of Economics. The scope of experiments of Economic laws is very wide. The laboratory of these experiments is the whole world & man is the tool of these experiments.

5) Scale of measurement - Economist possess the measuring rod of money to measure the Economic facts.

on the basis of arguments given above, it is proved that Economics is a Science. It explores the facts, classifies them & analyses them. Economics laws are based on these facts.

Is Economics, an Art?

There is a lot of controversy among the Economists as to whether Economics is an Art or not.

Meaning of Art

Art is the Practical Application of Knowledge for achieving definite ends.

According to Cossa - 'A Science teaches us to know, an art teaches us to do'.

Arguments in favour of Economics being an Art

- 1) Solution of the problem - Economics tells us how can an economy make most efficient & optimum use of its scarce resources.
- 2) Economics, as an art, chalk out policies, relating to the promotion of the welfare of human beings.
- 3) Economics Aspect of Problems - almost all the problems arising in the world of today are economic problems in one sense or another. These problems must be analysed from economic point of view also. It also highlights the artistic view of Economics.
- 4) Verification of Economic Laws → Verification of economic theories is possible only if Economics is an art. When we actually apply the economic laws, only then we come to know that whether their results are true or false.
For Example - it is an economic principle the devaluation promotes exports. The validity of this principle can be tested by putting it to practice. If we devalue Indian currency & thereby the exports boost up, we can say that the theory is fully applicable.

Thus validity of Economic laws can be judged only if Economics is an art.

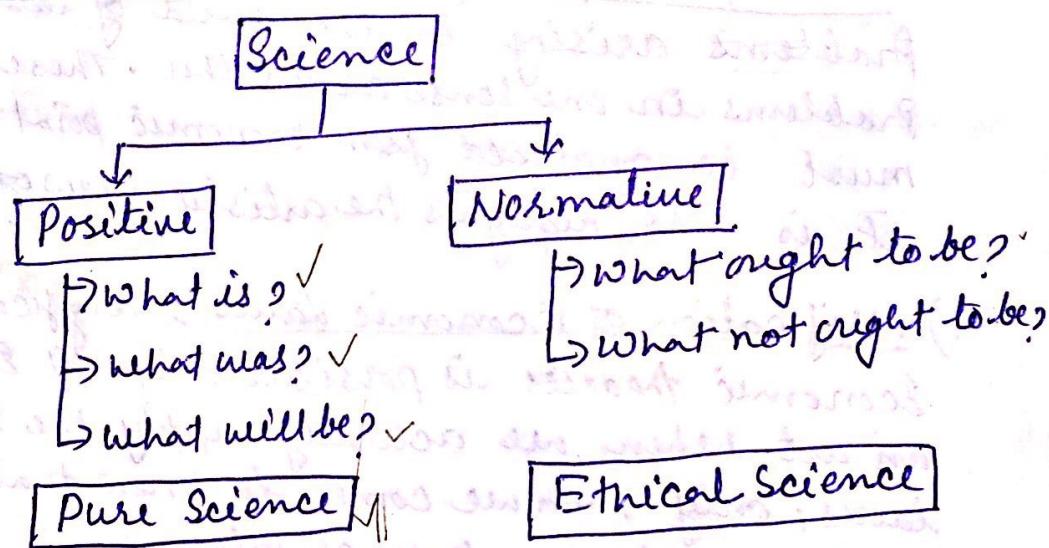
Conclusion:

In nutshell, Economics is both a Science & an art. In the words of Coase - 'Science requires art, art requires Science, each being complementary to the other.'

Economics : A Positive or A Normative Science

After deriving the conclusion that Economics is a Science as well as an art, another controversy arises about what type of science Economics is? whether it is a positive Science or a normative Science.

Economics as a positive Science



What is positive Science?

positive Science may be defined as a body of systematised knowledge concerning 'what is'.

Positive Economics = what is?

A positive science explains the real picture of a subject. It establishes the relationship between the cause & effect of a particular event as it happens. Positive Science establishes uniformities. A positive science deals with the things as they are.

In simple words positive science confined itself to the study of 'what', 'how' & 'why'. For example - as a positive science in Economics we study what is the wage rate? How is it determined? Why wage rate is low in India?

The manufacture & sale of cigarettes & wine may be injurious to health & therefore, morally unjustifiable, but the Economist has no right to pass judgement of these since both these satisfy ~~human wants~~ & involve economic activity.

Arguments in Favour of Economics as Positive Science or Economics Neutral as Regard Ends?

Classical Economist like J.B. Say, Senior & Mill, Robbins, Cairncross & Bagehot were of the opinion that Economics is a positive science.

The following arguments are given in favour of Economics being a positive science.

1. Logical Base -

Positive science is based upon logic with the help of logic, it establishes the relationship between cause & effect. For example - Economics as a positive science can explain the merits & demerits of direct & indirect taxes. But it cannot suggest which of the two is better & which tax should be imposed.

2. Formulation of Theories — A Theory Expresses the mutual relationship between cause & effect. For Example — the law of Demand Expresses the relationship between price & demand. Change in price is the cause & change in demand is the effect. As a positive Science, the main function of Economics is to formulate Economic Principles. This function can best be discharged if Economics confines itself to the study of facts as they are.

3. Moral Neutrality — The Economist will not stay neutral if he tries to know 'What is & What ought to be'. When he deals with the second question, he tries to explain the facts according to his own passion & prejudices. In this way, the explanation of the facts does not give a correct picture. It is therefore essential to Study Economics as a positive Science only & to know the true facts.

On the basis of the above arguments, we can say that Economics is merely a positive Science.

Economics as a Normative Science or Economics is not Neutral as Regards Ends)

What is Normative Science?

A normative science is a body of systematised knowledge relating to the criteria of "what ought to be".

Normative Economics = What ought to be?

Normative Science is concerned with the ideal as distinguished from the actual. It discusses what are desirable things & should be realised what are undesirable things should be avoided. It gives decisions regarding value judgments.

It is not enough for the economist to explain & analyse the problems of unequal distribution of wealth, industrial peace & social security etc. Rather his work is to offer suggestions for the solution of such problems.

Arguments in favour of Economics as a Normative Science as Economics is not Neutral as Regards En

1. Helpful in the Solution of Economic Problems - Severe economic problems arise in every economy. These problems can be solved only if Economics is taken to be the normative science.

2. A Means of Social Betterment - Economics from time to time gave different views regarding the human welfare. For Example - Adam Smith advocated the policy of Laissez faire. Malthus gave alarm about dangers of rising population & also suggested measures to check it. Keynes suggested measures to remove

unemployment. In this way, almost every Economist suggested something as to promote human welfare. So Economics is a normative Science.

3. Not Neutral as Regards Ends-

In India, Price level has risen so much, we also know that Price level is determined by the Equilibrium between the forces of demand & Supply. But Equilibrium price level does not mean that it is the optimum price level for the Society & that government should take no steps to curb the high price level. Rather, it should suggest methods to control prices. Hence Economics is a normative Science.

4. Basis of Economic Planning

Economic plans are formulated on the basis of the suggestions offered by different Economists regarding different problems. Therefore, Economics is a normative science.

Conclusion

We may thus conclude that Economics is not only a positive Science of what is? but also a normative Science of what ought to be?

Hence, Economics is not neutral as regards ends. Economics is concerned with both the means and the ends & the Economist must tender advice as to whether a particular action is desirable or not.

Unit- 4 **Perfect Competition:**

CONTENTS :

1.Concept

2.Definitions

3.Features

4.Revenue Curves (TR,AR,MR)

5. Price determined by the industry under Perfect Competition (industry is the price maker ,firm is the price taker)

6.Producer's Equilibrium

7.Price and output determination under perfect competition in short run and long run equilibrium (imp...)

Perfect competition is market situation where there are large number of buyers and seller's selling identical products at uniform price in the market. Price is given by industry to every seller.

Thus, the firm under perfect competition is a price taker and industry is a price maker. In perfect competition the golden principle 'one market one price' operates completely and continuously.

Definitions:

According to Leftwitch : " Perfect competition is a market in which there are many firms selling identical Products, no firm large enough in the entire market to be able to influence market price".

In the words of Bilas : "The perfect competition is characterized by the presence of many firms. They all sell identical / same product". The seller / firms are a price taker.

Features of a perfect competition :

The following are the features of a perfect competition:

- 1). Large number of firms / producers / Sellers and Buyers
- 2). Homogeneous product.
- 3). Perfect knowledge of the market.
- 4). Free entry and exit of firms.
- 5). Perfect mobility of goods and factors.
- 6). Lack of transport cost.
- 7). Lack of selling/Advertisement cost.
- 8). same price / Identical price / Uniform price.
- 9). Difference between Firms and Industry.

1) The large number of buyers and sellers :-

The number of buyers and sellers is so large that no individual buyer or seller can influence the market price

2) Homogeneous Product :-

All sellers / firm sale identical / homogeneous product. There is no product differentiation regarding quality, variety , colour , design , packing , of the product etc.

3) Free entry & exit of firms :-

Every firm is free to join or leave the industry, if the industry is making profits, new firms can enter the market to share these profits. Similarly if the industry suffers losses, the individual firms can quit the market.

4) Perfect Knowledge of the market :-

Buyers are fully aware of the price prevailing in the market. They are also aware of the fact that homogeneous product is being sold by all the firms. Accordingly, uniform price prevails in the market.

5) Perfect mobility of goods and services :-

Factors of production are perfectly mobile. They will move to that industry where they get best price.

6) Lack of transport cost :-

In perfect competitive market cost of transport doesn't influence the price of the product.

7) Lack of selling cost:-

Under perfect competition a seller doesn't spend on advertisement and publicity etc., it is so because all firms sell homogeneous product. Hence, there is no need on the part of any firm to incur selling cost.

8) Uniform price / Same price :-

At the particular time uniform price of a commodity prevails all over the market.

9) Difference between firm and industry:-

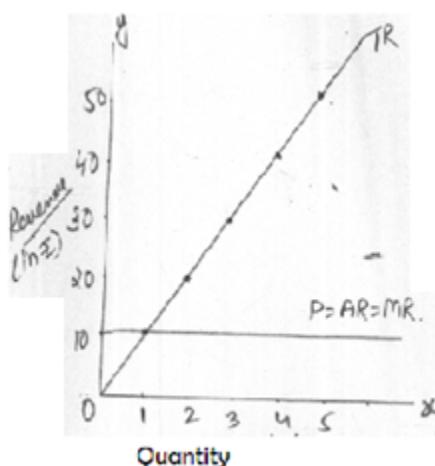
A firm is single unit producing identical product whereas an industry is a group of different firms producing the same product. Price is fixed by the industry. A single firm can't affect the price by its individual efforts. Firm is only the price taker and industry is price maker.

Firms Revenue (OR Demand) Curves under Perfect Competition

There is a close relationship among the three concepts of revenue Total Revenue (TR), Average revenue (AR) & Marginal revenue (MR).

Total Revenue (TR), Average revenue (AR) & Marginal revenue (MR) can be calculated by using formula as given below table.

No. of units sold(quantity)	Price (P)	Total Revenue (TR)=Price XQuantity	Average Revenue (AR)=TR/Q	Marginal Revenue (MR)= $\Delta TR / \Delta Q$
1	10	10	10	10
2	10	20	10	10
3	10	30	10	10
4	10	40	10	10
5	10	50	10	10



In the fig. output is measured on the OX axis and Revenue on the OY axis

The relationship observed among Total Revenue (TR) , Average Revenue (AR) & Marginal Revenue (MR) Curves is as follows.

1. Total Revenue (TR) curve is a straight positively sloping line from the origin. Because every additional unit is sold at the same price of Rs.10/- .
2. Total Revenue (TR) increases in the same proportion as increase in output sold.

- Average revenue (AR) Curve is horizontal line parallel to the OX axis. It starts from a fixed intercept on the Y axis which is equal to price value (Rs.10/-).It coincides with the price line or the demand curve , i.e . , $AR=P=D$ (Average Revenue = Price = Demand)
- Marginal Revenue Curve is also a horizontal line parallel to the OX axis. Since Average Revenue is constant, Marginal Revenue (MR) is also constant. MR Curve coincides with the Average Revenue Curve such that $P=D=AR=MR$ (Price = Demand = Average Revenue = Marginal Revenue).

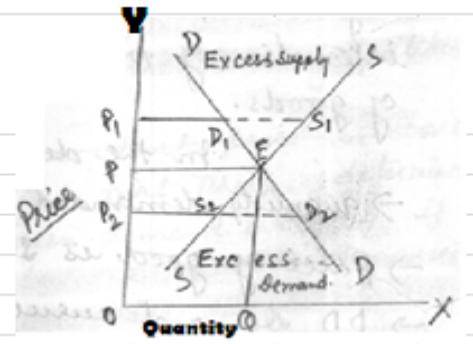
How Price determined by the industry under Perfect Competition (industry is the price maker ,firm is the price taker)

We know that there is a large number of firms under perfect competition .Firm is only price taker and not a price maker. Price is determined by the industry.

The equilibrium price is determined at a point where the demand and supply of the industry equal to each other.

The process of price determination is shown through a table & diagram given below,

Price (Rs.)	Deamnd for good 'X'	Supply of good ' X'
5	20	100
4	40	80
3	60	60
2	80	40
1	100	20



The table indicates how the price of X goods is determined by the forces of demand & supply. When price of good X is Rs.5/- per unit its supply is 100 units & demand is 20 units. Since supply is more than demand, there will be competition among the sellers of X good .due to this competition price of X good will fall. Fall in price will contract supply but extend demand.

When price falls to Rs.3/- per units than demand becomes equal to supply .thus Rs.3/- is the equilibrium price of good X. If due to certain reasons Price falls to Rs.2/- per units, then demand will be more than supply. It will lead to competition among buyers. As a result price will begin to rise till it reaches to Rs.3/- per units. At this price, once again equilibrium between demand & supply will be established.

Thus we conclude that under Perfect Competition price is determined by the interaction of the forces of demand for and supply of goods.

In the diagram

- Quantity demanded and supplied is shown on OX axis.
- Price of good is shown on OY axis
- DD Demand curve
- SS Supply curve
- E is the point where demand curve & supply curve intersect each other (E is the point of equilibrium)
 - It means that at price OP quantity demanded is equal to quantity supplied.
- OQ= Quantity
- OP =price
- If the price is greater than the equilibrium price OP1 , the quantity demanded by the buyers is D1 while the supply is S1. Thus, D1S1 is the (excess supply).

In order to dispose of this excess supply, the sellers will compete with each other and in doing so, they will bring down the price. Thus, there will be a tendency for the price to fall to the level of equilibrium price that is OP .

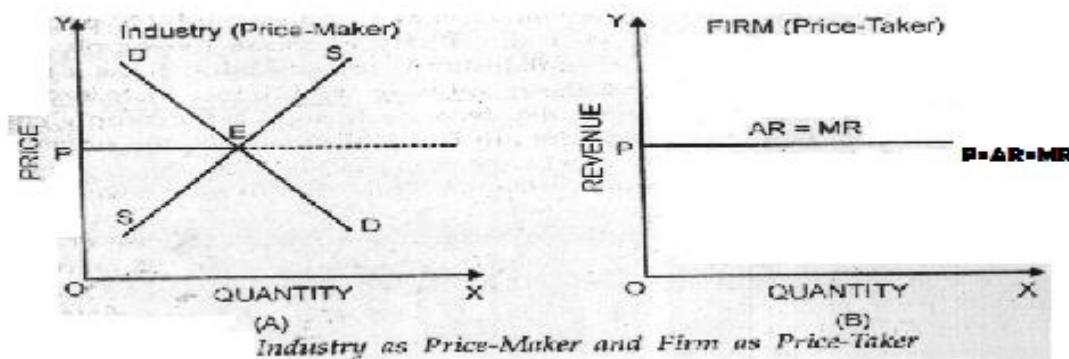
- Similarly, if price falls to OP_2 , which is less than the equilibrium price OP , the buyers demand D_2 , the sellers supply S_2 . D_2S_2 represents "Excess Demand". The unsatisfied buyers will compete with each other.

In this effort, there will be a tendency for the price to rise to the level of Equilibrium Price OP .

Thus we see that price is determined by the Equilibrium between demand & supply. If the price is above or below the Equilibrium price, certain forces in the system will operate to bring the price to the level of Equilibrium price OP .

In figure (A) Demand curve DD intersects industry supply curve SS at point E . Thus point E is the equilibrium point & OP is the equilibrium price.

In fig (B) refers to a firm's demand curve. The firm will be forced to sell its products at this price OP . It may sell more units or less units, but it will charge OP price only.



The firm can neither increase nor decrease this price, because price is determined by the industry & not by the firm.

Firm is a 'price-taker' & not a 'price-maker'. As such firms' demand curve PP will be parallel to X axis, signifying that the firm can sell any number of units at OP price.

Firm's demand curve is also its average revenue & marginal revenue curve under perfect competition. The average revenue & marginal revenue curves will coincide & will be shown by a single straight line parallel to X axis seen in fig (B).

Producers equilibrium / Equilibrium of the industry & firm :-

Equilibrium means 'a state of rest' or stability or a position from which no changes are required.

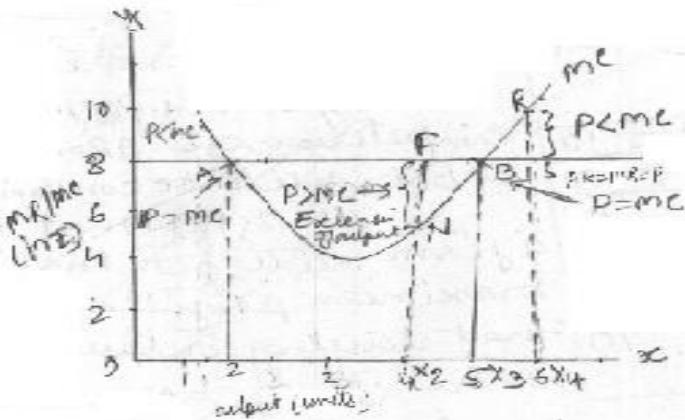
A producer / firm is said to be in equilibrium when he produces that level of output at which his profits are maximum at minimum costs.

Firms have no tendency to change its output, i.e., neither it wants to increase nor decrease its output.

Producers equilibrium is also known as profit maximization situation.

There are two conditions for the equilibrium of a firm / producer.

1. **Marginal costs = Marginal Revenue ($MC=MR$)**
2. **Marginal cost (MC) curve should cut Marginal Revenue (MR) from below.**



At output X_2 , price is $F X_2$ and marginal cost is $N X_2$. So, $P > MC$. X_2 is not the profit maximising level of output because firm's profit is higher when firm expands its output.

1. At output X_4 , price is $S X_4$, Marginal cost is $R X_4$. Thus, the price $<$ marginal cost. X_4 is not the profit maximizing level of output because firm's profit is higher when firm reduces its output level from X_4 .
2. Now, Price =Marginal Costs at two points A & B. Point A is ruled out since marginal costs curve is falling at point A.
3. The economic justification for choosing point B is that point B is a profit maximizing point if , for output less than $O X_3$, MR exceeds MC and for output more than $O X_3$, Marginal costs exceeds MR. This condition holds only at point B.thus, point B is the point of maximization .

Price and output determination under Perfect Competition:-

Price and output determination under Perfect Competition can be studied under two different time periods

1. Short run equilibrium of the firm
2. Long run equilibrium of the firm

Short run equilibrium of the firm:

The short run is the period of time in which the firm can alter its output by changing the variable factors of production. Such as labor, raw materials etc. While fixed factor like capital , equipment's etc. remain unchanged.

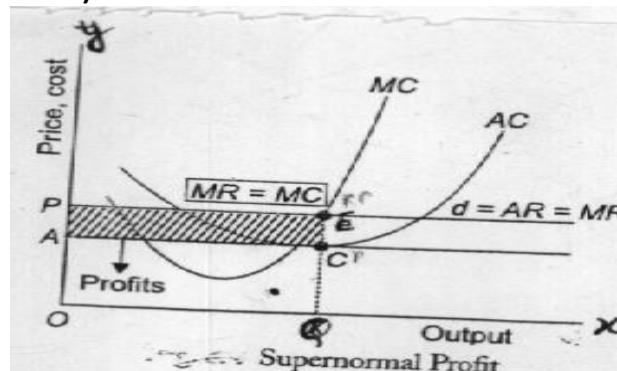
How much a competitive firm will produce in short periods depends on its short run marginal cost and prevailing market price(Since ,Under perfect competition price = average revenue =marginal revenue) .

A firm in equilibrium may face any of the three situations

- 1) Super normal profit($AR > AC$)
- 2) Normal profit($AR = AC$)
- 3) Minimum losses($AR < AC$)

All the three situations depend upon the price (AR) determined by the industry and average cost (AC).

1. Super normal profit($AR > AC$)-



When a firm earns super normal profits its average revenue is more than its average cost ($AR > AC$).

Price = $AR = MR$ = Demand curve facing the firm is infinitely elastic at the established market price OP .

AC = Average cost curve which is 'U' Shaped reflecting the law of variable proportions.

MC =Marginal cost curve which is 'U' shaped because of the law of the variable proportions and cut the Average cost curve (AC) at its minimum point .

Point E = Equilibrium point where Marginal cost (MC) = Marginal Revenue (MR) and Marginal cost curve must cut MR from below .In the short run firm is earning a economic / super normal profits . The profit earned as calculated as:-

Equilibrium output = OQ

Equilibrium Price = OP

Average Revenue = EQ

Average Costs = CQ or OA

Marginal cost = EQ

Marginal Revenue = EQ

Total Revenue = Price X Quantity

$$TR = OP \times OQ = \text{area } OQEP$$

Total costs = Average Costs X Quantity

Total Costs = $OA \times OQ = \text{Area } OQCA$

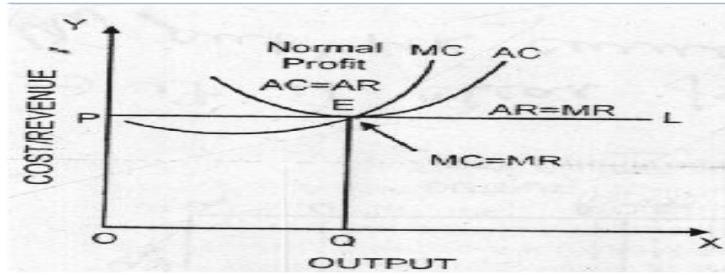
Super normal profit = Total Revenue (TR) – Total Costs (TC)

$$= \text{Area } OQEP - \text{Area } OQCA = \text{Area ACEP}.$$

In this situation Price >Average Cost

2. Normal Profit :-

If the market price is such that the price line is tangent to the minimum point of average cost curve, then the firm would make only normal profits.



In the diagram price = OP , Output = OM , Average Cost(AC)= QE ,Average Revenue (AR)= QE ,Marginal Cost= QE ,Marginal Revenue= QE , Marginal Cost(MC)= QE , Price Line PL tangent to average cost curve (AC) at its minimum point E and will be making only normal profit. At equilibrium point E Average revenue = average cost=Average Revenue ($AR=AC$),Marginal cost =Marginal revenue & Marginal cost curve should cut MR from below.

It is calculated as

Total Revenue = Price X Quantity

$$TR = OP \times OQ = \text{area } OQEP$$

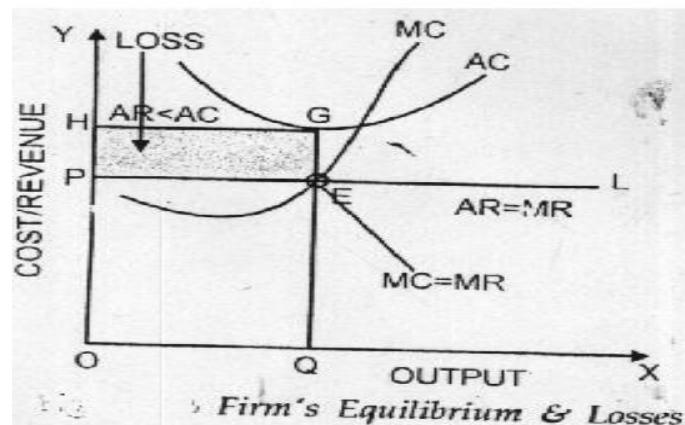
Total costs = Average Costs X Quantity

Total Costs = $QE \times OQ = \text{Area } OQEP$

Implying that Total Revenue = Total cost or Average revenue = Average Cost. It is a no profit no loss situations it is called breakeven point at this point firm is earning zero economic profit. The market price passes through the minimum point of average cost curve.

3. Minimum Losses :-

This situation occurs when the prevailing market price is so low that it doesn't cover fully the average fixed cost (AFC) . The market price is less than the Average cost of production and the firm incurs losses . In the short run firm may incur losses if average revenue < marginal cost / total cost (AR< MC/TC).



Here,

Equilibrium output = OQ

Equilibrium Price = OP

Average Revenue = EQ

Average Costs = QG/ OH

Marginal cost = QE

Marginal Revenue = QE

Total Revenue = Price X Quantity

$$TR = OP \times OQ = \text{area } OQEP$$

Total costs = Average Costs X Quantity

Total Costs = QG X OQ = Area OQGH

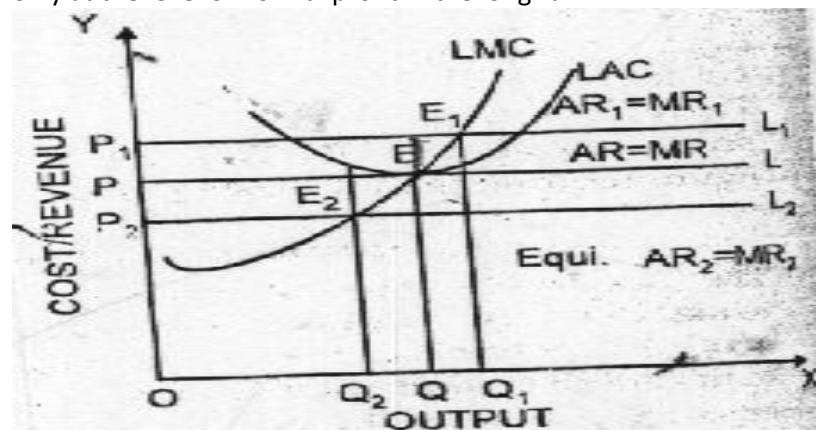
Super normal profit = Total Costs (TC) - Total Revenue (TR)

$$= \text{Area OQGH} - \text{Area OQEP} = \text{Area PEGH}. \text{ In this situation Price} < \text{Average Cost}.$$

Long run equilibrium of the firm under perfect competition:-

The Long run is a period of time which is sufficiently long to allow the firms to make changes in all factors of production (Variable & Fixed) .

The producers get sufficient time to adjust their supply according to the changed conditions of the demand . In the long run firm earns only normal profit because of the free entry and exit of the firm. If firm is getting super normal profit, Existing firms will expand, and new firms will enter into the market. This will increase supply as a result of it, price will come down to the level of average cost. Similarly, if firms are in loss , some firms will reduce their output and some will leave the industry. This will decrease supply and price will rise to the level of average cost. Thus, firm will be in equilibrium only at the level of normal profit in the long run.



In the figure LAC=Long run average cost curve, LMC = Long run marginal cost curve E=Equilibrium point (Here, MC=MR & MC curve cuts MR from below) , OP=Price , OQ=Quantity / Output , Marginal Revenue=QE, Marginal cost=QE, Average Cost =QE ,Average revenue=QE. So that in equilibrium marginal revenue (MR) = Long run marginal cost (LMC) = Average Revenue (AR)= long run average cost (LAC) (MR=LMC=AR=LAC).

It is calculated as profit per unit= revenue per unit – cost per unit

$$=EQ-EQ=0$$

Here, firm earns only normal profit.

The firm can't be in the long run equilibrium at a price greater than OP i.e., OP₁ , the price line would be somewhere above the minimum point of average cost curve.

So , that marginal cost & price will be equal where the firm is earning super normal profit. Since, there will be tendency for new firms to enter and compete these abnormal profits, the firm can't be equilibrium at any price higher then OP.

Likewise the firm can't be in equilibrium at a price lower then OP that is OP₂ , the price line will be below the minimum average cost curve so that the marginal cost and price will be equal at the point E₂ , where the firm is making losses. Therefore, there will be a tendency for some of the firms in the industry to go out , with the result that price may rise .

Thus, under perfect competition in the long run all firms will be in equilibrium and earning normal profit.