Understanding Business Economics

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Chapter -I. Introduction to Business Economics

- Business economics & Managerial Economics are the two terms which at times, have been used interchangeably. Of late, however, the term managerial economics has become more popular & seems to displace the term business economics.

- Functions of Managerial Economist / Manager-
1. Decision Making.
2. Forward planning.

Definitions

- Business Economics consists of the use of economic modes of thoughts to analyse business situations.(McNair & Meriam)

- Business Economics is the integration of economic theories with business practices for the purpose of facilitating decision making & forward planning by the management.(Spencer & Seigelman)

- The purpose of business economics is to show how economic analysis can be used in formulating business polices. (Joel Dean)

Managerial Economics

Economics-Theory & Methodology

Business / Management – Decision Problems

Managerial Economics- Application of Economics to solving business problems with optimum solutions.

Aspects of Application

1. Reconciling traditional theoretical concepts of economics in relation to the actual business behavior & conditions.

2. Estimating economic relationship.

3. Predicting relevant economic quantities.

4. Decision making & Forward planning.

5. Understanding significant external forces.

Key Characteristics of Managerial Economics

- It is Micro Economic in character.
- Managerial economics is pragmatic / Practical.
- It is normative rather than positive.
- It helps in macro economic task solving.
- It uses that body of economic concepts which is known as '*Theory of firm*'.
- `

Managerial Economics V/s. Economics

SN.	Managerial Economics	Economics
1.	It is an application of economic principles to business problems.	It deals with only theories & principles of economics.
2.	Micro in character.	Both micro & macro.
3.	Deals only with the firms.	It deals with both economics of individuals & economics of firm.
4.	It includes mainly profit theory.	It includes the theory of distribution viz., theory of wages, interest & profit.
5.	Includes certain feedbacks.	Makes certain assumptions.

Scope of Managerial Economics

1. Demand Analysis & forecasting.
2. Cost & Production Analysis.
3. Pricing Decisions, Policies & Practices.
4. Profit management.
5. Capital management (Budgeting).

Basic Economic Tools in Managerial Economics

1. Opportunity cost Principle.

2. Incremental Principle.

3. Discounting Principle.

4. Equi- Marginal principle.

5. Principle of Time Perspective.

# Role & Responsibilities of Managerial Economist

- One of the principal objective of any management in its decision making process is to determine the key factors which will influence the business over the period ahead.

- In general, these factors are divided into two categories namely, external & internal factors.

Objectives of the Firm

- Profit maximization.
- Sales or revenue maximization.
- Staff maximization.
- Growth or output maximization.
- Optimizing managerial utilities.
- Increasing market share.
- Building a good business reputation.
- Financial stability & liquidity.
- Maintaining good labour relations.
- Job satisfaction.
- Consumer satisfaction.
- Provision of quality product(s).

Factors Influencing Business

Determinants

External Factors/ Environmental Factors

Internal Factors/ Operational Factors
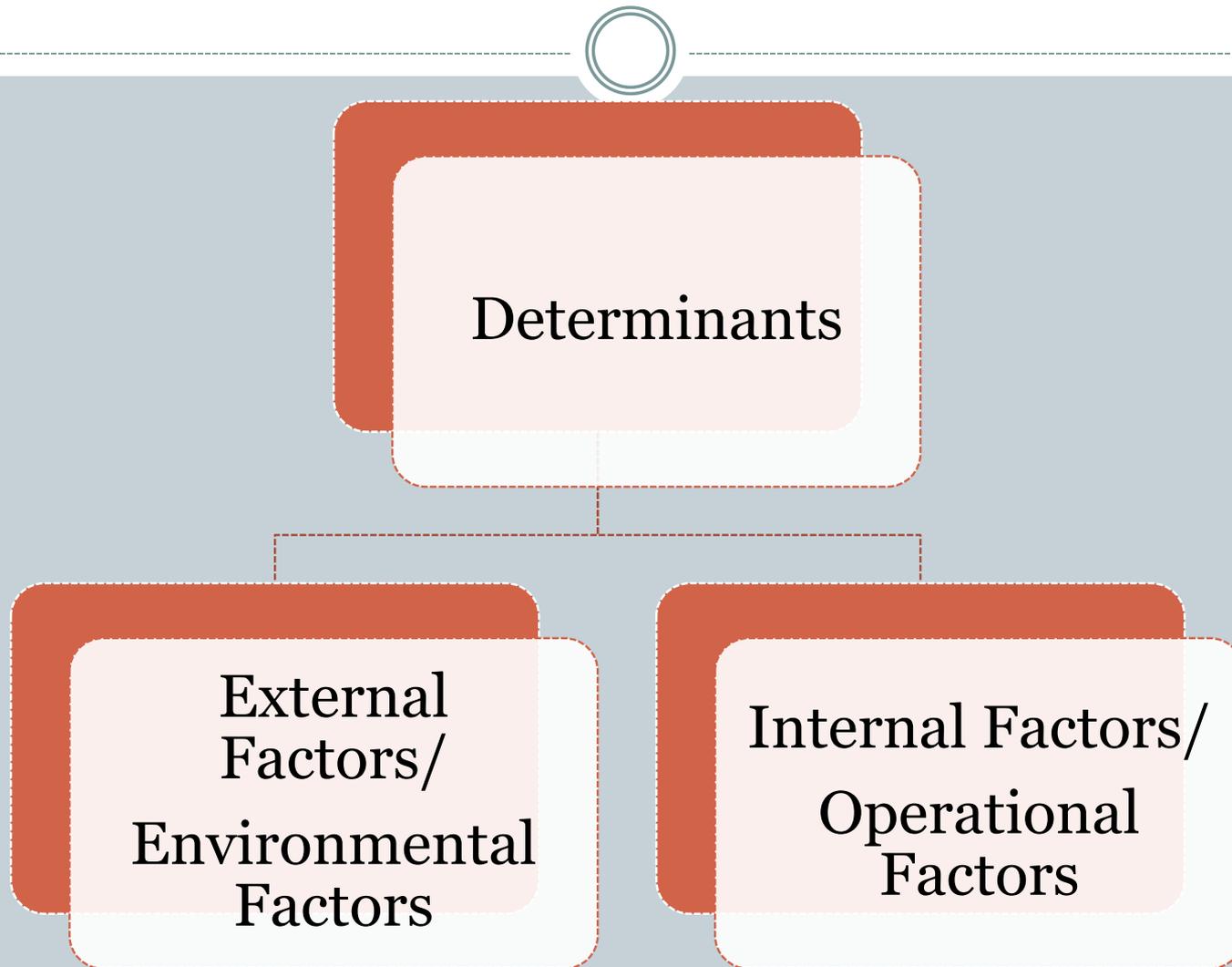
Environmental/ External Factors

- Environmental Factors:
1. Outlook of national economy.
2. Population shifts & ups & downs in regional purchasing power.
3. Demand prospects.
4. Market (expansion or contraction) & customers' choice.
5. Market Competition.
6. Prices of raw materials.
7. Components of five year plans-Sectors of importance & the allocation of resources.
8. Government's Economic Policies.
9. Policy of Central Bank of a country (RBI).

Operational / Internal Factors

- Operational Factors:
1. Target of sales & profit.(Budget).
2. Production Schedule & inventory policies of a firm.
3. Changes in wage & price policies.
4. Cash required for running the business.

Chapter - II. Demand Analyses

- Meaning of Demand:

- Demand in economics means desire to buy backed by adequate purchasing power. Mere desire or wish cannot buy goods.

- Further, the demand for goods refers to the various commodities that consumer will take off the market during a specific period of time at different prices.

Law of Demand

- The relation of price to sales is known as law of demand. It states that 'higher the price lower the demand & vice versa, ceteris paribus'.

- In other words, quantity demanded & price level is negatively or inversely related with one another.

Price

Demand

Features of Law of Demand

1. Inverse Relationship.
2. Price is a independent variable & demand is a dependent variable.
3. Assumption of Ceteris Paribus.
4. Reasons underlying the law of demand-

    a. Income Effect.

    b. Substitution Effect.

Demand Schedule

- In micro economics, the relationship of price to sales or demand or alternatively, the Price-Quantity Relation , is shown arithmetically in the form of table showing price & corresponding quantities. This table is known as Demand Schedule.

Price (in rs.)	Quantity Demanded (in units)
5	80
4	100
3	150
2	200

Demand Curve

- In 1890, Alfred Marshall's Principles of Economics developed a supply-and-**demand curve** that is still used to demonstrate the point at which the market is in equilibrium.

- The law of demand or Price –Quantity Relationship is also portrayed graphically in the from of chart which is called as *Demand Curve.*

- The demand curve for a normal commodity slopes downwards from left to right indicating that when price rises, less is demanded & when price falls , more is demanded. This kind of slope is also known as negative slope.

- However, it should be noted that the demand curve for commodities is only have a negative slope(Rectangular Hyperbola). Exceptions are in rule.

Shape of Demand Curve

Rectangular
Hyperbola

Exceptions of the Law

1. Snob Effect.
2. Veblen Effect
3. Speculation.
4. Giffen Commodity etc...

The Snob effect and Veblen effect are related concepts in consumer behavior where demand is influenced by factors other than the typical price-demand relationship. The Snob effect describes a decrease in demand for a product as its popularity increases, as consumers desire exclusivity and differentiation. The Veblen effect describes an increase in demand for a product as its price increases, often due to the product's perceived social status or luxury appeal.

Demand Function

- A function shows the relationship between two or more variables. It indicates how the value of one variable (dependent) depends on the value of other variables(independent).

- For instance, the demand function is a functional relationship between demand & its determinants.

$$D = f (P)$$

Where,

D= Demand ;f= function ; P = Price

This means that demand is a function of price.

Demand Determinants

1. Price of a commodity.
2. Price of a related commodity.
3. Income of a person.
4. Taste & preferences of a consumer.
5. Size of population.
6. Expectation about future price.
7. Income distribution.
8. Advertisement & publicity.
9. Taxation (esp. indirect taxes).
10. Change in general price level (inflation).

Demand Distinctions

- Producer's goods & consumer's goods.
- Durable goods & non-durable goods.
- Derived demand & Autonomous demand.
- Industry's demand & company's demand.
- Market demand & Individual's demand.
- Short run demand & long run demand.

Demand Forecasting

- Meaning:

    Accurate demand forecasting is essential for a firm to enable it to produce the required quantities at the right time & arrange well in advance for various factors of production.

- Demand forecasting occupies a very vital place in business planning. Mainly there are two types of demand forecasting namely, Active Demand Forecasting & Passive Demand Forecasting

Factors Involve in Demand Forecasting

1. Time Period (Short run or Long run)
2. Level of Demand Forecasting (Macro level, Industry level or firm's level)
3. Nature of Demand Forecasting (General or Specific Forecasting)
4. Nature of a product (Established product or New product)
5. Nature of Competition (Type of market)
6. Selection of appropriate method.(Labor intensive or capital incentive)
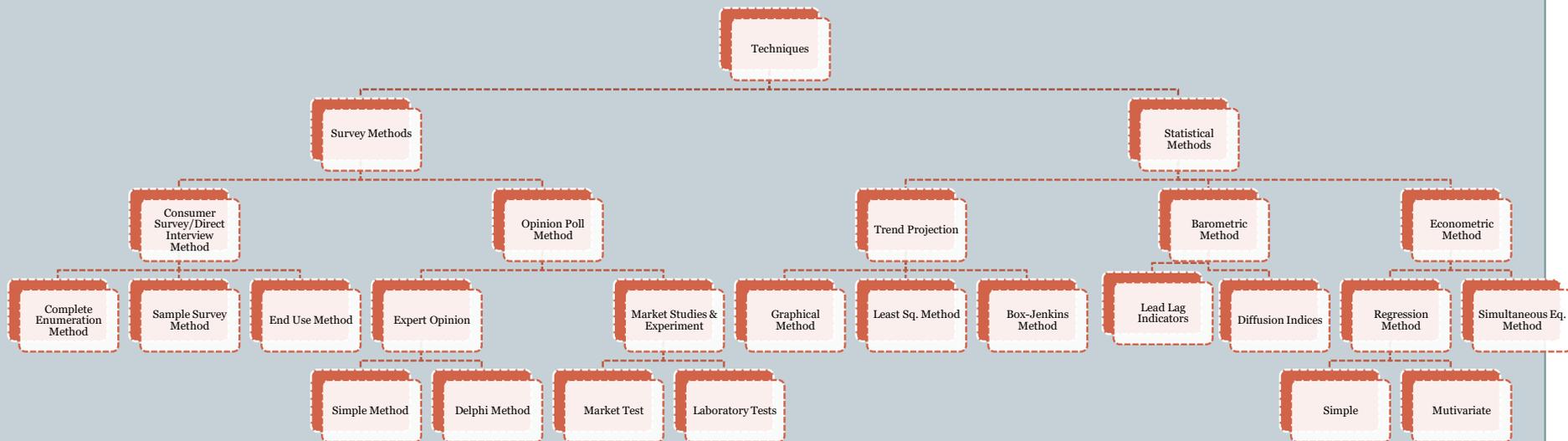
Purposes of Demand Forecasting

- Short Term Objectives

1. Appropriate Production Scheduling.

2. Reducing cost of purchasing raw materials & controlling inventories.

3. Determining appropriate pricing policy.

4. Setting Sales targets & establishing controls & incentives.

5. Evolving a suitable advertising & promotional prog.

6. Forecasting short term financial requirements.

Purposes of Demand Forecasting

- Long Term Objectives
1. Planning of a new unit or expansion of an existing unit.
2. Planning for a long term financial requirements.
3. Planning for a manpower requirements.

Techniques of Demand Forecasting

Methods for Measuring Demand Forecasting

Method	Explanation
Delphi Method (Expert Opinion)	It is the process of gathering a panel of experts and engaging in several rounds of questions about how to make certain business decisions or solve an organizational problem. Every answer the experts provide is unique. After each round, facilitators review and sort through all the answers.
Least Square Method (Trend Projection)	The least square method is the process of finding the best-fitting curve or line of best fit for a set of data points by reducing the sum of the squares of the offsets (residual part) of the points from the curve. This method is commonly used by statisticians and traders who want to identify trading opportunities and trends.
Box Jenkins Method (Trend Projection)	The Box-Jenkins methodology is a five-step process for identifying, selecting, and assessing conditional mean models (for discrete, univariate time series data). Determine whether the time series is stationary. If the series is not stationary, successively difference it to attain stationarity.
Lead Lag Indicator (Barometric Method)	Leading and lagging indicators are metrics that tell you about the health of your organization. Leading indicators help predict future performance, whereas lagging indicators give insight into past outcomes. It's important to track both because they help identify product and business improvement opportunities.
Diffusion Indices (Barometric Method)	Diffusion indexes are commonly used to highlight results from a survey. Responses are in the form of values, and depending on those values, a base number is designated. Many indicators use a baseline of 0, 50, or 100. A series of data shows how far results are from the baseline

Methods for Measuring Demand Forecasting

Method	Explanation
Regression Method (Econometric Method)	Regression analysis is a set of statistical methods used for the estimation of relationships between a dependent variable and one or more independent variables. It can be utilized to assess the strength of the relationship between variables and for modeling the future relationship between them.
Simultaneous Equation Method (Econometric Method)	There are two common methods for solving simultaneous linear equations: substitution and elimination. In some questions, one method is the more obvious choice, often because it makes the process of solving the equations simpler; in others, the choice of method is up to personal preference.

Criteria of a Good Demand Forecasting Method

1. Accuracy.
2. Simplicity.
3. Economy.
4. Effective.
5. Durability.
6. Flexibility.
7. Timeliness.
8. Lead Time.

Approaches of Demand Forecasting for a New Product

- The Evolutionary Approach
- The Substitute Approach.
- The Growth Curve Approach.
- The Opinion Poll Approach.
- The Experiment Approach.
- The Sales Experience Approach.
- Indirect Approach.

Chapter- III. Theory of Production

- Whatever the objective of business firms, achieving optimum efficiency in production or minimizing cost for a given production is one of the prime concerns of the business mangers.

- In fact, the vary survival of a firm in a competitive market depends on their ability to produce at a competitive cost.

- Therefore, manager of a business firms endeavors to minimise production cost or maximise output from a given quantity of inputs.

The Problems

- The fundamental questions which managers are faced with are-

1. How can be production be optimised or cost minimised?
2. How does output behave when quantity of inputs is increased?
3. How does the technology matters in reducing cost of production?
4. How can the least cost combination of inputs be achieved?
5. Given the technology, what happens to the rate of return when more plants are added to the firm?

The Theory of production provides a theoretical answer to these questions.

Some Basic Concepts

- Production:

In economics, the term production means a process by which resources (inputs) are transformed into a different commodities(output).In general, production means transforming inputs into an output. However, this concept is limited to manufacturing.

- Input & Output:

An input is a good or a service that goes into the process of production & an Output is any good or service that comes out of production process.

Some Basic Concepts

- Fixed & Variable Inputs:

  The Concept of fixed & variable inputs are defined in economic sense as well in technical sense too.

  In economic sense, a fixed input is one whose supply is inelastic in the short run, while in technical sense, a fixed factor is one that remains fixed (or constant) for a certain level of output.

  A variable input is defined as one whose supply is elastic, e.g., labour or raw material etc. Technically, a variable input is one that changes with the change in the output.

  One important point to be remembered is that all fixed inputs are variable in long run.

Some Basic Concepts

- Short Run & Long Run:

There are two *reference to time period* involved in production process viz., short run & long run.

The short run refers to a period of time in which the supply of certain factor inputs (e.g., plant, building, machinery etc.) is fixed or is inelastic.

The long run refers to a period of time in which the supply of all the factor inputs is elastic, but not enough to permit a change in technology.

The Economists use another term ***very long run***, which refers to a period where technology of production is suppose to change.
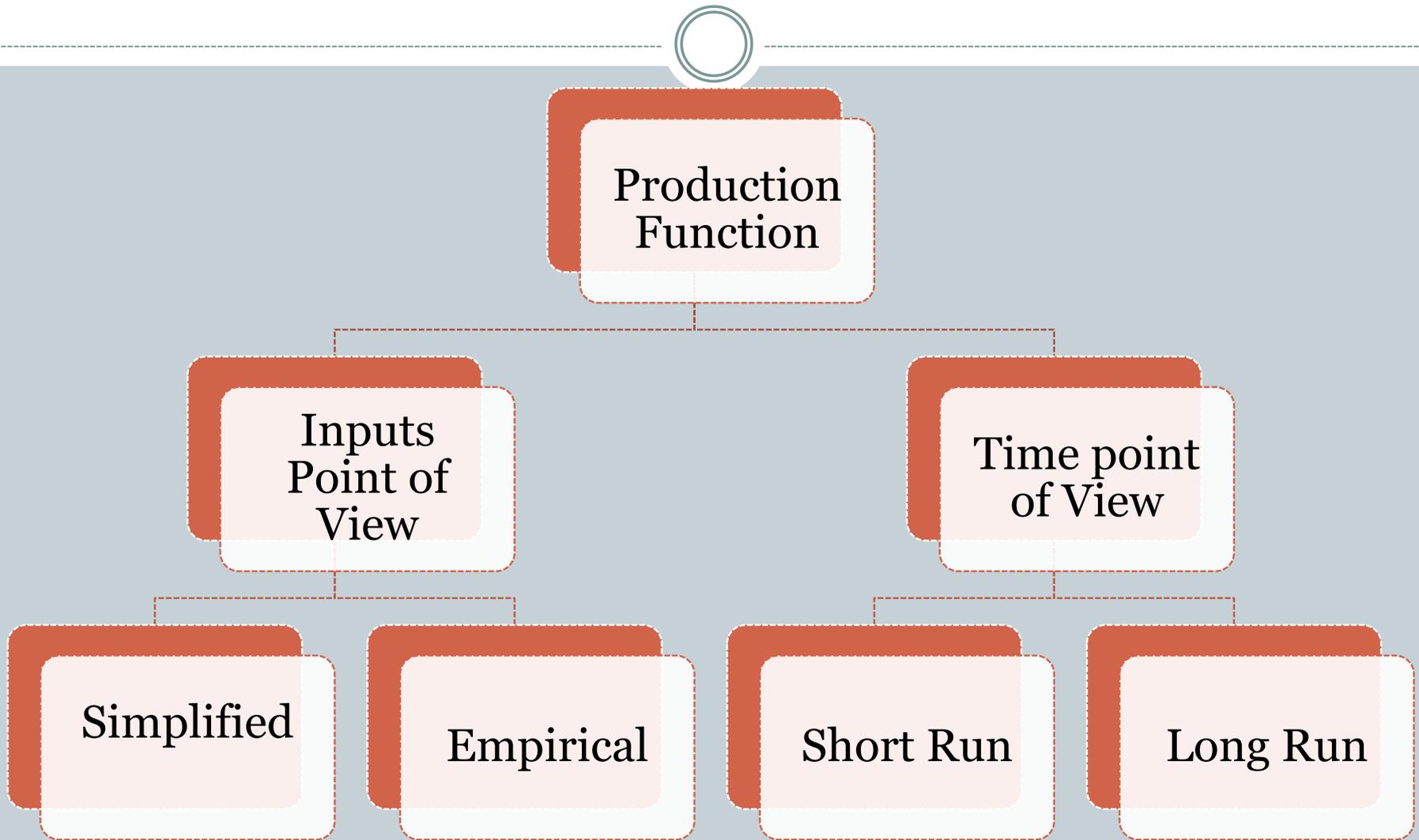
Production Function

- Production function is a tool of analysis used to explain the input output relationship.

- It describes the technological relationships between input & output in physical terms. In general, it tells us that production of a commodity depends on certain specific inputs.

- Technically, production function presents the quantitative relationships between inputs & outputs. Symbolically, it can be expressed as –

$$Q = f (I)$$

Where , Q means output ; I means input & f means function of.

Production Function

```
                    Production
                    Function
                         |
         +---------------+---------------+
         |                               |
    Inputs                          Time point
    Point of                        of View
    View
       |                                |
   +---+---+                       +----+----+
   |       |                       |         |
Simplified  Empirical         Short Run   Long Run
```

Simplified & Empirical Production Function

- In a simplified production function the no. of inputs is reduced to a manageable extent, especially in theoretical analysis or models.

$$Q = f (L , K)$$

- Empirical production function is generally very complex. As it includes a wide range of inputs.

$$Q = f (L_d, L , K , M, T, t)$$

Where,

L_d = land & building , L = Labour , K = Capital,

M = Material, T = Technology and t = time.

Short run & Long run Production Function

- By definition, in short run the production function includes fixed & variable components of inputs. At least one significant factor is fixed over the short period. Algebraically,

$$Q = f (a, b, c^o.....n^o, T)$$

  Where, a, b are the variable factor inputs & c^o, n^o & T are the fixed

  factor inputs.

- The term long run is defined as a period of time long enough to permit variation in inputs. It is a time where all fixed factors became variable. Thus there is no distinction between fixed factors & variable factors. Long run is associated with the change in the scale of production. Algebraically,

$$Q = f (a, b, c.....n, T)$$

  T = Technology remains as a constant variable in short run & long run.

- In short, supply of factor inputs is inelastic in short run& elastic in long run.

Assumption of Production Function

1. Perfect divisibility of both inputs & output.
2. There are only two factors of production. (L & K)
3. Limited substitution of one factor for the another.
4. A state of technology is given.
5. Inelastic supply of fixed factors in short run.

Iso- Quants(IQ) & Iso- Cost (IC)Lines (Production Function with Two Factor Input)

- In this type of production function, in long run productive resources are substitutable.

- Iso-Quant(Equal Product Curve):

  It represents all these combinations of two factor inputs which produces a given (same) quantity of product.

- Features of Iso-Quants:

1. Iso-Quants have a negative slope.
2. Iso-Quants are convex to the origin.
3. Iso-Quants is oval shape curve.
4. Iso-Quants never intersects.
5. Iso-Quants never intercepts either axis.

Why Iso-quants are Negatively Sloped Curves?

- The slope of each iso-quants indicates how the quantity of one input can be traded off against the quantity of other, while output remains constant.

- The slope of iso-quants at any point measures the Marginal Rate of technical Substitution (MRTS).

- MRTS of labour for capital is an amount by which the input of capital can be reduced when one extra unit of labour is used, so that output remains constant.

- MRTS is the ability of the firm to replace capital with labour while maintaining the same level of output.

Iso-Cost Lines

- Iso-Cost lines are graphical device showing all the combinations of two factor inputs (say labour & capital) that can be purchased for a given expenditure outlay by the firm. E.G., suppose total outlay is Rs. 100, Labour Cost is Rs. 10 per unit & Capital cost is Rs. 30 per unit then a firm can employee below mentioned factor inputs. Plotting these value on graph, joining the loci of points(combinations A, B & C we can derive Iso-Cost Lines.

Combinations	Factor Inputs		Total Outlay
	Labour	Capital	
A	1 * 10 = 10	3 * 30 = 90	10 + 90 = 100
B	4 * 10 = 40	2 * 30 = 60	40 + 60 = 100
C	7 * 10 = 70	1 * 30 = 30	70 + 30 = 100

Least Cost Combination Point/ Producer's Equilibrium

- A rationale firm is interested in selecting an optimum combination, which yields maximum benefit or production, i.e., the firm is in least cost combination of factors.

- The least cost of factors can be determined by comparing a production map in relation to a given cost line.

Producer's Equilibrium

- A producer attains equilibrium when the iso-quant line becomes tangent to iso- cost line or in other words, a point of tangency between cost lines & iso-quant determines producer's equilibrium.

The Laws of Production

- The laws of production state the relationship between output & input. The traditional theory of production the marginal input – output relationships under short run & long run conditions.

```
Production          Short Run          Laws of
Theory                                 Variable
                                       Proportion

                    Long Run           Laws of
                                       returns to
                                       Scale
```

The Laws of Production

- In short run the input output relations are studied with one variable input, other inputs remains constant which is known as *Laws of Variable Proportion* or Laws of Returns of Variable Proportion. While in the long run input output relations are studied assuming all inputs to be variable which is known as *Laws of Returns to Scale*.

The Law of Variable Proportion

- The Statement:

"The law states that when more & more units of a variable input are applied to a given quantity of fixed inputs, the total output may initially increase at an increasing rate & then at a constant rate but it will eventually increase at diminishing rates."

That is, the marginal increase in the total output eventually decreases when additional units of variable factors are applied to a given quantity of fixed factors.

The Assumptions

1. One of the factors of production is fixed or constant.
2. The state of technology is given(Constant).
3. Labour is homogeneous.
4. Input prices are given(Constant).

The Concepts of TP, AP & MP

- Total Product (TP)/ Total Physical Product (TPP):

  It designates the total amount of output produced, in physical units such as bushels of wheat.

- Average Product (AP) /Average Physical Product (APP):

  It measures the total output divided by total units of inputs. Symbolically, AP =TP/Q

- Marginal Product (MP)/ Marginal Physical Product (MPP):

  Marginal Product of a input is the extra product or output added by one extra unit of that input while other inputs are held constant. Symbolically,

  MP = ΔTP/ ΔQ

Relationship Among TP, AP & MP

Units of Labour (Input = Q)	Total Product (TP) (Units)	Average Product(AP) AP=TP/Q	Marginal Product(MP) $MP = \Delta TP / \Delta Q$
0	0	0	-
1	2000	2000	-
2	3000	1500	1000
3	3500	1167	500
4	3800	950	300
5	3900	780	100

Three Stages in Production

First Stage

- TP increases at increasing rate
- MP reaches its maximum & then declines till MP=AP.
- AP increases & reaches to its maximum.

Second Stage

- TP continue to increase but at diminishing rate till it reaches maximum.
- MP is diminishing & becomes equal to zero.
- AP Starts diminishing.

Third Stage

- TP Starts declining.
- MP becomes negative.
- AP continues to decline.

Tabular Explanation of the Law

(1) No of Workers (Q)	(2) Total Product (TP in tones)	(3) Average Product (AP)	(4) Marginal Product (MP)	(5) Stages of Production
1	24	24	-	Increasing Returns
2	72	36	48	
3	138	46	66	
4	216	54	78	
5	300	60	84	
6	384	64	84	
7	462	66	78	Diminishing Returns
8	528	66	66	
9	576	64	48	
10	600	60	24	
11	594	54	-6	Negative Returns
12	552	46	-42	

Diagrammatical Representation
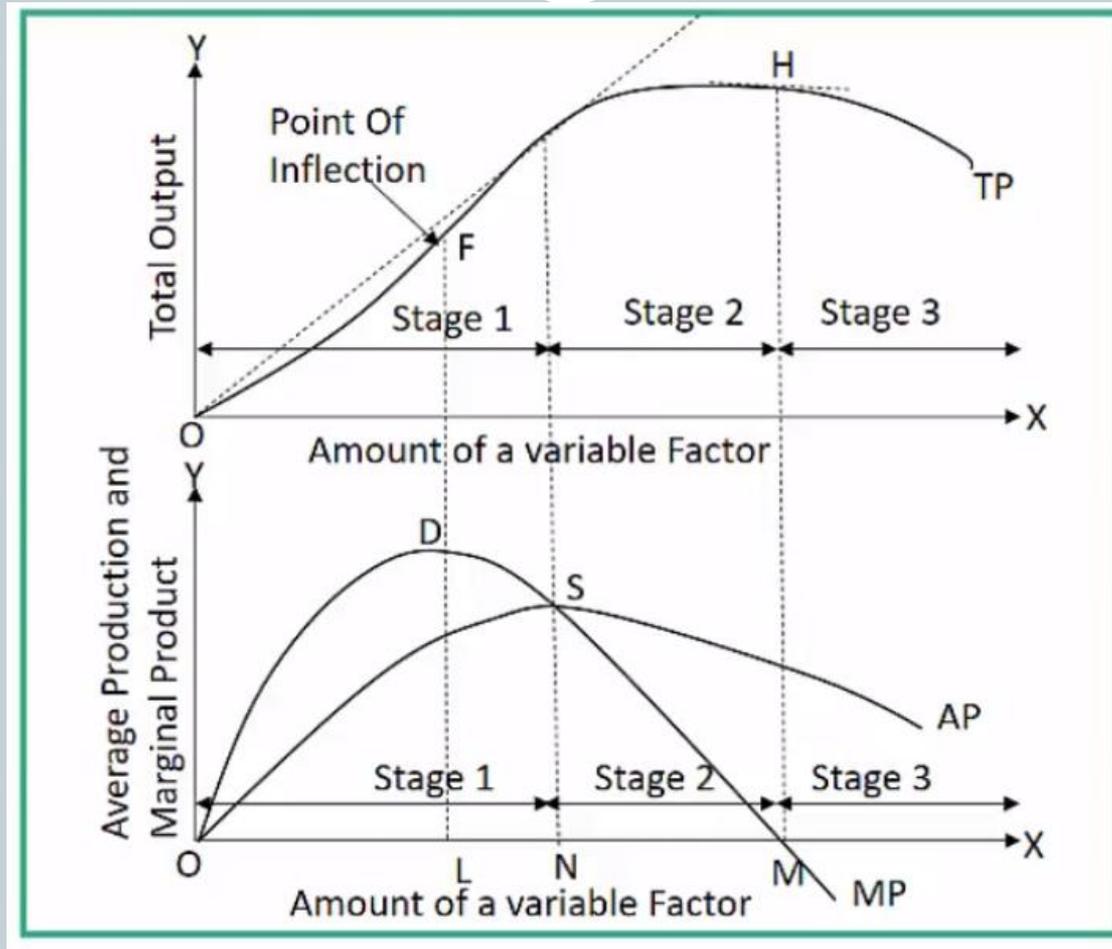
Laws of Returns to Scale

- The laws of returns to scale explain the behaviour of output in response to a proportional & simultaneous changes in inputs.

- The statement:

  "As a firm in long run increases the quantities of all factors employed, other things being equal, the output may rise initially at a more rapid rate than the rate of increase in inputs, then after, output may increases in a same proportion of input & finally, output increases less proportionately."

Assumption of the laws of Returns to Scale

1. Techniques of production remains unchanged.
2. All units of factors are homogeneous.
3. Returns are measured in physical terms.

Stages of Returns to Scale

Stages	Interpretation	Algebraically	
Increasing Returns to Scale	When the given % increase in input will lead to a greater relative % increase in resultant output this stage operates.	$\dfrac{\Delta Q}{Q} > \dfrac{\Delta I}{I}$	PFC > 1
Constant Returns to Scale	In the second stage, when the given % increase in input lead to the same % increase in output.	$\dfrac{\Delta Q}{Q} = \dfrac{\Delta I}{I}$	PFC = 1
Diminishing Returns to Scale	When the % increase in output is less than % increase in input the diminishing stage will be in operation.	$\dfrac{\Delta Q}{Q} < \dfrac{\Delta I}{I}$	PFC < 1

Diagrammatical Explanation
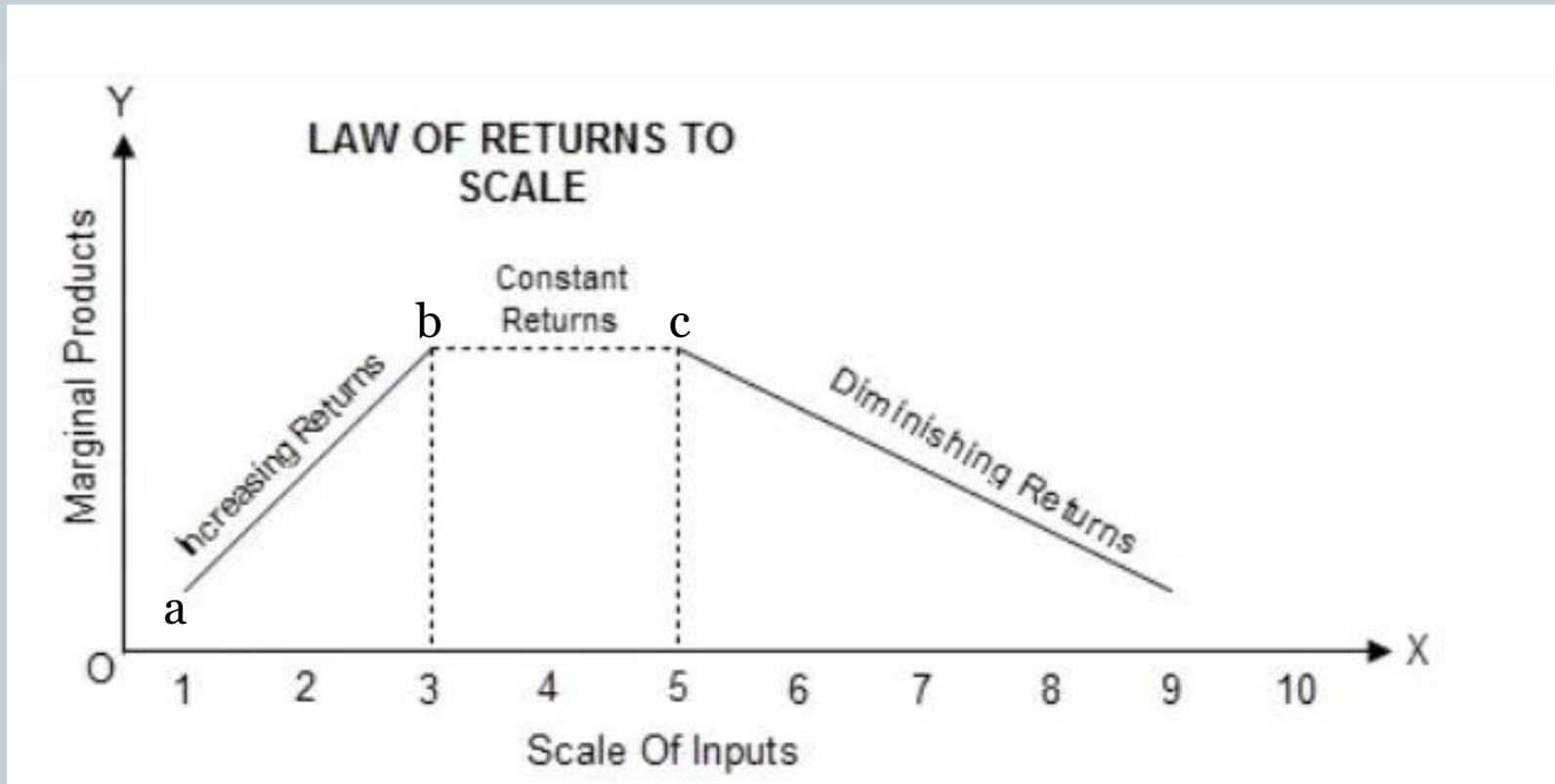
Economies & Diseconomies of Scale

- Economies of Scale:

➤ Scale of Production means the size of plant which has an important bearing on cost of production.

➤ It has a manufacturer's experience that larger the size of   production , lower the average cost of production & bigger the economies. That is why entrepreneurs are tempted to enlarge their scale of production so that they can reap maximum profit. This is known as economies of scale.

➤ Prof. Alfred Marshall classified the economies of large scale production into two types viz.,
   1. Internal Economies &
   2. External Economies.

Internal & External Economies of Scale

Internal Economies (Real Economies)	External Economies (Pecuniary Economies)
• Internal Economies are available to a particular firm & give it an advantage over other firms engaged in industry.	• External Economies are those which are available to all the firms in an industry.
• Internal Economies arise from the expansion of the size of a firm.	• These economies arise from the expansion in the size of an industry-involving an increase in the number & size of the firms engaged in it.
• From the managerial point of view internal economies are more important as they can be effected by managerial decisions of an individual firm.	• The examples of external economies are construction of railway lines, the discovery of a new machine, establishment of a special training schools & research institutions etc.

Types of Internal Economies

1. Labour Economies.
2. Technical Economies.
3. Managerial Economies.
4. Marketing Economies.
5. Financial Economies.
6. Risk Bearing Economies.
7. Economies of Diversification of output.
8. Economies of Diversification of Markets.

Types of External Economies

1. Economies of Information.
2. Economies of localization.
3. Economies of Vertical Disintegration. (Textile industry)
4. Economies of Concentration.

Diseconomies of Scale

- Diseconomies of Scale:

➤ Diseconomies arise when with the expansion of the firm , the cost of production arise. In other words, when the average cost of production rises with every expansion of the size of the firm, diseconomies is said to be arisen.

➤ Diseconomies is further divided into two types-
   1. Internal Diseconomies &
   2. External Diseconomies.

Diseconomies of Scale

Internal Diseconomies	External Diseconomies
• This type of diseconomies arise due to employment of inefficient factor inputs. When a firm expands beyond proper limits , it becomes difficult for manager to manage this expansion. This is an example of internal diseconomies.	• In the same way expansion of an industry may result in diseconomies, which may be called as external diseconomies. As a result of this the individual firms in an industry are faced with diseconomies. Example, textile industry of Surat City.

Types of Internal Diseconomies

1 Technical Diseconomies.

2. Managerial Diseconomies.

3. Marketing Diseconomies.

4. Difficulties of adjustment with change in demand.

5. Increased Price of factors of production.

Types of External Diseconomies

1. Transportation Diseconomies.

2. Factors Diseconomies (Expansion of industry in a particular area leads to high rents , high cost etc.)

3. Indiscriminate Concentration of industry (leads to pollution, industrial congestion, global warming, increase in slums, industrial unrest, etc.)

Chapter- IV. Theory of Cost & Revenue

- Cost is normally considered from the producer's point of view.

- Cost lie at the heart of many business decisions. Businesses must pay careful attention to costs because every Rupee of cost reduces the firm's profit.

- As the main objective of any business firm is to maximise profit, so a firm always aims to minimise its cost.

Meaning & Definitions of Cost

- The term cost means different things to different person. For business executive, the use of cost figures is very important; for managerial economist, cost analysis has to solve the managerial problems.

- In general prevalence, cost is the expense incurred in producing a commodity.

- Technically, cost is a summation of compensations paid to the factors of production, that is , it is a aggregate of factor payments.

Cost = Rent + Wages + Interest + Profit. (CRIP)

Classification of Cost

- The cost concepts which are relevant to business operations & decision can be grouped, on the basis of their nature & purpose under two overlapping categories-

    (i) concepts used for accounting purposes,

    (ii) analytical cost concepts used in economic

        analysis of business.

Classification of Cost

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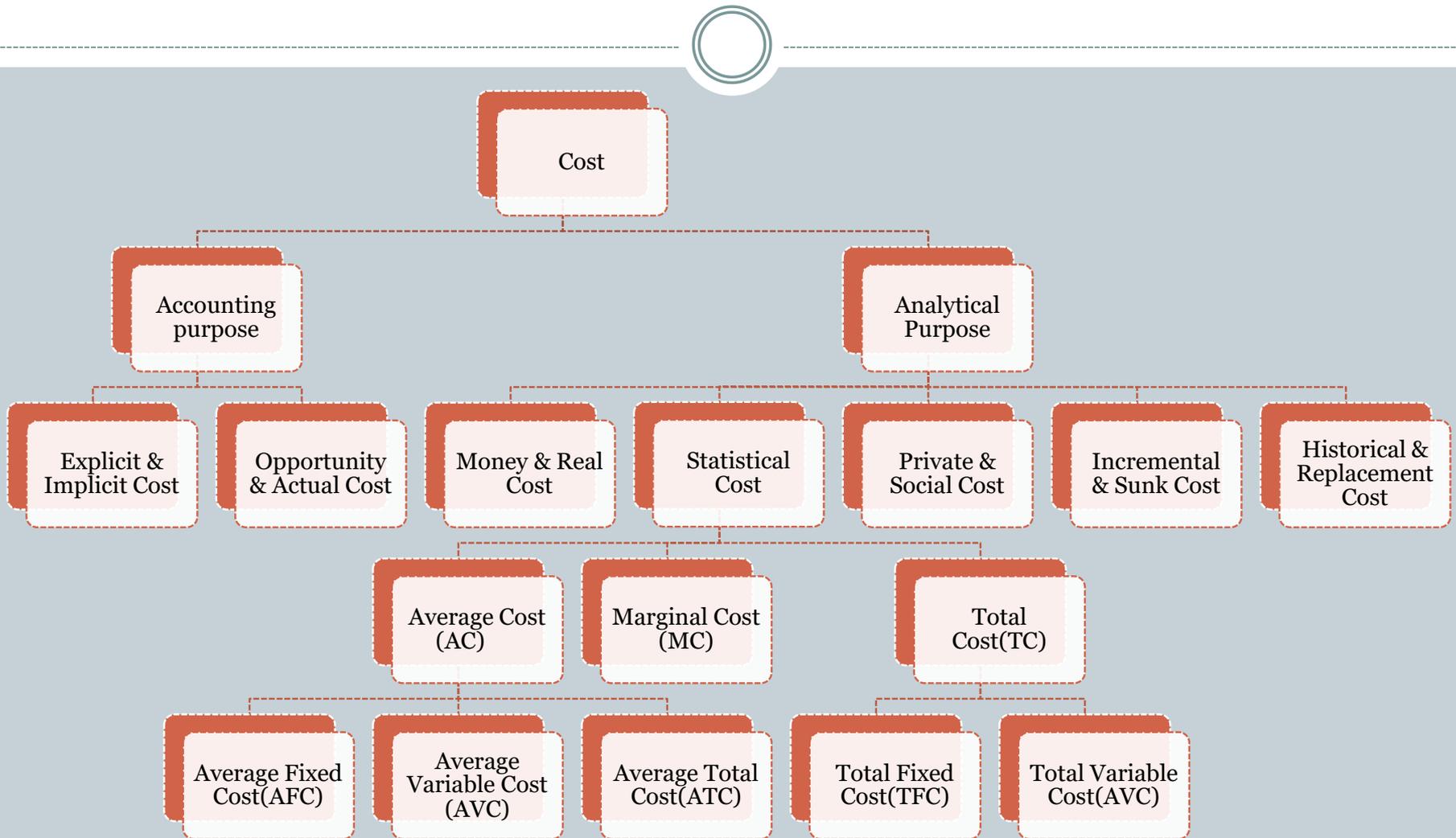
Explicit & Implicit Cost

- Explicit Cost:

    Explicit costs are direct contractual monetary payments incurred to market transaction. In other words, explicit cost refer to the actual money outlay or out of pocket expenditure of the firm to buy or hire the productive resources it needs in the process of production. It includes, cost of raw materials, wages & salaries, power charges, rent, interest payments, insurance premium, taxes etc. It is recorded in books of account.

- Implicit Cost:

    Implicit cost are the opportunity cost of the use of factors which a firm does not buy or hire but already owns. The implicit cost do not take the form of cash outlays, nor do they appear in accounting system. Opportunity cost is an example of implicit cost.

Opportunity & Actual Cost

- Opportunity Cost:

  It may be defined as the expected returns from the second best use of the resources which are forgone due to the scarcity of resources. It is also known as alternative cost or displacement cost.

- Actual cost:

  It is a cost which is actually incurred by the firm for the payment for labour, material, plant ,building, advertisement, etc.

Money & Real Cost

- Money Cost:

  Money cost refers to the monetary expenditure on inputs of various types required for output. Money cost is measurable in monetary units. In short, payment made for the factors in terms of money is called money cost. Money cost is recorded in the books of account.

- Real Cost:

  The concept of real cost was propounded by Prof. A. Marshall. The real cost refers to the pains/exertion taken by the labour & sacrifice done by the entrepreneurs to produce the commodity is known as real cost. Here, it should be noted that the concept of real cost is an abstract idea.

Private & Social Cost

- Private Cost:

Private cost are those which are actually incurred or provided for by an individual or a firm on the purchase of goods & services from the market. For a firm all the actual cost both implicit & explicit are private cost. Private cost are internalized costs that are incorporated in the firm's total cost.

- Social Cost:

Social cost refer to the total cost borne by the society due to production of a commodity. Social cost includes the cost of resources for which the firm in not compel to pay a price i.e., atmosphere, rivers ,lakes & use of public utility services; the cost in the form of disutility created through pollution.

Analytical / Statistical Costs

- Average Cost: (AC)
  Average cost is the cost derived by dividing total cost with the total quantity produced.
  [AC = TC/Q]

- Marginal Cost: (MC)
  Marginal cost is the extra cost of producing one additional unit.
  [MC =ΔTC/ ΔQ] OR [MC_n =MC_n − MC_{n-1}]

- Total Cost: (TC)
  Refers to the total expenses incurred by a firm to produce a given level of output/commodity.
  [TC =TFC + TVC]

Analytical / Statistical Costs

- Average Fixed Cost: (AFC)
  Average Fixed Cost is the total fixed cost divided by total units of output. It is also known as overhead cost or spreading of overhead. [AFC =TFC/Q]

- Average Variable Cost: (AVC)
  Average Variable Cost is total variable cost divided by total units of output. Among all average cost concepts this cost is very important as the laws of variable proportion is applicable to AVC.
 [AVC = TVC/Q]

- Average Total Cost : (ATC)
  Average Total Cost or Average Cost is the summation of AFC & AVC .It is also known as per unit cost. [ATC = AFC + AVC]

Average Fixed Cost

Average Fixed Cost is the total fixed cost divided by total units of output. It is also known as overhead cost or spreading of overhead.

AFC =TFC/Q
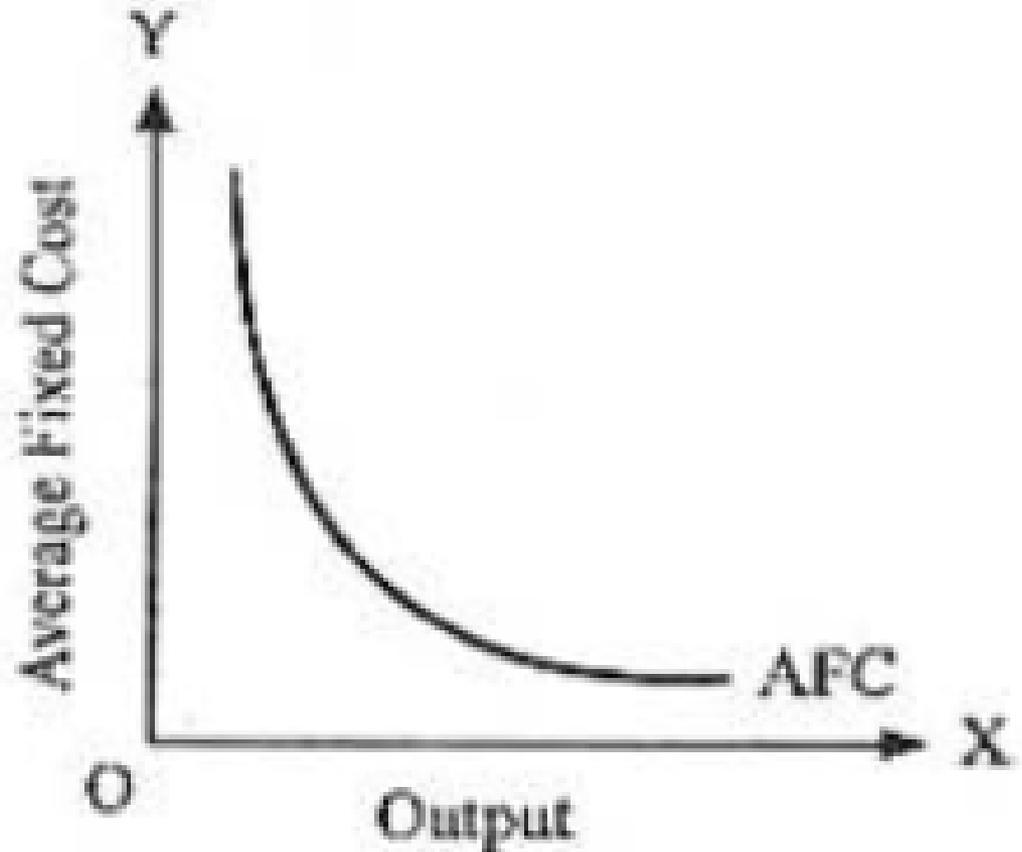
Average Variable Cost

Average Variable Cost is total variable cost divided by total units of output. Among all average cost concepts this cost is very important as the laws of variable proportion is applicable to AVC.

AVC = TVC/Q

Average Variable Cost

a

b

c

AVC Curve

0

Output
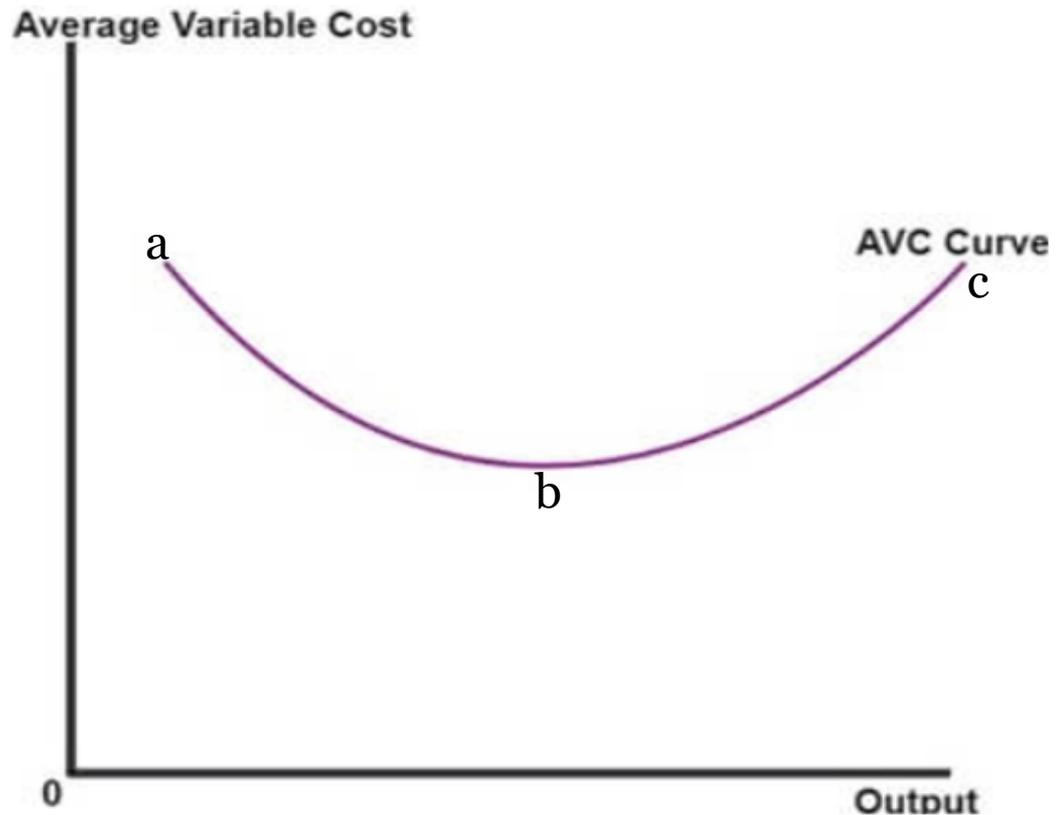
Average Total Cost

Average Total Cost or Average Cost is the summation of AFC & AVC .It is also known as per unit cost.

ATC = AFC + AVC
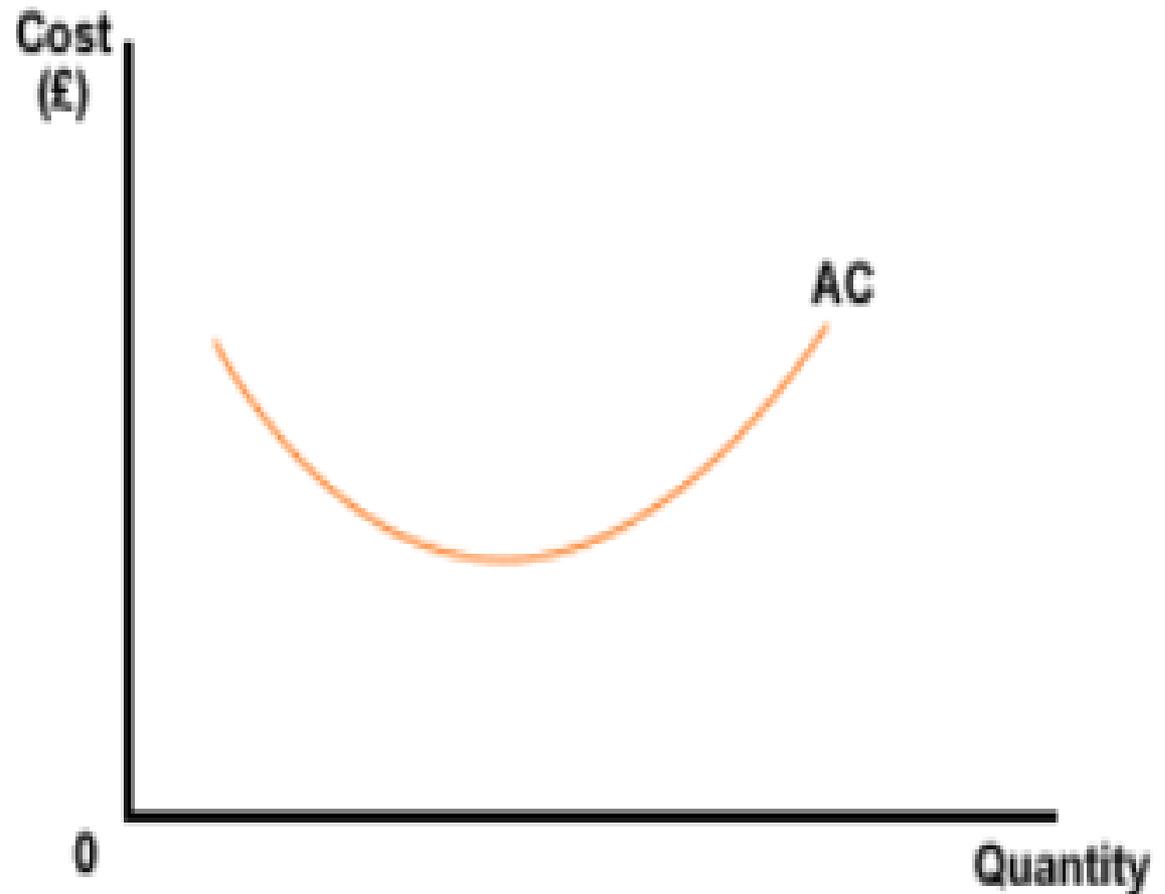
Analytical / Statistical Costs

- Total Fixed Cost : (TFC)

  It is a costs pertaining to all fixed inputs like machinery, purchase of land etc. at a given level of output.

- Total Variable Cost: (TVC)

  It is the costs pertaining to all variable inputs like raw materials, electricity expenses etc. at a given level of output.

- Total Cost: (TC)

  It is a costs pertaining to entire factor inputs at any given level of output. [TC = TFC + TVC]

Diagrams of TFC , TVC & TC
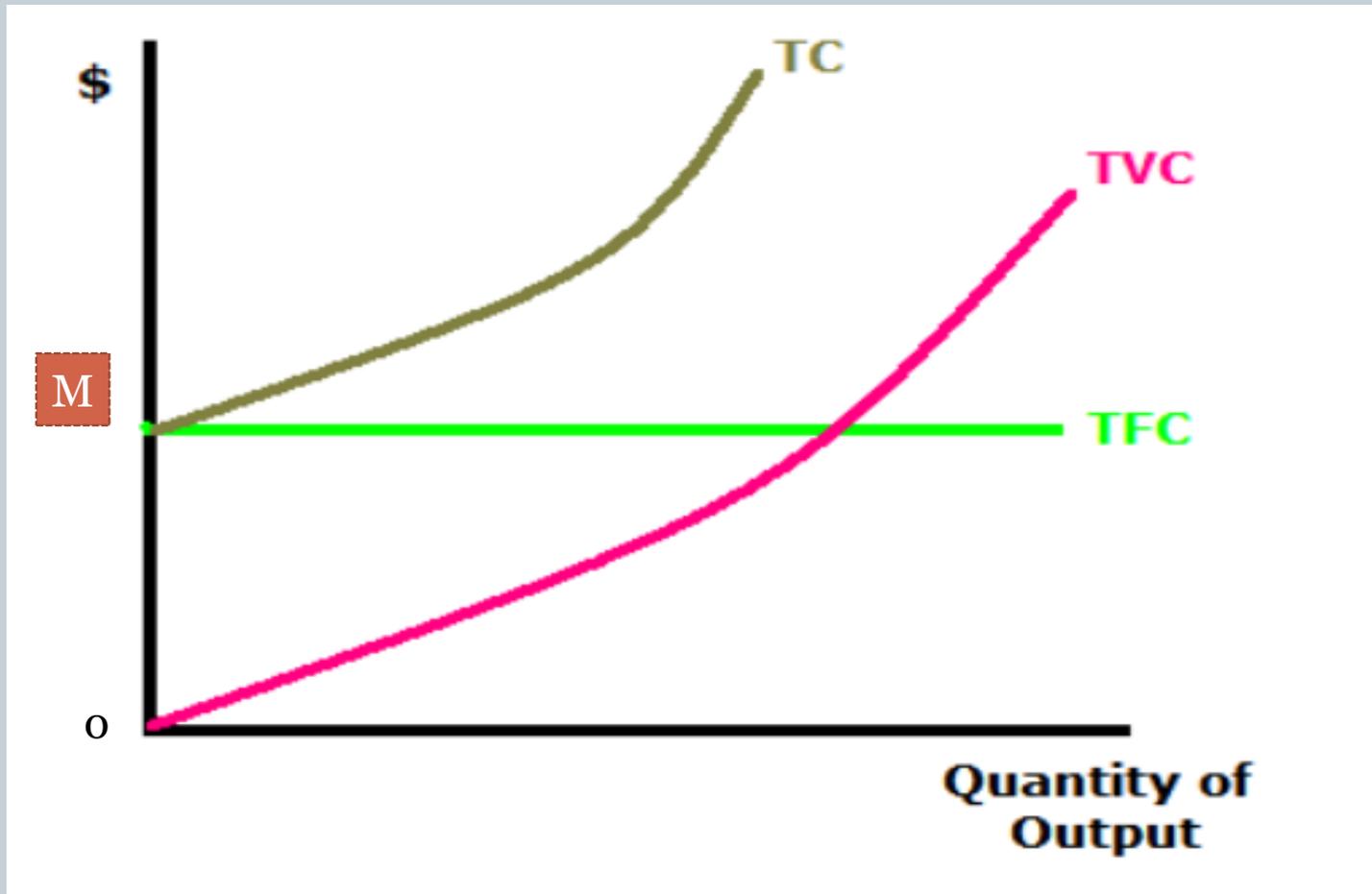
Marginal Cost

- Marginal cost is an addition to the total cost for producing an additional unit.
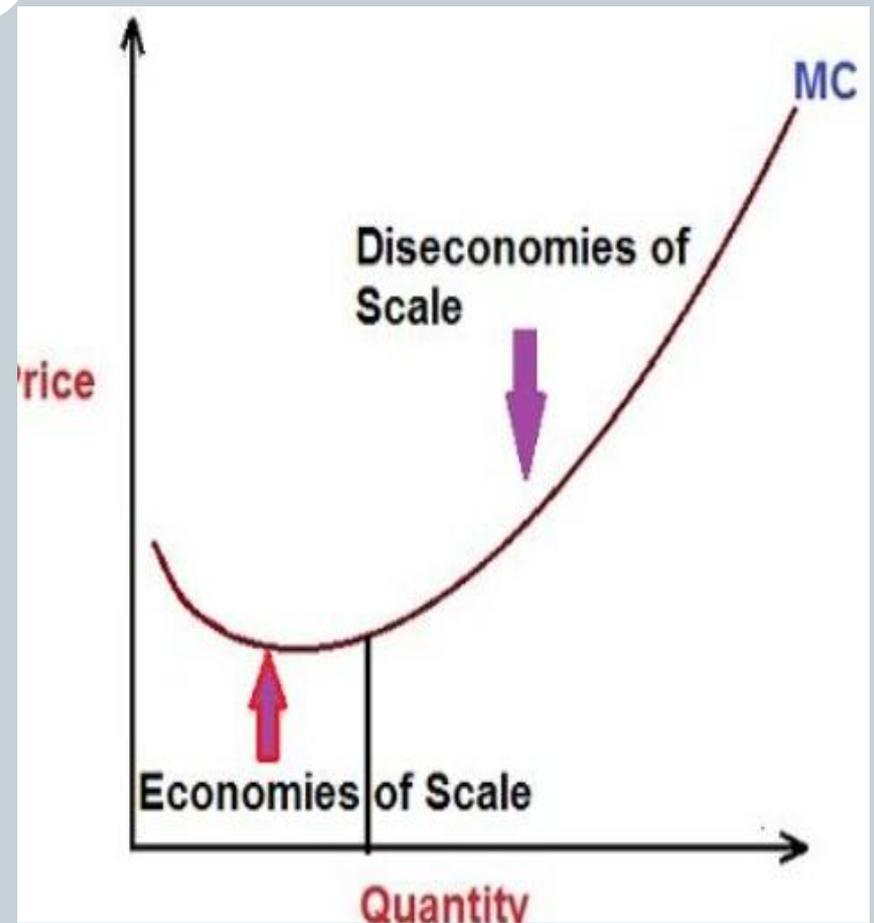
Incremental & Sunk Cost

- Conceptually Incremental cost is closely related to the concept of MC. While MC refers to the cost of Marginal unit of output, incremental cost refers to the total additional cost associated with decisions to expand the output or to add a new variety of product.

- The sunk cost are those which can not be altered, increased or decreased by varying the rate of output. For instance, once it is decided to make increment investment expenditure & funds are allocated & spent, all preceding cost are to be called as sunk cost since they accord to the prior commitment & can not be revised or recovered when there is change in market conditions or change in the business decisions.

Historical & Replacement Cost

- Historical cost refers to the cost of an asset acquired in past where as replacement cost refers to the outlay which has to be made for replacing old asset.

- Historical cost of assets is used for accounting purpose, in the assessment in the net worth of the firm. The replacement cost figures in business decisions regarding the renovation of the firm.
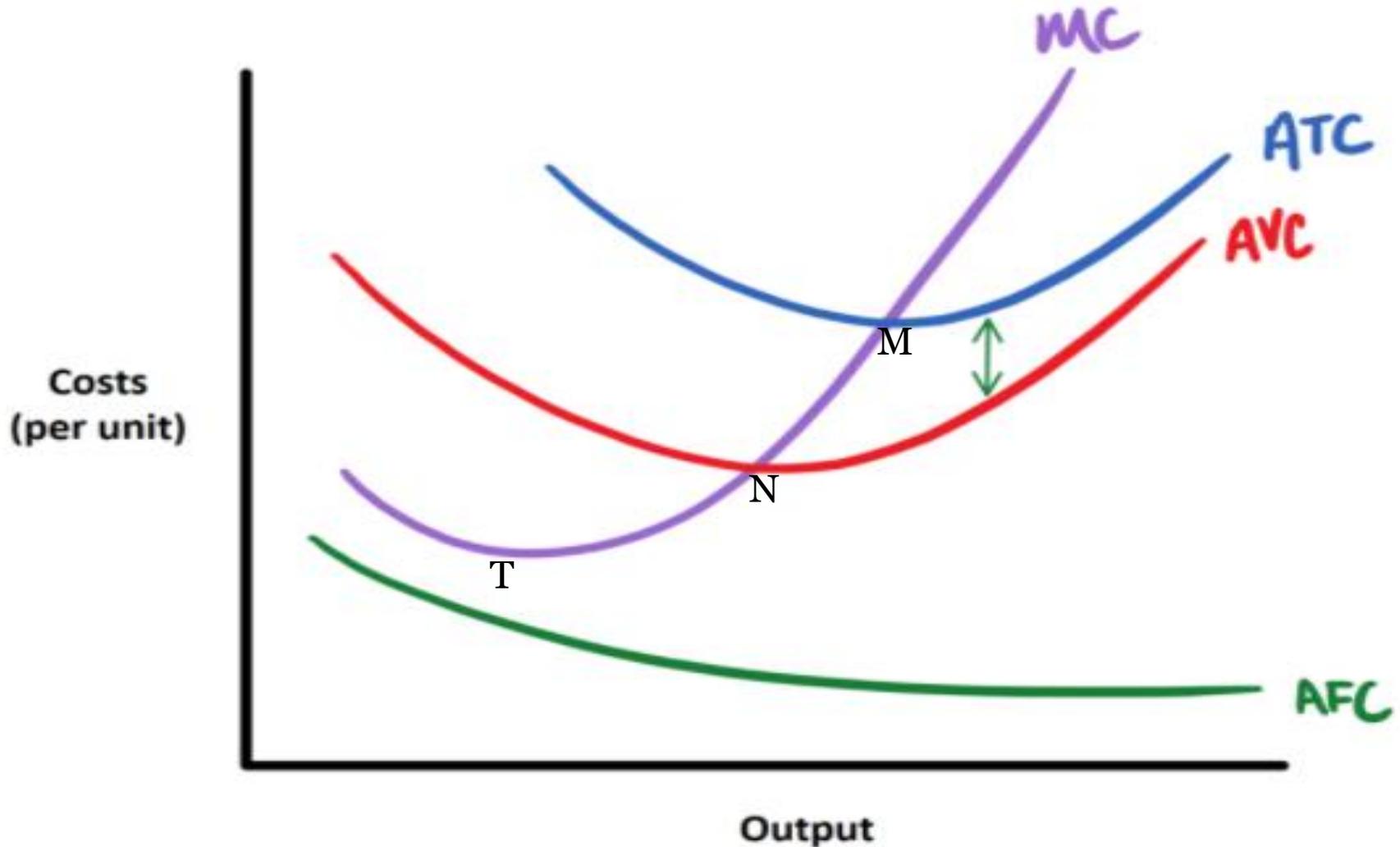
Cost – Output Relationship

Cost – Output Relationship

Short Run

Long Run
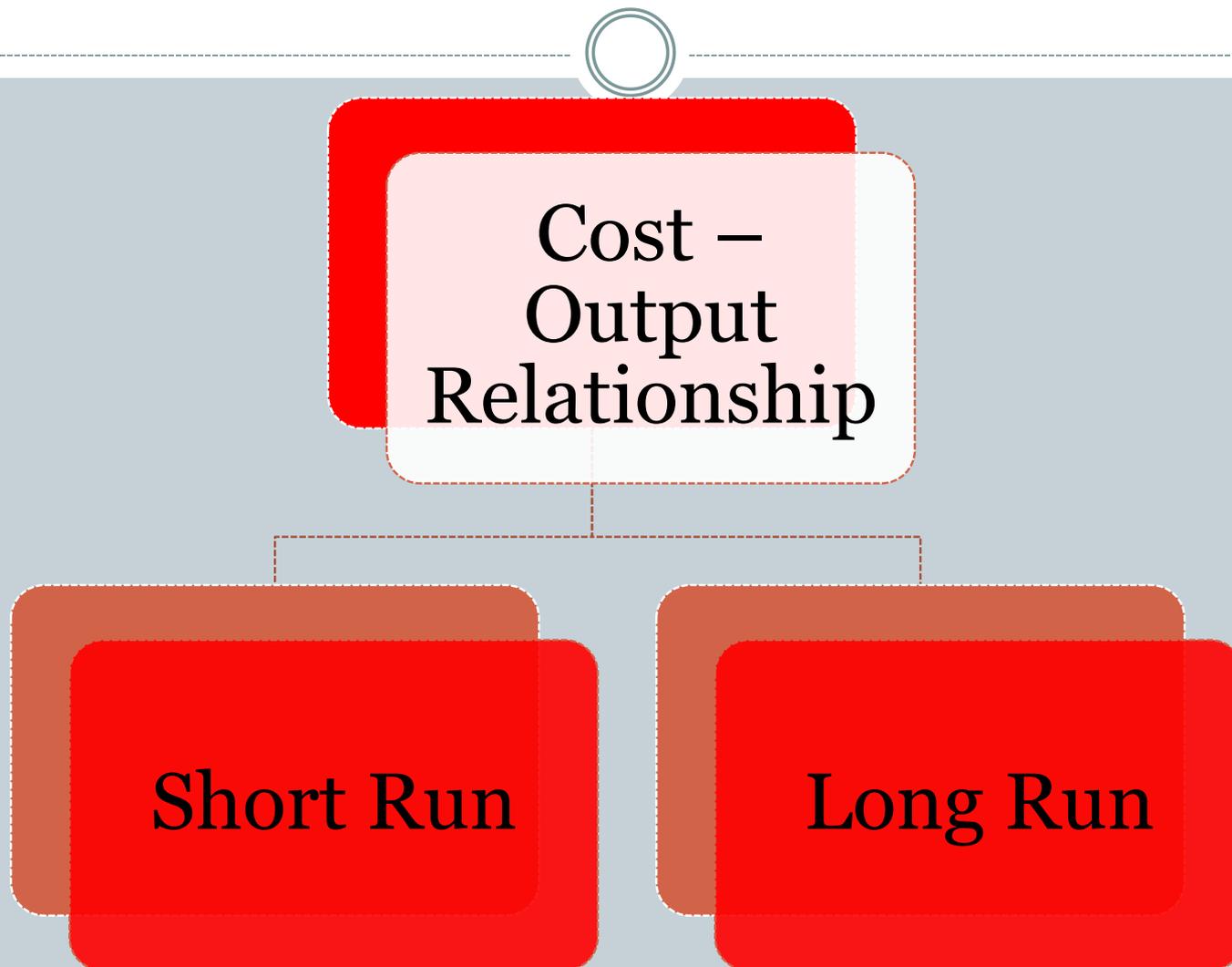
Cost Output Relationship in Short Run

[1] Unit of outputs (Q)	[2] TFC	[3] TVC	[4] TC= TFC+TVC	[5] AFC= TFC/Q	[6] AVC= TVC/Q	[7] ATC= AFC+AVC/ AC=TC/Q	[8] MC MC =ΔTC/ ΔQ
			4 = 2+3	5=2/1	6=3/1	7=5+6	
0	100	0	100	-	-	-	-
1	100	25	125	100	25	125	25
2	100	40	140	50	20	70	15
3	100	50	150	33.3	16.6	50	10
4	100	60	160	25	15	40	10
5	100	80	180	20	16	36	20
6	100	110	210	16.3	18.3	35	30
7	100	150	250	14.2	21.4	35.7	40
8	100	300	400	12.5	37.5	50	150
9	100	500	600	11.1	55.6	66.7	200
10	100	900	1000	10	90	100	400

Diagrammatical Representation

Costs (per unit)

Output

MC
ATC
AVC
AFC

M
N
T

Cost Output Relationship in Long Run

- The long run cost output relationship is shown graphically by the Long Run Cost Curve- a curve showing how costs would change when scale of production is changed.

- Long Run:

  Long run is a period long enough to make all costs variable including such costs as are fixed in short run.

- Long Run Costs:

  Long Run Costs would refer to the costs of producing different levels of output by changes in the size of plant or scale of production.

Cost Output Relationship in Long Run

- To draw a Long Run Average Cost (LAC) curve , we have to start with a number of Short Run Average Cost (SAC)curves, each such curve representing a particular scale or size of plant, including the optimum scale.

- One can now draw the LAC which would be tangential to the entire family of SAC curves. i.e., it would touch each SAC curve at one point. (esp. at the optimum point of each SAC).

- LAC is also known as Envelope Curve or Planning Curve.

Cost Output Relationship in Long Run

- The following are the characteristics of LAC:

1. LAC curve is tangential to various SAC curves. It is said to envelop them, since no point on an SAC curve can ever be below the LAC curve.

2. The LAC curve is like a U-shaped or like a disc shape curve, which implies the lower & lower the average cost in the beginning until the optimum scale of a firm is reached.

3. The SAC curve has also have U-shaped but the difference is that LAC is more flatter i.e., the U-shaped of LAC curve is less pronounced, this is because in long run such economies are possible which is not in short run.

4. LAC can never cut a SAC curves that signifies that for any given level of output, average cost can not be higher in the long run rather than in short run.

5. LAC curve will touch the 'optimum scale' curve at latter's least cost point.

6. LAC curve will touch SAC curves lying to the left of 'optimum scale' curve at the left of their least cost points.

7. LAC curve will touch SAC curves lying to the right of the 'optimum scale' curve at the right of their least cost points.

Diagrammatical Representation of Envelope Curve
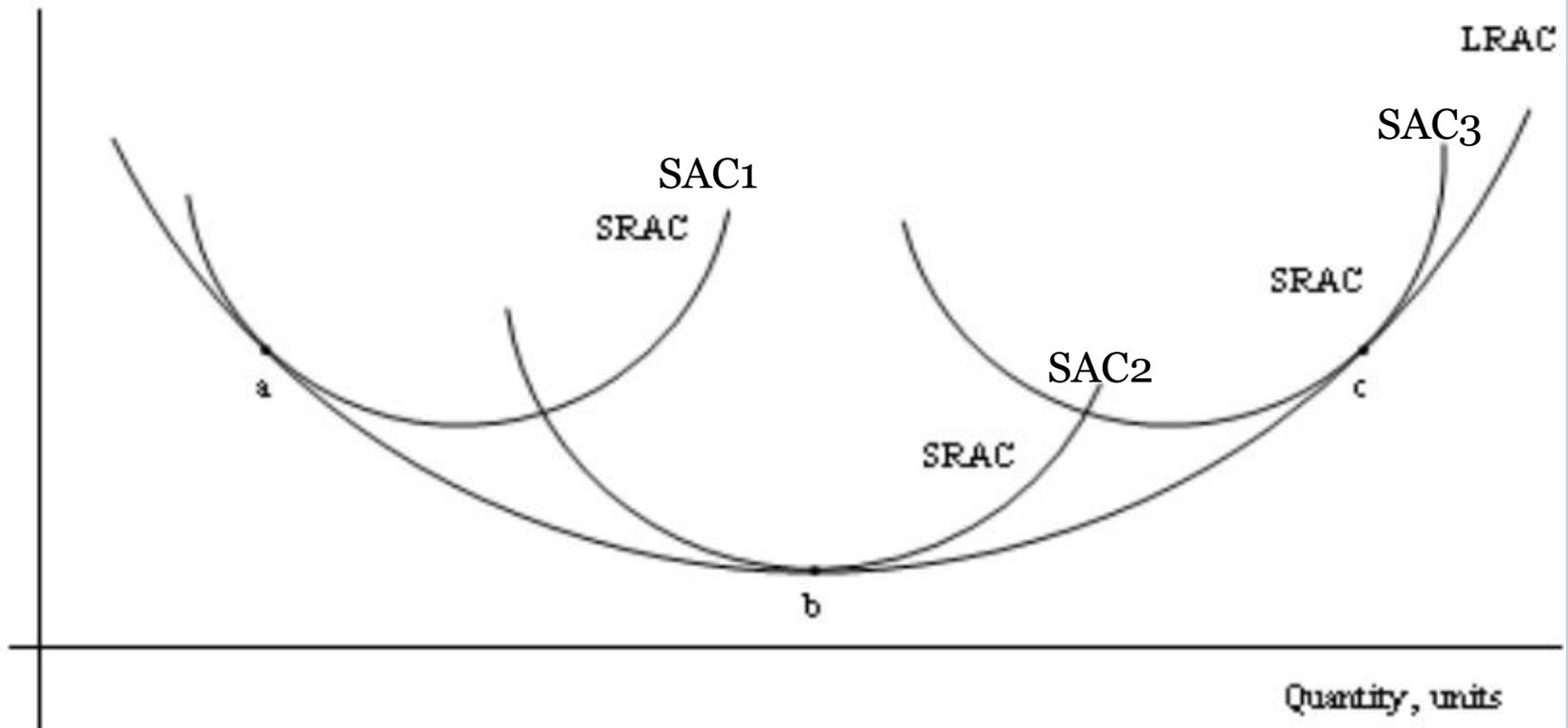
Output Maximization in the Short Run

- Let us assume that a short run cost function is given as –

$$TC = 200 + 5Q + 2Q^2$$

Revenue Concepts

- Revenue in lay man terms known as income. It is the earning of a producer through the sales of a product.

- Revenue is classified in three categories viz., Total Revenue (TR), Average Revenue (AR) & Marginal Revenue (MR).

Types of Revenue

Total Revenue (TR)	Average Revenue (AR)	Marginal Revenue (MR)
• It is the sum total of all the earnings of a firm through the sales of goods & Services.	• AR is also known as price or demand. It is the revenue per unit.	• It is an addition to the total revenue by selling an additional unit of a product.
• TR = P * Q	• AR = TR /Q	• MR= ΔTR/ ΔQ

Revenue under Perfect Competition Market

Figure 1 Revenue curves - constant price (price-taker)

Revenue under Imperfect Competition Market

Figure 2 Revenue curves - falling price (price-setter)

Empirical Illustration

Output	Total cost Rs.	Marginal cost	Average cost	Total Revenue Rs.	Marginal Revenue	Average Revenue	Profit TR-TC Rs.
1	20	—	20	120	—	120	100
2	60	40	30	230	110	115	170
3	120	60	40	330	100	110	210
4	200	80	50	410	80	102.5	210
5	300	100	60	460	50	92	160
6	420	120	70	480	20	80	60

Chapter- V. Profit Analysis

- Meaning & Definitions of Profit:

 In ordinary language profit is understood as an excess of income over costs. But in economics, profit is regarded as a reward for entrepreneurial function of risk & uncertainty management. In accounting sense, when total cost is subtracted from total revenue of the firm, the residual is termed as profit.

Profit = Total Revenue – Total Cost

 However, it should be noted that, in accounting sense when total cost is measured only explicit cost is considered while in economic sense, total cost includes both explicit & implicit costs.

 Profit in accounting terms is categorized in three parts viz., Positive Profit (Abnormal or super Normal Profit), Zero Profit (Normal Profit)& Negative Profit (Loss).

Definitions of Profit

- Some definitions:

➢ *'Profit resulted from the favorable movements of general price level'*- Lord J.M.Keynes.

➢ *'Greater the degree of monopoly power, greater is the profit'*- E.H.Chamberline & M. Kalecki.

➢ *'Profit is the reward for innovation'*- J.A.Schumpeter.

Theories of Profit

- In economic literature there are various theories of profit developed by eminent economists like J.A. Schumpeter(Innovation Theory of profit), Prof. F.H. Knight(Uncertainty Bearing Theory), J.B Clark (Dynamic theory of Profit) ,Prof Hawley (Risk Theory of Profit),Residual Claimant Theory of Profit, etc.

Gross Profit V/s. Net Profit

* Gross Profit :
  Generally, profit refer to gross profit. Gross profit stand for the total earning of an entrepreneur.
  Gross Profit includes-
1. Imputed/ Implicit Returns like
   a. Interest on entrepreneur's own capital. (Implicit Interest)
   b. Rent of land owned by the entrepreneur.(Implicit Rent)
   c. Entrepreneur's wages of management. (Implicit Wages)
2. Imputed Cost/Implicit Cost like
   a. Maintenance
   b. Depreciation charges.
3. Non entrepreneurial profit like
   a. Entrepreneur's windfall gains.
   b. Monopoly profit etc.

In short,
Gross Profit = Implicit returns + Maintenance & Depreciation charges + Non entrepreneurial Pr.

* Net Profit :
* Net profit is the pure profit. Technically, net profit is the income received by the entrepreneur after payments to all factors of production.

In short,
Net Profit = Gross Profit – [Implicit returns + Maintenance & Depreciation charges + Non entrepreneurial Pr.]

Profit Planning & Management

- The most important method for determining the cost-volume-profit relationship is that of Break Even Analysis, also known as C-V-P analysis.

- Break Even Analysis is a significant technique for profit planning.

Break Even Point

- The point at which the level of output & level of revenue is equal to the cost of production is known as break even point.

- It is also known as "No Profit-No Loss" situation.

$$BEP = TR - TC$$

Consumer Behaviour

- The theory of consumer behaviour or demand theory seeks to explain the decision making behaviour of the consumer in demanding a particular commodity.

- Economists have offered their theories of consumer behaviour on basis of measurement of utility.

- There are three major approaches regarding the measurement of utility viz.,
  (i) Introspective Cardinal Approach.
  (ii) Introspective Ordinal Approach.
  (iii) Revealed Preference Approach.

Approaches to Utility
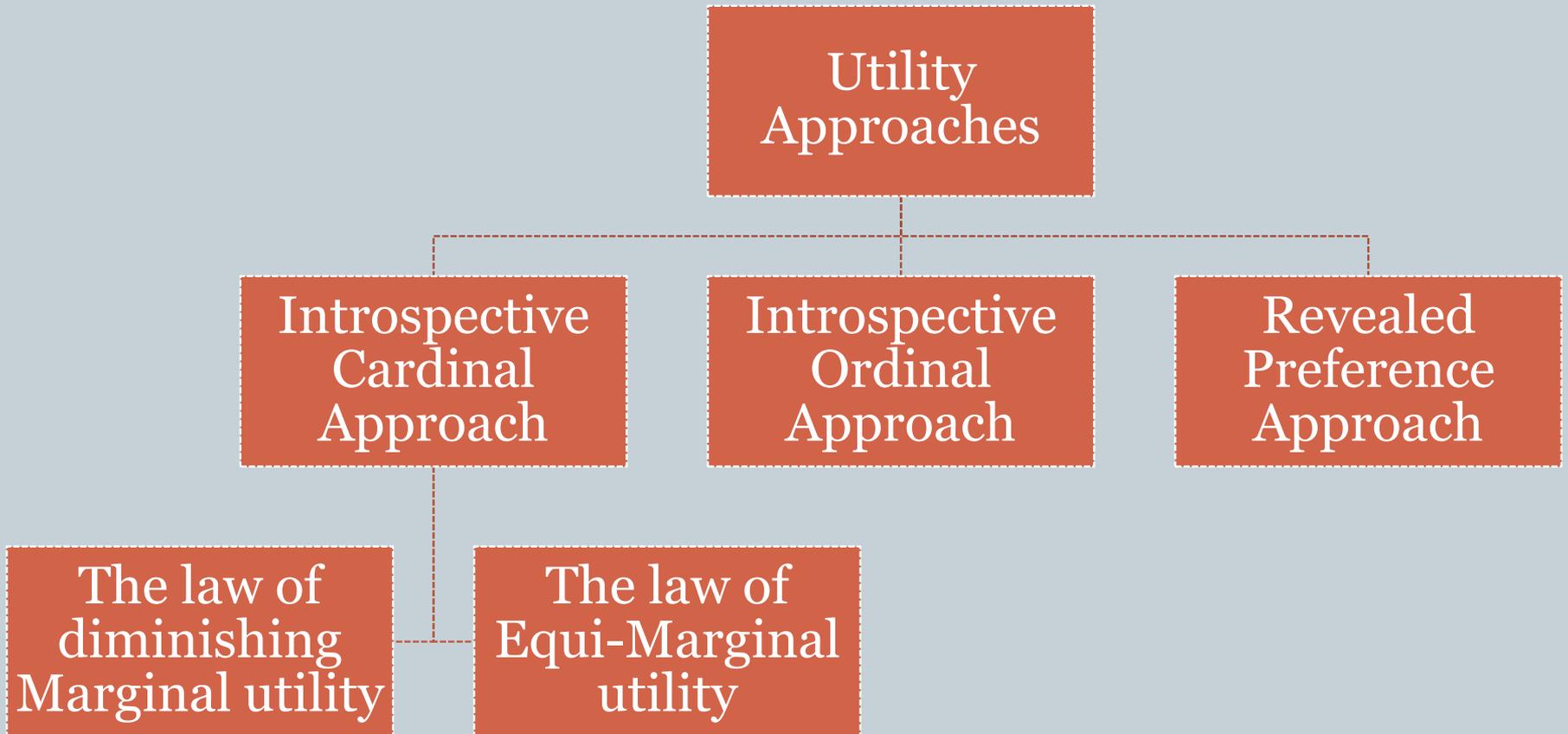
The Utility

- To understand these approaches, first one has to know what Utility is?

- Utility is a power or property to measure human wants or their level of satisfaction. Utility can be measured in terms of *"Utils"*.

- Utility can be categorized into two parts-
(i) Total Utility. (T.U.)
(ii) Marginal Utility (M.U.)

Utility Analysis of Demand

- Marshall expresses the demand behaviour of a rationale consumer in terms of demand curve which is graphically represents the law of demand. Usually the demand curve slopes downwards to the right indicating an inverse functional relationship between price and demand.

- A theoretical explanation of consumer behaviour signifies that more the quantity purchased (or demanded) as the price falls and vice versa. This is explained by Prof. Marshall in his law of diminishing marginal utility.

Marshallian Cardinal Approach

- The Marshallian Cardinal Approach is based on the following postulates –

1. Utility is measurable i.e., its cardinal(numerical).
2. The law of diminishing marginal utility.
3. The law of equi-marginal utility.

Hence, his approach is called as Marginal Utility Approach.

Assumptions of Cardinal Approach

- Cardinal utility (measured in numeric terms).
- Independent utility.
- Constant marginal utility of money.
- Diminishing marginal utility.
- Rationality.
- Introspective analysis (observing the own behaviour of consumer or person).

The law of Diminishing Marginal Utility

- The law states that as a consumer tries to equalize his marginal utility of the commodity with its price so that his satisfaction is maximize.

- The law of diminishing marginal utility states that all else equal, as consumption increases, the marginal utility derived from each additional unit declines. Marginal utility is the incremental increase in utility that results from the consumption of one additional unit.
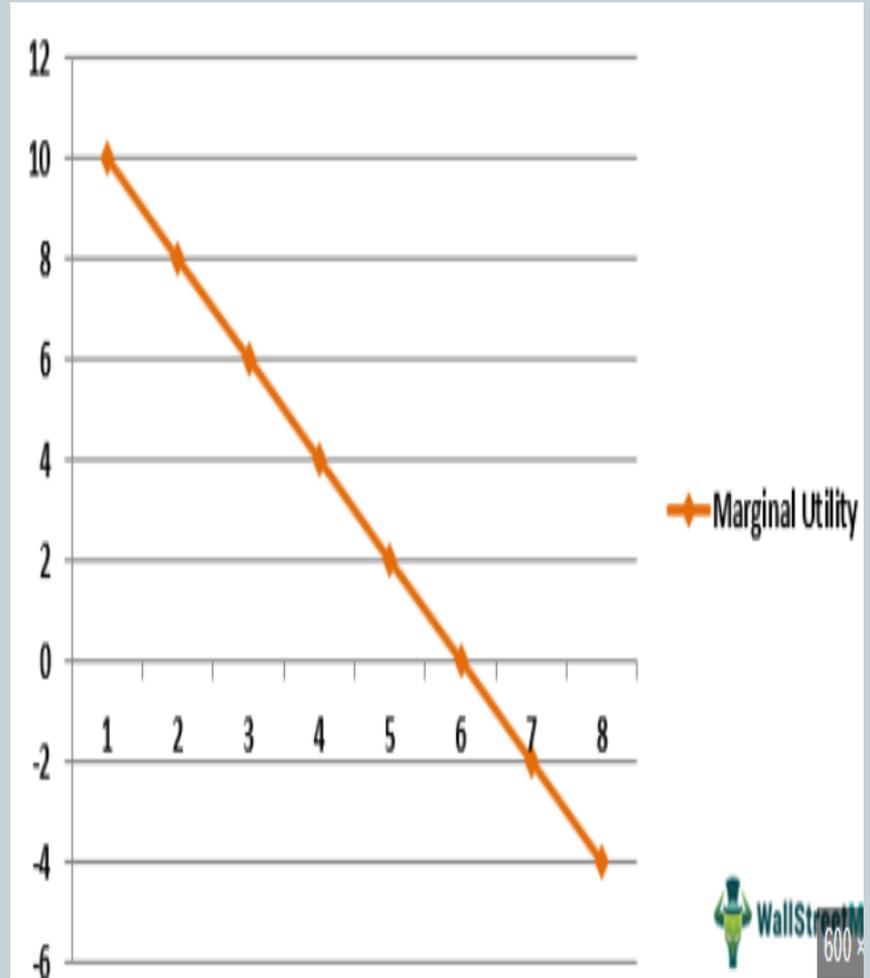
The Law of Equi-Marginal Utility

- It explains the behavior of a consumer when he consumes more than one commodity. The law states that a consumer should spend his limited income on different commodities in such a way that the last rupee spent on each commodity yield him equal marginal utility in order to get maximum satisfaction.

- $$\frac{MUx}{Px} = \frac{MUy}{Py} = \frac{MUz}{Pz}$$

Marshallian's Income & Substitution Effect

- Income Effect:

This refers to the changes in the real income of a consumer due to changes in price. For instance, when the price of commodity falls there will be an increase in the real income or purchasing power of a consumer & vice versa.

- Substitution Effect:

When the price of commodity rise, the consumer is induce to substitute more of the relatively cheaper commodity for the dearer one which is known as substitution effect.

Introspective Ordinal Approach

- This approach is also called as Indifference curve approach.

- The technique of indifference curve was originated by Edgeworth in 1881 and its refinement was effected by Pareto- an Italian economist in 1906.

- This technique attained its perfection and its systematic application in the demand analysis at the hand of J.R. Hicks & R.G.D. Allen in 1934.

- Prof Hicks expounded and popularized this approach in his book *"Value & Capital"* in 1939. That's why this approach is also known as *Hicksian* approach.

The Concept of Scale of Preferences: Ordinal Utility

- Indifference Curve have been devised to represent the ordinal measurement of utility.

- Prof. Hicks introduced the concept of "*Scale of Preferences*" of a consumer as the base of indifference curve technique.

- Ordinal measurement implies comparison and ranking without quantification of satisfaction enjoyed by a consumer. In ordinal sense, utility is viewed as the level of satisfaction rather than amount of satisfaction.

Scale of Preferences

| Combinations	Combinations of Commodity	Level of Satisfaction derived	Ranking – Order of Preferecne
A	12 Apples + 12 Bananas	Highest	I
B	10 Apples + 10 Bananas	Less than A	II
C	5 Apples + 5 Bananas	Less than B	III

Indifference Schedule

- Indifference Curve (I.C.) is based on indifference schedule.

- Indifference schedule is a list of alternative combinations of two commodities which yields equal satisfaction to the consumer.

- When a consumer lays down his scale of preference for different combinations, he will rank them as per higher & the lower level of satisfaction. The combinations which yields them higher level of satisfaction is assigned the first order preference.

Combinations	Apples	Bananas	Marginal Rate of Substitution (MRS)
A	1	12	-
B	2	8	-4/1 = -4
C	3	5	-3/1 = -3
D	4	3	-2/1 = -2
E	5	2	-1/1 = -1

Indifference Curve (IC)

- The IC is a geometric devise representing all such combinations of two commodities yielding equal or same level of satisfaction at a particular level.

- In other words, An IC is a locus of points representing all the different combinations of two goods (X & Y) which yields same level of utility or satisfaction.
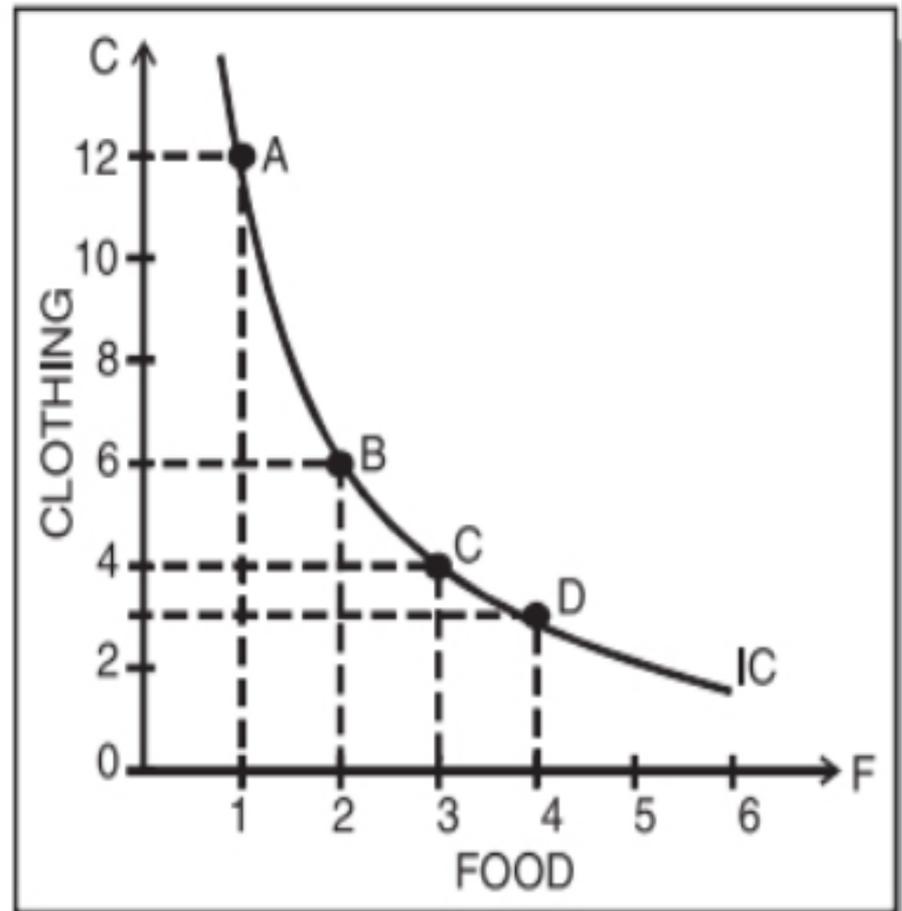
Properties or Features of IC

1. IC slopes downwards from left to right.
2. Convex to origin.
3. They never intersects each other.
4. The higher level of IC shows a higher level of satisfaction.
5. They need not be parallel to each other

Budget Lines or Price Income Line

- The Budget constraints or budget line show all the possible combinations of two goods in consideration the consumer can buy with his given income and prices of the goods.

- To be precise, budget line can be defined as a locus of points representing all different combinations of two goods that can be purchased by the consumer, given his money income and the prices of the two commodities.

- To illustrate the point, let us assume that a consumer has a income of Rs. 50 to be spent on two goods X &Y. The price of X is Rs. 5 per unit & price of Y is Rs. 10 per unit. In such on next slide. case the alternative spending possibilities can be assumed as given in the Table in next slide.
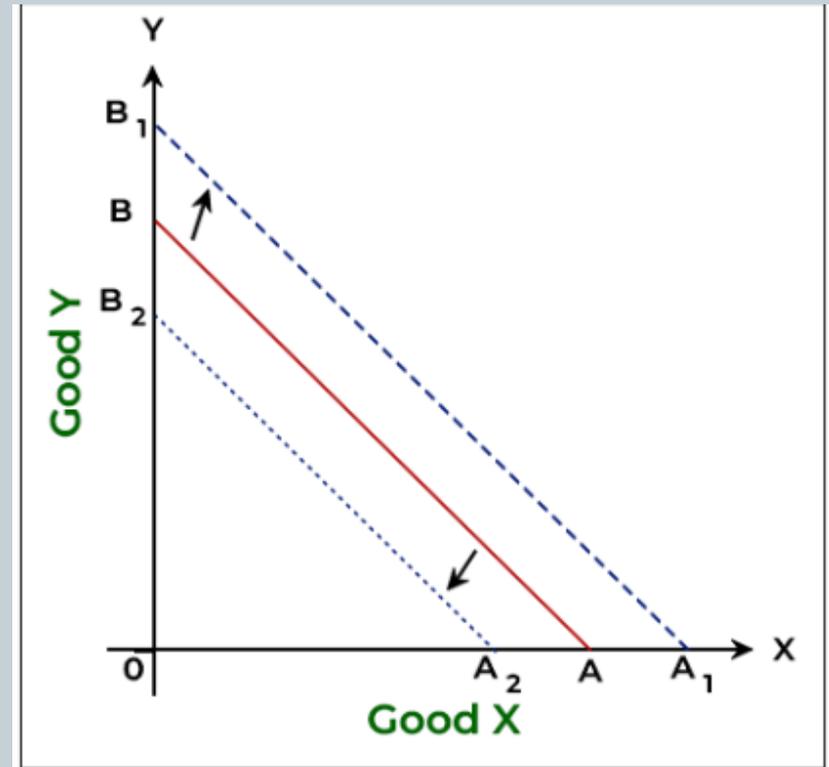
Budget Line

| Combination	Units of good Y	Units of good X
A	5	0
	4	2
	3	4
	2	6
	1	8
B	0	10
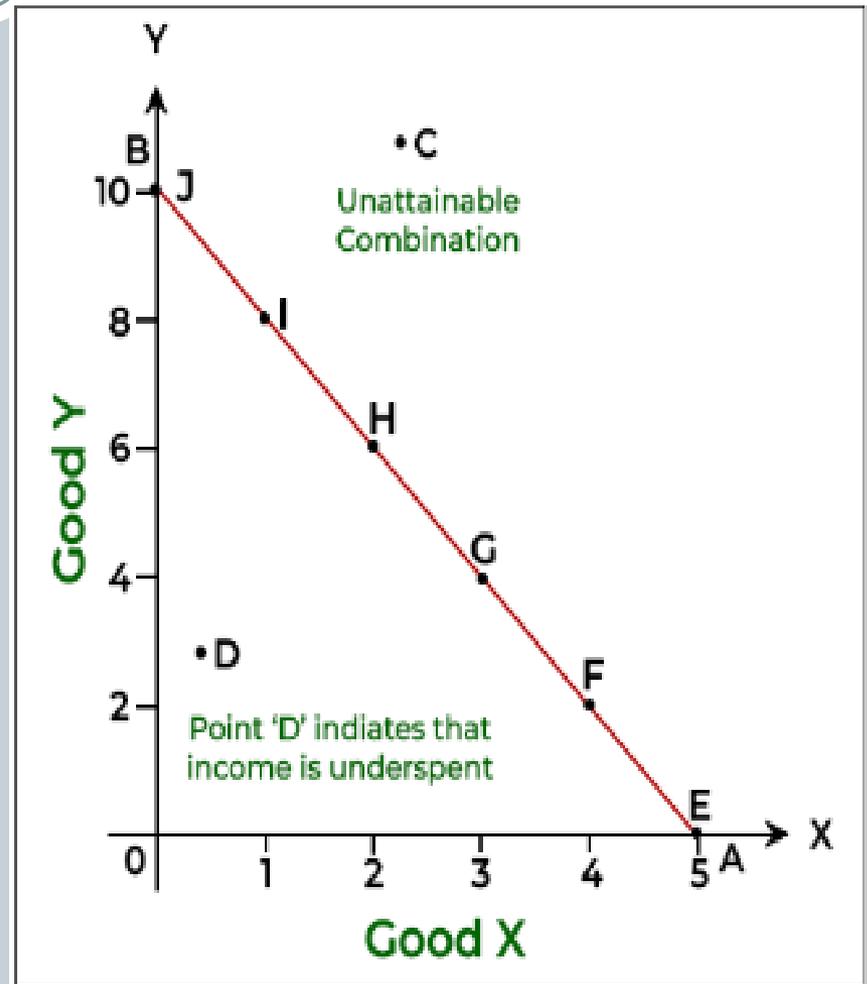
Changes in Money Income & Budget Line

- If the prices of both the goods remain constant (Px/Py is constant) and when the money income of the consumer increases or decreases, the budget line or the income line will shift upwards or downwards.

Change in the Price of Commodity on the X-axis (Good X):

- When the price of Good X falls, then the budget line will rotate to the right from, AB to A_1B. It means that the new budget line will meet the Y-axis at the same point; i.e., B because the price of Good Y has not changed; however, it will touch the X-axis at point A_1, because the consumer can now buy more units of Good X with his same income level. Similarly, if the price of Good X rises, then the budget line will rotate to the left from AB to A_2B.
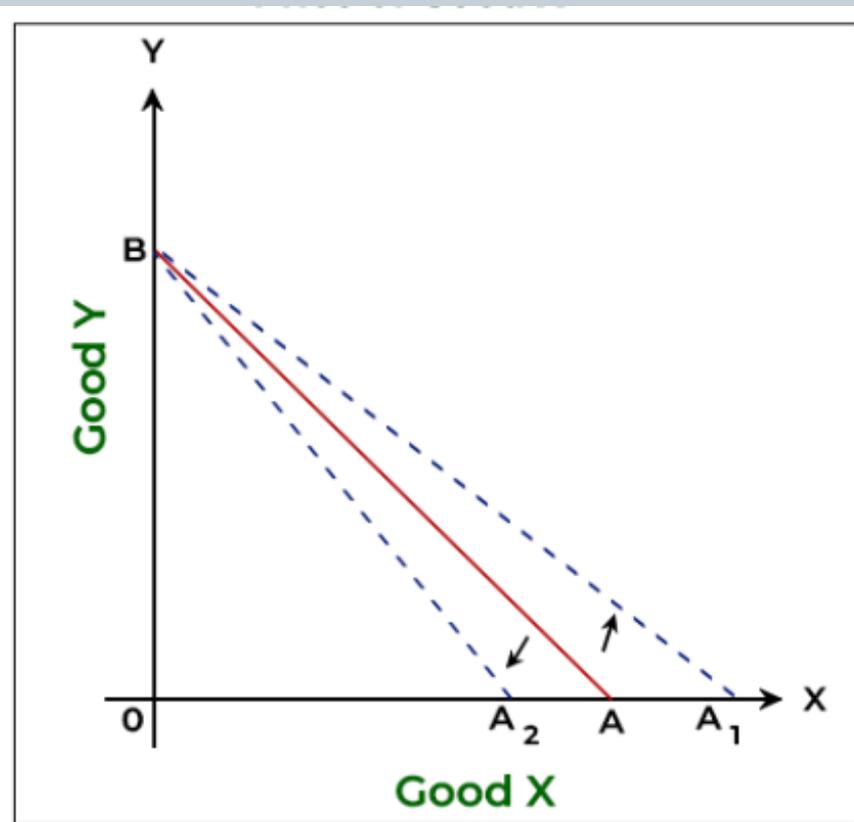
Change in the Price of Commodity on the Y-axis (Good Y):

- When the price of Good Y falls, then the budget line will rotate to the right from, AB to AB_1. It means that the new budget line will meet the X-axis at the same point; i.e., A because the price of Good X has not changed; however, it will touch the Y-axis at point B_1, because the consumer can now buy more units of Good Y with his same income level. Similarly, if the price of Good Y rises, then the budget line will rotate to the left from AB to AB_2.
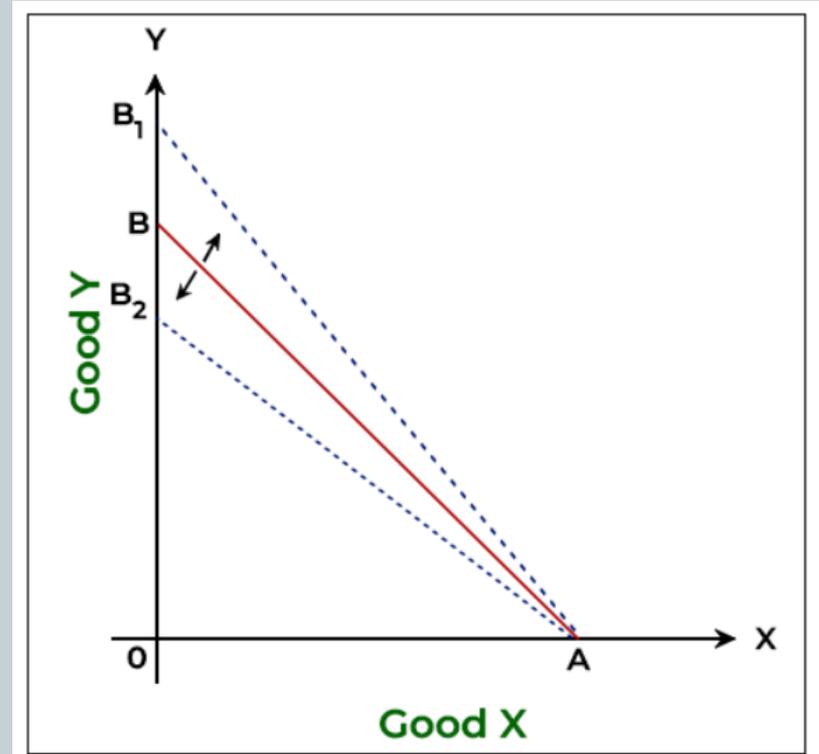
Consumer's Equilibrium

- The term *equilibrium* is used frequently in economic analysis. It is a state of rest or a position of no change, which under a situation provides the maximum gain. A consumer is said to be in equilibrium when he has derived maximum satisfaction and does not want to change his consumption level.

- **Consumer's Equilibrium** is a situation in which a consumer has maximum satisfaction with limited income and does not tend to change his existing way of expenditure.
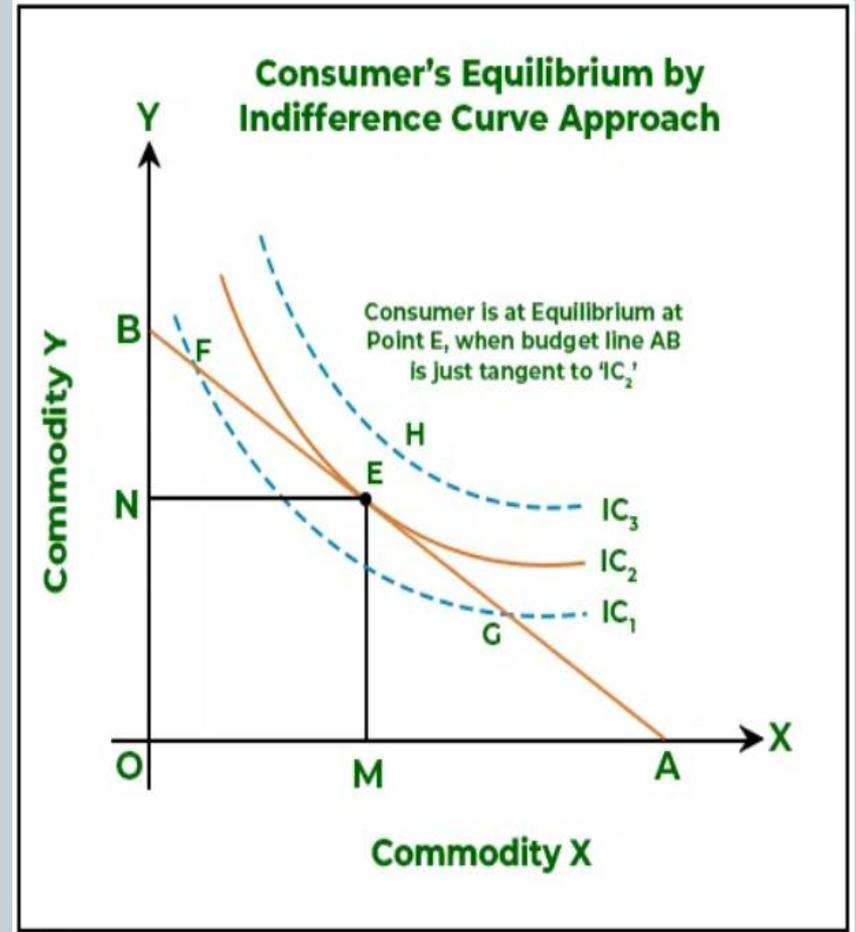
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