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MANAGERIAL ECONOMICS

M.Com (Previous)

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MAHARSHI DAYANAND UNIVERSITY, ROHTAK

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Unit - I

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- **Demand Estimation and Forecasting**

1. Meaning and Features of Demand Forecasting
2. Objectives/ Uses/ Purpose of Demand Forecasting
3. Methods of Demand Forecasting
4. Fundamentals of a Good Demand Forecasting Method

Objectives of the Unit

After going through this unit the students will be able to:

- Understand the meaning, definition, nature, scope and significance of Managerial Economics
- Explain the relationship of economics with other disciplines and as well as the role of economics in managerial/business decision making
- Understand the fundamental concepts of economics
- Elucidate the theory of consumer behavior i.e. Cardinal Utility Analysis and Ordinal Utility Analysis
- Understand the meaning, features, and objectives of demand forecasting
- Explicate the various methods of demand forecasting and carry out demand forecasting

Managerial Economics: Nature, Scope and Significance

1. Introduction

The development of managerial economics is regulated by a close inter-connection between two distinct disciplines: Economics and Management. Managerial economics refers to a stream that combines the economic theory and managerial decision making. It is the analysis of major managerial decisions by using the tools and techniques of economics to aid managers in making better decisions. Managers are always confronted with numerous day to day decisions regarding production, quantity, quality, supply, profit and so on. In this regard, managerial economics equips the managers with a number of economic tools and techniques with the help of which the managers take various decisions in real market situations. Thus, managerial economics can be stated as a body of knowledge that helps the managers in preparing strategies for a business unit

- **Few Definitions**

According to **Mansfield**, "Managerial Economics is concerned with the application of economic concepts and economic analysis to the problems of formulating rational managerial decisions."

According to **McNair and Meriam**, "Managerial economics is the use of economic modes of thought to analyse business situations."

Prof. Evan J Douglas defined "Managerial Economics is concerned with the application of economic principles and methodologies to the decision making process within the firm or organisation under the conditions of uncertainty,"

M. H. Spencer and Louis Siegelman explain the "Managerial Economics is the integration of economic theory with business practice for the purpose of facilitating decision making and forward planning by management".

In Nutshell, we can summarise that **managerial economics** is the study of efficient utilisation of limited resources to achieve predetermined goals.

Broadly, managerial economics is categorised into two slots: Micro-Economics and Macro-Economics. **Microeconomics** (micro means small + economics) analyses the behaviour of firms and individuals in taking various decisions of distributing scare resources to achieve their goals. The subject also studies the interaction of individuals and firms in different market situations. On the other hand, the other branch of economics i.e. **macroeconomics** studies the economy as a whole that is concerned with the general economic factors and focuses on the aggregate changes in growth rate, unemployment, gross domestic product, interest rates, and inflation, etc. In totality, it is a stream applying the principles of micro and macro-economics for business decision making.

2. Nature of Managerial Economics

The managerial economics is an applied subject which uses the economic theory and concepts in solving managerial problems.

i) **Applied in Nature:** Managerial economics help the managers in business decision making by applying the economic theories and models.In the words of S. K. Deo, "Managerial economics is

an application of economic theory, particularly of microeconomics theory, to practical problem solving."

ii) **Managerial Economic is both Art and Science: M**anagerial economics can be compared to a science as it is a discipline of decision making with regard to limited resources with alternate applications. Managerial economics observes internal and external environment for managerial decision making. As an art, it requires the knowledge, understanding and capability in applying economic theory to achieve the firms' objective.

iii) **Dynamic:** Managerial Economics deals with human-beings, firms and different market situations. The stream is dynamic by nature and change itself time to time to cope-up with dynamism and vitality according to the diverse nature of individuals and markets.

iv) **Pragmatic:** Managerial economics is pragmatic in nature as it solves the management decision problems by applying economic theory and various quantitative methods. It finds the optimal solution to various decision making problems of businesses/ firms.

v) **Normative:** Managerial economics is normative also as it includes the word 'ought' or 'should' and emphases on the result of the firm or economy. Managerial economics targets the maximum achievements of a firm or an economy.

vi) **Inter-Disciplinary:** The subject has its liaison with other disciplines like mathematics, statistics, accounting, operational research, psychology, etc. for proposing economic theories and concepts for managerial decisions making. According to D. C. Hague, "Managerial Economics is concerned with the logic of economics, mathematics, and statistics to provide effective ways of thinking about managerial decision making."

vii) **Based on Assumptions and limitations:** The validity of the managerial concepts are not universal as each concept and theory is followed by certain assumption and limitations. The theory may not hold good at all if there is any change in assumptions.

3. Scope of Managerial Economics

The scope here refers to the area, subject matter of economics and width of application of economic tools and techniques. Managerial Economics is majorly related with the applicability of economic tools and techniques in decision making.

i) **Theory of consumer Demand**: Managerial economics analyses the decision making behaviour of the individuals because the firm's decision making depends on the accurate estimation of the consumer demand. Only after the accurate estimation of consumer demand a manager can take decisions regarding quantity, quality, and price, etc. of the product.

ii) **Theory of Production**: Production function defines the theory of production which is a relationship between input and output of a production process. This mathematical relationship relates the maximum amount of output with a given number of inputs. The firm is aimed to establish a least-cost combination that ensures the optimal output with a given number of inputs.

iii) **Pricing Decisions:** Pricing tactics are also a vital aspect of management as firm's revenue basically governed by its pricing tactics. Managerial economics carefully analyze the nature of consumers and markets in which firm is operating. Firms take help of market analysis, pricing tactics, and price forecasting in order to fix correct pricing policy for their product.

iv) **Profit Management:** The prime objective and chief measure of success of business firms is making profits. Managing the profit is an essential function of any business firm that depends on the projection of future earnings, sales volume, pricing and competitive strategies, etc. Profit planning and measurement is not an easy task in the world of uncertainties as business expectations are not always truly realized. The managerial economics covered many important aspects such as profit policies, profit planning tools like cost-volume-profit analysis, break-even analysis, etc.

v) **Inventory Management:** Managers of any business firm solve the problem of high and low stock with the help of managerial economics and keep the inventory at the ideal stock. Both the conditions i.e. high and low stock of inventory are not in favour of an economic unit as the high stock of inventory tied the capital unproductive and on the other hand, the low level will affect the production activities. Consequently, the managers use various methods like EOQ (Economic Order Quantity), ABC analysis to lessen the cost of the inventory.

vi) **Advertising:** The message should be reach the potential consumer after production but earlier he thinks of purchasing it. The concept of advertisement is become an integral part of business decision making and future planning. Managerial economist practices various methods to set advertising budget such as Objective and Task Approach, Competitive Parity Approach, Percentage of Sales Approach, All you can Afford Approach, etc.

vii) **Competition:** A managerial economist must have the perfect knowledge of the different markets existing in the environment. Managerial economics enable the managers to identify the perfect and imperfect markets so as to introduce the product in such markets in order to increase the sales revenue. The main aspects are perfect market, monopoly market, monopolistic market, oligopoly market, and price fixation under different market conditions.

4. Significance/ Importance of Managerial Economics

Managerial economics detects the problem, organizes the information, and evaluate the alternatives. This branch of economics mediates the theories and practical knowledge of economics. Managerial economics helps the managers in solving business problems and enhance the decision making process through analyzing all the business decisions and forecasts.

i) Managerial economics helps the managers in directing **all the natural and man-made resources** in desired manner. The demand for different goods and services is continuously increasing with the explosion of population and increasing per capita income. It assists the management in satisfying the increasing and diversified human needs and wants.

ii) Managerial economics assures the **central role in solving various problems of an economy** such as what, how, how much, to whom and where to produce. With the help of economic

methods, the management formulates the business policies to make proper decisions in solving these economic problems.

iii) Managerial economics is useful in taking **crucial business decisions** by understanding the complex system of entire economy. It provides the relevant aspects of traditional economics i.e. economic concepts, theories, models, and techniques of analysis that have a major role in business decision making.

iv) Managerial economics proves its significance as it defines and directs the perks and pitfalls of an economy. It identifies the business activities that can positively or negatively affect the growth of the business and decisions regarding product, production, quantity, quality, cost, selling price, etc. are taken accordingly.

v) It also provides the **various pricing policies and tactic** that guide the managers in handling the price of the product. Different pricing policies are adopted in different competitive situations i.e. perfect & imperfect competition and monopoly.

vi) The **well-being of the labour and owners of capital, land &other resources** has increased after the emergence of the concept of managerial economics. The development of managerial economics has increased the benefits to all sections of the society despite the fact that business firms maximize their profits. The business firms generates income and employment for their contribution to production and organize production by combining various productive resources and bringing about coordination between various resources.

5. Relationship with other Disciplines

Basically, Managerial economics is a branch of traditional economics that propounding its theories and decisions with the help of other disciplines. It is closely related with certain subjects like economics, statistics, mathematics, accounting, and operational research.

i) Relationship with Traditional Economics: Managerial economics has its relationship with both the branches of economics i.e. micro and macro-economic. It uses concepts from micro economics such as marginal cost, marginal revenue, pricing theories and tactics, elasticity of demand and the theories of market structure in taking various managerial decisions. Managerial economics also studies the micro-economics concepts price level, employment level, income level, investment and consumption in the economy as well as the matters related to international trade, Money, public finance, etc.

ii) Relationship with Accounting: Managerial economics uses perfect knowledge of accounting concepts to take various types of business decisions. Accounting provides the data regarding cost, revenue and their classification which helps the managers in achieving the profit and sales maximization objectives of the firm. The relationship of managerial economics with accounting gave birth to a new area called ‘Managerial Economics.

iii) Relationship with Mathematics: Managers use mathematical concepts and models for optimal use of resources in achieving the profit maximization goal. Mathematical techniques are widely used to manage various notions like elasticity of demand, incremental cost, etc. The main

branches of mathematics i.e. Geometry, Algebra and Calculus are also used in managerial economics.

iv) **Relationship with Statistics:** Tools of economics are used in many ways for correct estimation of demand of the product. The data regarding changes in taste, fashion, and income that impact the demand are analysed and the adjustment are made in production decisions. The statistical tools like correlation, multiple regression, probability, etc. are used to solve the problems relating uncertainty.

v) **Relationship with Operation Research:** Managerial economics takes assistance from the scientific methods of operation research in the field of product development, inventory management, material management, marketing research and demand analysis. It solves complex managerial problems regarding men, machines, materials, and money by applying techniques like game theory linear programming and inventory models, etc.

vi) **Relationship with the Theory of Decision-Making:** The decision-making theory describes the multiple aims and uncertainty of a firm. This new field of knowledge supports the managers in taking practical and application oriented decisions regarding multiplicity of goals.

vii) **Relationship with Computer Science:** With no exception, computer science has changed the way of economic/business activities in the area of data & accounts maintenance, inventory controls, and supply & demand predictions. The basic knowledge of computer science is compulsory for managerial trainees in many countries as it lessen the workload of management in big firms.

viii) **Relationship with Psychology and Sociology:** The study of the motivational factors of behaviour of an individual and group are essential for managerial decision making. Both psychology and sociology offer the basic of behavioural theory of the firm as put forth by Simon, Cyert & March and Williamson.

6. Managerial Economics- Role in Business Decision Making

This branch of economics applies economic theory and practice directly to business with a view to assist the managers in the process of decision making. The managers take help of managerial economics in determining strategies on production, operations, price, investment, risk, profits, and consumer behaviour. Managerial economist uses advanced techniques of economics to solve multi-layered issues of successful decision making and future planning.

- **Business Decision Making**

The process of business decision making comprises of the following steps:

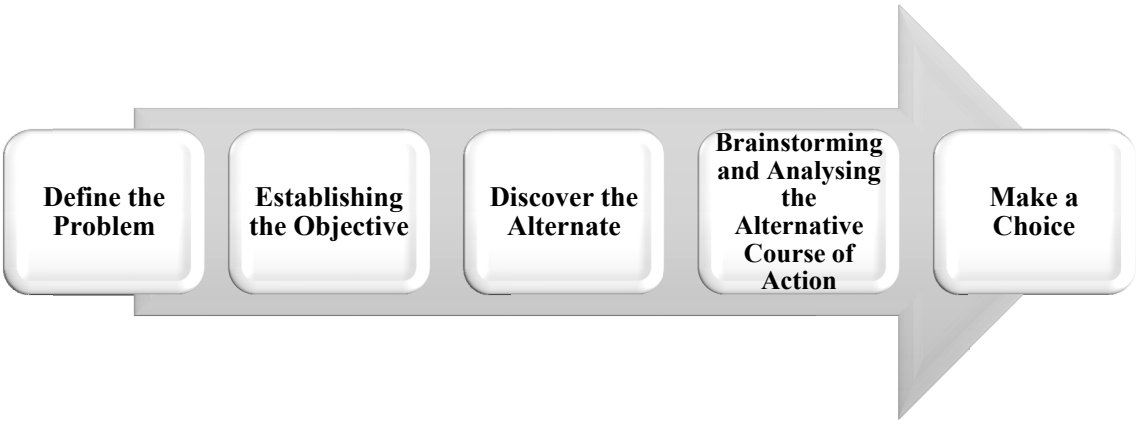

Figure 1. Steps in Business Decision making

i) **Define the problem:** The identification of problem and its source is the initial step in this process. The decision makers must be well aware of the root cause of the problem that influences the firm's success planning and the problem needs to be investigated.

ii) **Establishing the objective:** Once the basic problem is identified, managers then establish the objectives of business unit. The prime motto of the business firm is profit maximization, sales maximization, growth of the firm, market share, cost-benefit principle, etc.

iii) **Discover the alternate:** After setting the objectives, the next step is to discover out alternative solutions to the defined problem. A careful and appropriate formulation of all the possible alternatives is of much importance for a sound decision framework.

iv) **Brainstorming and analysing the alternative course of action:** This step requires the collection and analysis of the relevant data form internal or external sources to evaluation the each possible outcomes. The managers use regression analysis, linear programming, differential calculus, cost-benefit analysis to arrive at the optimal solution to the problem.

v) **Make a choice:** After the analyses and brainstorming session, the preferred course of action is selected and implemented by the decision makers. The implementation needs constant monitoring so that the desired results from the optimal course of action are obtained.

- The **role of managerial economics in managerial decision making** is summarized as follows:
  - Managerial economics analyses the microeconomic indicators such as consumer demand and behaviour, demand and sales forecasting that are significance to the organization and it's functioning.
  - It also investigates the macro-economic indicators like price level, income, employment levels, business cycles, population, and the probable upshot on the firm's working.
  - It analyses the changing business environment and assists the management in the process of sound decision making by picking the best alternative in case of choice.

- It also assists the managerial economist in taking better investment decisions by applying the economic tools and models such as cost-benefit analysis, etc.
- The pricing theories and strategies backs the business and determine appropriate pricing policies and pricing levels for their products by using some common methods like price discrimination, cost-plus pricing, and value based pricing.
- It also offer assistance to management in taking various investment decisions as they affect the internal functioning of an enterprise such as production decisions, goods and services to be produced, inputs to be used, pricing policies, investment plans, etc.
- Managerial economics analyses the uncertainties in the changing business scenario and reduces the risk in business decisions by applying decision theory model, uncertainty model analysis, etc.
- Managerial economics examines all the decisive information about the industry in which the firm is operating such as individual and market demand, market structures, competition, etc.

Fundamental Concepts of Economics

1. Introduction

In the words of **Prof. Samuelson,** "Economics is the study of how men and 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 and to distribute them for consumption, now and in the future, among various people and groups in society".The nature of managerial economics is conceptual as well as empirical. The concepts and tools of economics immensely help the mangers in business decisions and planning.

2. Basic Concepts:

Six basic concepts are as follows:

i) The Incremental Concept

ii) Time Perspective Concept

iii) The Opportunity Cost Concept

iv) The Equi-marginal Concept

v) The Discounting Concept

vi) The risk and Uncertainty Concept

i) The Incremental Concept

This most important basic concept of economics is mostly used by the managerial economists. The incremental concept is closely allied with the marginal cost and marginal revenue and the economists majorly used both the concepts- incremental cost and incremental revenue. The incremental cost denotes the alteration in total cost, while the alteration in total revenue is signified by incremental revenue occurring from a firm's production decision. The economist T. J. Coyne has put in,"It involves estimating the impact of decision alternatives on costs and revenues, stressing the changes in total cost

and total revenue that result from changes in prices, products, procedures, investments or whatever may be at stake in the decision".

The concept can be stated as:

The firm's decision will be profitable if:

a. Revenues will rise more than costs

b. The increment in some costs is less than the reduction in other costs

c. The increase in some revenues is more as compare to others

d. The reduction in costs is more than the revenues.

Despite being used widely, this concept has certain limitations:

a. Generalization of this concept is not possible due to the variable behaviour of the firms

b. The concept can only be applicable in short run.

c. The applicability on the concept is depend on the additional Production capacity of the business firm.

Therefore, the incremental concept called a decision sound and rational if it lessen the costs more than revenues or rises the revenues more than costs.

ii) The Time Perspective Concept

The concept of time concept draws a clear distinction between short run and long run time period. This distinction is not based on any calendar period, like a month or a year rather based on the quickness of the decisions can be made and variability of the factors. The time element in economic theory was introduced by **Marshall**. The short run is the time period in which a firm can only alter its factors of production like labour and raw materials. The firm has to change its output without changing its size. The firm can easily increase its output in the long run because the firm has enough time to alter its size as well as can use both fixed and variable factors in the production process. In managerial economics, the consequences of the decisions during short run and long run are taken into consideration and maintain a right balance among these time perspectives.

The average cost of a firm may be more or less as compared to its average revenue in short run time period, but in the long run the average revenue and average cost will be same. The economists are much concerned about short run and long run time period effects on a firm's profitability and establish a balance between the two time periods.

iii) The opportunity Cost Concept:

The concepts of opportunity cost is abundantly used by both branches of economics i.e. micro and macroeconomics. It refers to the benefit of revenue foregone by availing one course of action rather than another. The opportunity cost here means the sacrificed alternative. That alternative quantify the worth of best alternative choice forego by selecting from a set of alternative options. For example, if a person employed funds in his own business, the opportunity cost of those invested funds is the interest if they had been employed somewhere else. As we know that the resources are scare and firm cannot produce

all the commodities itself. The produce has to sacrifice the production of one commodity for producing another commodity and forced to make a choice. It proves the significance of the concept of opportunity cost in business decisions where the firm has to make a choice between various courses of action.

The opportunity cost concept infers the following points:

a. Sacrifice is measured while calculating opportunity cost

b. The cost of sacrificed option in known as opportunity cost

c. The opportunity cost will be zero when the resource has no alternate use

d. Opportunity cost doesn't appear in the books of account as is just a imaginary idea

e. Opportunity cost (sacrifice) can be real or in the form of money

The opportunity cost concept has a significant place in business decision making. The concept has economic significance as it helps in:

a. Deciding relative prices of commodities

b. Determining factor (inputs) remuneration

c. Optimal allocation of available resources

iv) The Equi- Marginal Concept

According to the well-known concept of equi-marginal, the producer should allocate its productive resources in such a manner that value addition or profit or marginal utilities yielding from each unit are equal. A producer cannot increase the benefits or decrease costs without moving any unit of input from one application to other. The system will operate below its optimum level if the condition of equi-marginality is violated. Let's take an example to simplify the concept, a firm is engaging in five different production activities i.e. A, B, C, D, and E with 100 number/ unit of labour. Now, if a firm wants to increase output of activity B by employing more labour, it can only be possible by reducing number of labour employed on other activities. Moreover, the optimal allocation can only be attained if marginal utility from activity B is greater than the marginal productivity from another activities. In this way, the total productivity/utility from all activities will be maximum.

The concept of equi-marginal is also used for investment decisions and distribution of research expenditure. A consumer applies this concept to assure that the money to be spend on different commodities in such a way that the marginal benefit/utility yielding from one commodity will be equal to the marginal utilities from other commodities. Similarly, a producer applies this concept to insure that the total marginal product yielding from all activities will be maximum.

v) The Discounting Concept

The famous proverb 'bird in the hand is worth two in bush' is worth mentioning while discussing the discounting principle explaining that a rupee to be received tomorrow is worth less than the same rupee received today. This principle is basically an extension of time perspective concept and gave the due importance to the future uncertainties in receiving the future rupee. It is also necessary to discount future

rupee even in the absence of uncertainty to make them equivalent to present day rupees. One can understand the rationale of discounting with the help of a simple example. Assume, a person is offered a choice of rs.100 today or 100 next year then he would preferably choose Rs. 100 today instead of Rs. 100 after one year. The future uncertainty works here and as well as the person can earn interest say 10 per cent on his money. In another example, A person would be indifferent if he is offered rs 100 today or rs 110 after one year as rs 110 consists the present value of rs 100. The time value of the money is adjusted and present value is calculated by this discounting concept. This is an important concept of managerial economics and should be kept in mind while taking investment decision or capital budgeting.

The following formula is used to compute present value:

$$V= A/ 1+i$$

(Here, "V" stands for present value of money, "A" stands for invested amount i.e. Rs. 100, "i" is the interest rate of 10 per cent)

$$V= 100/1+.10 =100/1.10= Rs\ 90.90$$

In same way, the present value at the end of two years will be:

$$V= A/ (1+i)^2$$

And for n number of years:

$$V= A/ (1+i)^n$$

vi) **Risk and Uncertainty Concept:**

The managerial decisions are affected by future uncertainties i.e. impulsive variations in economic conditions, policies of government, business cycles, etc. Normally, the factor of uncertainty is not allowed to affect the decisions taken as the producer assumes that he has the perfect knowledge of cost/demand factors and the relative environment. But, the dynamic changes may be arises due to internal or external factors of the firm. The firm cannot control the external factors as they are beyond the control of the firm. The producer cannot accurately estimate and measure the data of revenue and cost. Due to these uncertainties, the managerial economists must take care of the risk involved in business decision making. The managerial economist uses subjective probability and formulate definite expectations regarding revenue, costs, and the competitive environment. These expectations are further affected by the time element, risk, and the changing environment.

Theory of Consumer Behavior

Managerial economies is just not about graphs and statistics, it deals with the human behavior and wants. The theory of consumer behaviour is the study of how consumers allocate and spend their income among all the different goods and services based on their individual preferences and budget constraints. This branch of microeconomics analyses the consumer choices. The following two core approaches of consumer behaviour are used widely- **Cardinal Utility analysis** and **Ordinal Utility Analysis**

Cardinal Utility Analysis

1. Introduction

The famous neo-classical economists named **Dupit, Walras,** and **Jevons** introduced the concept of cardinal utility analysis disapproving the classical theories given by Adam Smith and others. After that **Pigou** and **Marshall** also elaborated the cardinal theory of consumer behaviour. Cardinal utility analysis explains the demand of the consumer for a particular commodity and then stems the law of demand which indicates a counter association between price and demanded quantity of the product. Cardinal utility analysis states that the utility can be measured in cardinal numbers which can be added or subtracted like 1, 2, 3, etc. The term **Util** is coined by the famous economist **Fisher** as the measurement of utility.

Definitions

According to **Jevos,** who first introduced the concept of utility, "Utility is the basis on which the demand of an individual for a commodity depends upon".

In the words of **Prof. Waugh, "**Utility is the power of commodity to satisfy human wants."

2. C**haracteristic of Utility**

i) Utility has no Ethical or Moral Importance but has the utility, for example alcohol, cigarette, knife, etc.

ii) Utility is psychological and differ from consumer to consumer.

iii) Utility is relative/ individual and differ in different situations in relation to place and time like woolen cloths and air conditioner.

iv) Utility is not necessary to be useful as a cigarette has utility to the smoker but injurious to health.

v) Utility is always subjective and cannot be measured objectively as a consumer's feeling cannot be expressed in numerical terms.

vi) The intensity of a consumer's want defined utility as we want more of a commodity if we have less and vice-versa.

vii) Utility is differ from pleasure and satisfaction. For example, the medicine or an injection is necessary for the patient, but it will not offer any pleasure to the consumer.

3. Assumptions of Cardinal Utility Analysis

The concept is based on certain assumptions:

i) **Cardinal Measurement:** This approach consider utility as a measurable and quantifiable entity. An individual express that he derives 10 or 20 utils from a consumption of a cup of tea.

ii) **Independent Utilities:** The utility gained from consumption of one commodity is the function of that particular commodity and utility gained from a good does not depend upon the consumed quantity of other commodity.

iii) **Consumer is rational:** A consumer is assumed to be rational who want to maximize his level of satisfaction from his limited income.

iv) **Marginal Utility of Money is constant: Daniel Bernoulli** first introduced this notion but later **Marshall** adopted this in his famous book "Principles of Economics'. According to this assumption, the money's marginal utility remain constant throughout the consumer spending.

v) **DMU:** Diminishing marginal utility (DMU) concept is assumed in cardinal utility analysis. The marginal utility of a commodity always diminish after consuming more and more unit of a commodity.

vi) **Introspective Method:** The behaviour of marginal utility is arbitrated by introspective method or we can say by self-observation.

4. Concept of Utility

There are three concepts of utility based on the consumption of the commodities:

I) Total utility (TU): The total satisfaction gained from the consumption of all possible units of a commodity is called total utility. For instance, by consuming the first unit of ice-cream a person gets 20 utils, 15 utils by second unit, and 10 utils by third unit. Then the TU is expressed as:

$$TUx = f(Qx)$$

(Here, Tux= Total Utility of commodity X is a function (f) of quantity of commodity X)

$\mathbf{TU_n} = U_1+U_2+U_3+\ldots\ldots\ldots\ldots\ldots\ldots +U_n$

TUn = 20+15+10= 45

Here,

TU_n represents total utility from n units of a given commodity

$U_1, U_2, U_3,\ldots\ldots\ldots U_n$ is the utility from the 1^{st}, 2^{nd}, 3^{rd} ….. n^{th} unit

n is the number of units consumed

II) Marginal Utility (MU): The economist **Jevos** introduced this concept of MU. Marginal utility here refers to the addition in total utility resulted from consumption of one additional unit. We can also define it as the additional utility yielding from the consumption of one additional unit of a particular commodity. For example: when a consumer have the 3^{rd} unit of ice-cream, the TU increases to 45 utils from 35 utils. The additional utility gained (10 utils) here is termed as marginal utility.

The following equation is used to measure MU:

$$\mathbf{MU_n=TU_n-TU_{n-1}}$$

Or

MU= change in TU/change in Quantities

The MU of 3^{rd} unit of ice-cream is calculated as under

$$MU_3= TU_3-TU_2= 45-35= 10 \text{ Utils}$$

There are three types of MU:

(i) Positive MU

(ii) Negative MU

(iii) Zero MU

III) Initial Utility: When a consumer gained utility from consumption of 1st unit of any commodity, it is called initial utility. Initial utility is always positive. The utility gained from consuming 1st unit of ice-cream is initial utility i.e. 20 utils.

5. Laws of Utility analysis

The utility analysis has the two main approaches:

A) Law of Diminishing Marginal Utility

B) Law of Equi-Marginal Utility

Both the laws are comprehensively explained as under:

A) Law of Diminishing Marginal Utility

Many economists namely **Gossen, Jevos, Bentham,** and **Prof. Boulding** contributed in the law called "Law of Eventually Diminishing marginal utility". The law of DMU served as the foundation of consumer analysis. This law relates to the familiar behaviour of marginal utilities. The marginal utility gained from consuming a product will diminish when an individual consumes more and more units of that product. In this way, the satisfaction (utility) goes on diminishing on consuming additional unit. Due to the effect of diminishing utility, the total utility will increase with a decreasing rate.

- **Definition**

The famous advocate of cardinal utility analysis, **Marshall** states that, "The additional benefit which a person derives from a given increase of his stock of a thing diminishes with every increase in the stock that he already has."

- **Assumptions**

i) Utility is assumed to be measurable in cardinal numbers such as 1, 2, 3 etc.

ii) Marginal utility of money is constant

iii) Consumer is assumed to consume same and uniform quantity of commodity

iv) The consumption should be a continuous process.

v) Consumer is rational who wants to maximize his total satisfaction.

vi) All the consumed quantities are independent

vii) Income and price level remain unchanged

- **Explanation of the Law**

Cardinal utility analysis can be understood with the help of the table 1 and Figure 2.

Table 1: Diminishing Marginal Utility

Units of Bread Consumed	Marginal Utility (Utils)
1st	5
2nd	4
3rd	3
4th	2
5th	1
6th	0
7th	-1

The table 2 states that the first unit of bread yields 5 util of marginal utility and from the consumption of second unit consumer gets 4 util of marginal utility. Third unit of bread yields less util i.e. 3 in comparison to the previous utils. The fourth and fifth unit of bread continued to yield comparatively less utils i.e. 2 and 1 utils respectively. The consumption of sixth unit gave zero utility as the want may be fully satisfied. If he forcefully consumes seventh unit, the consumption may lead to negative yield (-1 util) that further may upset his stomach. So, the table clearly evident that the consumption of additional units of a particular commodity will diminish the marginal utility for each successive unit.

Figure.2. shows the quantities of bread on X-axis and MU on Y-axis. MN represents the marginal utility curve. The negative slope of MU exhibiting the first unit of bread yields 5 utils, second 4 utils, third 3 utils, fourth 2 utils, and fifth 1 utils of marginal utility. The MN curve touches the X-axis while consuming sixth unit of the commodity (bread) that yields zero utils and the consumption of seventh unit indicates negative utility (-1 utils) and MN curve goes below X-axis.

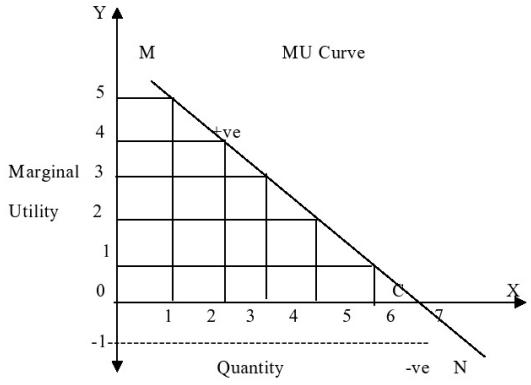

Figure 2

- **Exceptions to the Law**

Here are some exceptions of the law:

i. The law of DMUs cannot be applicable in case of **cheapskates** as they yield more marginal utilities from consuming more and more commodities.

ii. This law is violated also in case of consumer hobbies like collection of **rare and curious things** (stamps and coins). The individual gain more and more utilities from collecting each additional unit.

iii. The law is not applicable if a person is not aware of the consumption due to **abnormal** state of mind.

iv. **The obsession of addictive commodities** like alcohol and cigarette is also the exception to the law. The desire of having more quantity of alcohol goes on increasing as he consumes more and more units of alcohol.

v. The law does not hold good in case of **luxury and durable commodities**. The consumer repetitively spends on such type of commodities like diamonds, property, luxury cars, etc.

vi. Sometimes, the **Inhomogeneous quantities of a particular commodity** breaks the law of DMUs. The utility derived from the second unit may be higher than the utility gained from the first unit if the commodities having different size, colour, features, etc.

vii. The derived utility from the latest unit may be higher than the previous consumption if there is any **change in consumer choice.**

viii. **If there is any increment in the consumer's income then** this may also lead to more and more consumption of the same commodity that may yield the higher satisfaction than the previous consumption.

ix. Any kind of **time laps between the usages** of same commodity will motivate the consumer to consume more and more of the commodity.

x. The law also does not hold fit if the **initial consumption is** less than standard measure. In that case the MU from the additional units goes on increasing.

- **Causes of Application of Law**

i. If any particular human want is **fully satisfied**, then the use of additional unit of commodity yields zero utility.

ii. The **self-examination** can also establish the law of DMUs. The neo-classical economists used their own psychological reactions to the extra consumption of a specific commodity to test the law and applicability.

iii. Prof. Boulding called it the law of imperfect substitutes. One commodity cannot always be consumed in place of another. So, the use of variable commodity with fixed quantity of another good will cause MU of the additional units of variable goods to diminish.

iv. This law is also applicable because an individual put one unit of its most important use and the successive units to the less important use. This behaviour causes the marginal utility to diminish.

- **Importance of the Law of DMUs**

i. The law has a great importance in economics as it provides the base to various laws like law of demand, law of equi-marginal utility, consumer surplus, etc.

ii. The variety in production and consumption is also based on the law of DMUs.

iii. The law of DMU's explain the value theory.

iv. The economist **Smith** also explained his famous **"diamond-water paradox"** concept regarding the price of commodities on the basis of DMUs.

v. Government levies Progressive Taxation on the basis of DMUs.

vi. Equitable distribution of Wealth also depends on the law of DMUs.

- **Criticism to the Law of Diminishing Marginal Utility:**

i. Cardinal measurement of utility is not possible

ii. Every commodity is not an independent commodity

iii. In real life, MU of money is not static

iv. Marginal utility cannot be estimated in all conditions and in case of all commodities.

v. Unrealistic assumptions

B) Law of Equi-Marginal Utility

The second important law of utility analysis, Equi- Marginal Utility, also known as '*second law of Gossen*'. **Prof.Leftwitch** named it, "The general principle for maximization of consumer's satisfaction", Prof. **Hibdon** had referred it, "Law of Rational Consumer", and **Robbins** called it, "Law of Economics". According to the law the consumer spend his limited income in such a manner that he gets equal satisfaction from the last unit of money spent on each commodity.

- **Definitions**

--- **Marshall** states that, "if a person has a thing which he can put to several uses he will distribute it among these uses in such a way that it has the same marginal utility in all"

--- According to **Samuelson**, "A consumer gets maximum satisfaction when the ratio of marginal utilities of all commodities and their price is equal"

Let's assume different commodities like X, Y, Z. The consumer will be in the situation of equilibrium or get maximum satisfaction when:

$$\mathbf{MU_X / P_X = MU_Y / P_Y = MU_Z / P_Z}$$

Here:

MU= Marginal utilities for commodities

P= Prices of the commodities

If the prices of all the above commodities are equal then the consumer will be in equilibrium at the level where:

$$\mathbf{MU_X = MU_Y = MU_Z}$$

Here:

MU_X, MU_Y, and MU_Z are the marginal utilities of commodities.

- **Assumptions of the Law**

i) The utility is quantifiable in cardinal numbers.

ii) The prices and consumer income level remain static

iii) MU of money is also assumed to be static

iv) Consumer is rational and has perfect knowledge of utilities in order to maximize satisfaction

v) Consumer has many wants

vi) The commodities are divisible into small quantities

vii) The commodities are substitutes to each other

viii) The consumption takes place at a specific time

- **Explanation of the Law**

Table 2 and Figure 3 explain the concept of Equi- Marginal Utility. The assumed income of the consumer is Rs.5 that is constant, which he wants to spend on two commodities i.e. mangoes and apples. Let's assume the price of both the commodities are Rs. 1/kg. The table shows the marginal utilities of both the commodities. The consumer spend his income in terms of one-rupee unit. The consumption of first unit of income (Rs. 1) on mangoes yields him 14 utils and on mangoes yields 12 utils. Out of the remaining income the consumption of per unit income on both the commodities yields, on mangoes 12, 10, 8 and 6 units, and on apples 10, 8, 6,4 utils respectively. Hence, the consumer here will spend three units of his income on mangoes and remaining two units on apples that yield him equal marginal utility from last units of consumption. It is the level of maximum satisfaction for consumer.

Table 2: Law of Equi-Marginal Utility

Rupee	Marginal Utilities of Mangoes	Marginal Utilities of Apples
First	14	12
Second	12	10
Third	10	8
Fourth	8	6
Fifth	6	4

The distribution of income in order to gain maximum satisfaction will be:

Utilities gained form Mangoes (Utils) = 14+12+10 = 36 Utils

Utilities gained from Apples (Utils) = 12+10 = 22 Utils

Total Utilities (Maximum) = 36+22 = 58 Utils

Table.2 shows the combination of consumption on both the commodities in order to achieve maximum satisfaction. Suppose the consumer will spend four units of income on mangoes and one unit on apples. In

that situation the total utilities from both the commodities, mangoes (14+12+10+8) and apples (12), are 56 Utils, which in not maximum. Only by spending entire income in above said combination (as shown in the table) will lead to the maximum satisfaction.

The figure.3 also illustrated the law in another way. Let's assume that the consumer has two commodities X and Y to spend his income on. Now, the curves AB and CD represent the marginal utilities gained from goods X (left to right) and Y (right to left) respectively. Both the curves are showing diminishing marginal utility of money spent on both the commodities. Consumer has OO' level of money to spend on both the commodities in order to attain maximum satisfaction. The curves intersect at the point E where the MU of money spent on commodity X is equal to the MU of money spent on commodity Y. At this point, consumer is spending OM amount of money on commodity X and remaining O'M on commodity Y.

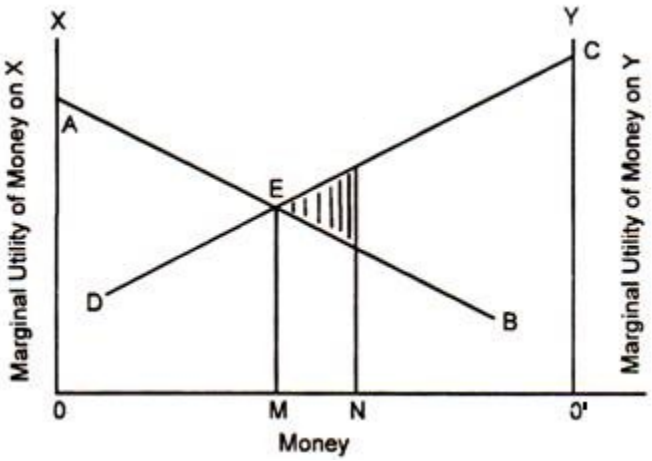

Figure 3

In this way, consumer reach at the point of equilibrium in terms of expenditure from a given amount of money on X and Y commodities. This is worth mentioning here that if the consumer spends a little more amount on any of two commodities from the same amount of money, he will get less utilities (util), and hence, satisfaction will decline.

- **Importance of the Law of Equi-Marginal Utility**

The law keeps its importance in almost every area of economics:

i) **In the field of Consumption:** If a consumer distributes his entire expenditure to fulfil all his needs and wants in accordance with the law, then he will surely yield maximum satisfaction.

ii) **In the Field of Production:** The producer uses all the inputs to get maximum net profit. He must substitute one input for alternative input so as to have the least cost combination and the marginal utility or productivity of the two will be equal.

iii) **In the field of Distribution:** This concept suggests that national income should be equally distributed among all the factors of production i.e. labour, capital, and land so that every factor can get its share in national income in the long run.

iv) **Influences Prices:** The law also influences prices as when a commodity becomes scarce and high priced, consumer substitute it with the commodities which are less scarce. Resultant, its price comes down.

v) **Public Finance:** It also guides the government in the area of public expenditure. The government spends public revenues in order to do maximum welfare for the community. If the return is not proportionate the government should cut down the wasteful expenditure and should concentrate its resources on more productive and beneficial expenditure.

Ordinal Measurement of Consumer Behaviour

Introduction

In real life situations, utility measurement in cardinal numbers like 1, 2, 3, etc. is not possible. But the consumer can possibly compare the satisfaction gained from the consumption of different goods and services. For example consumer can tell that a cup of coffee give him more satisfaction than a cup of tea, but he cannot express the utility in terms of cardinal numbers. The economists used a tool called indifference curve analysis for consumer behaviour analysis. The ordinal measurement allows the consumer to rank the utilities derived from different goods like first, second, third, etc. The concept of indifference curve is coined by **Edgeworth** in 1881 in his famous book **"Mathematical Physics"** and then developed by British economist **Johnson,** Italian economist **Pareto** and Russian economist **Slutsky**. Lastly, economist **Hicks** and **Allen** developed the concept as a tool of consumer behaviour analysis and discussed in famous book, **"value and capital".**

1. Meaning and Assumptions of Indifference Curve

The indifference curve represents the combination of two commodities from which a consumer yields equal satisfaction. Moreover, a consumer can yield equal satisfaction at all the points positioned on an indifference curve as the consumer become indifferent about his choice reason being each point yielding him equal satisfaction.

- **Definition**

According to **Koutsoyiannis**, "An indifference curve is the locus of points- particular combinations of goods which yield the same utility to the consumer to that he is indifferent as to the particular combination he consumes."

Assumptions to the Law

i) Rationality

Consumer behave rationally and spends his income in order to get maximum satisfaction from a given combination of two commodities.

ii) Ordinal Utility

Indifference curve allows the consumer to measure utility in ordinal terms. A consumer can rank his particular choice for different combinations of goods and services as first, second, third, etc.

iii) Non- Satiety

The law implies that consumer does not reach the level of satisfaction by consuming the goods and always wants to have large quantities of goods in place of less quantity.

iv) DMRS

In the words of **Prof. Baumol**, "indifference curve analysis assume that marginal rate of substitution diminishes". It implies that the consumer substitute one good for another at a diminishing rate so that the total satisfaction remain equal.

v) Transitivity and Consistency in Choice

The law assumes that the choice of consumer is always transitive and consistent. The term transitive means if a consumers prefer commodity A over B and commodity B over C, then he always choose commodity A over C. The term consistency means that if a consumer choose commodity A to B in one period of time then he always prefer commodity A during another period of selection.

- **Indifference Schedule**

The Table 3 showing different possible combinations of two commodities from which consumer can achieve equal satisfaction is called indifference schedule. The consumer becomes indifferent in choice and gives importance to each combination.

Table 3: Indifference Schedule

Combinations of Good X and Good Y	**Good X**	**Good Y**	**Diminishing MRS**
A	1	10	-
B	2	7	1:3
C	3	5	1:2
D	4	4	1:1

The above Table shows the various combinations i.e. A, B, C, and D of two commodities X and Y. Consumer gets equal satisfaction from each combination. In case of all the four combinations, the consumer sacrifice some units of commodity Y to gain additional units of commodity X in such a way that he gets equal satisfaction.

- **Indifference Map**

It refers to a set of different ICs which indicates the low to high level of satisfaction gained from different combination of two commodities. According to the indifference map, the indifference curve on higher position indicates the higher level of consumer satisfaction and the indifference curve on lower position shows the comparatively lower level of satisfaction. The figure 4 represents the different indifference curves, namely IC_1, IC_2, IC_3, and IC_4 yielding given level of satisfaction.

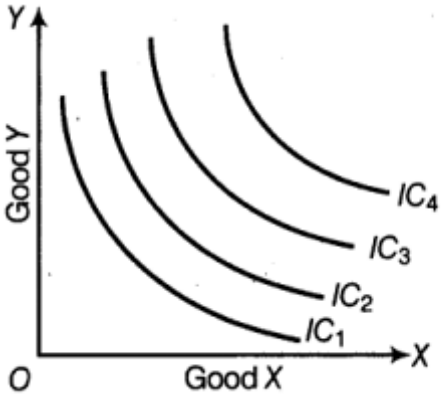

Figure 4

2. Marginal Rate of Substitution (MRS)

When the consumer substitute one commodity for another, it forms the indifference curve. The situation where consumer substitute one good for another keeping the level of satisfaction constant is termed as marginal rate of substitution (MRS). The MRS for commodity X and commodity Y is defined as the quantities of commodity X which are required to replace the commodity Y.

- **Definition**

In the words of Prof. **Bilas**, "Marginal Rate of substitution of x for y is defined as the amount of Y the consumer it just willing to give up to get one more unit of x and maintain same level of satisfaction level."

MRS_{XY} = Loss of Good Y/Gain of Good X

MRS indices the ratio between the units of good Y that must be sacrificed and the units of good X gain in place of good Y. This slope of indifference curve is decided by the marginal rate of substitution.

Types of Marginal Rate of Substitution

- Diminishing MRS
- Constant MRS
- Increasing MRS

MRS: Why does it diminish?

MRS diminish because of the two main reasons. First, reason is that the two goods are not perfectly substitute to each other. In case if they are perfect substitute the slope of indifference curve would be constant or straight line. So in case of imperfect substitute the consumer is required sacrifice additional unit of Y to gain increasing quantities of good X to achieve same level of satisfaction. Secondly, the consumer sacrifice more of a commodity whose quantity is large. Here, consumer is ready to sacrifice more units of good Y if he has more quantities of Good Y in order to gain more satisfaction and vice versa that's why marginal rate of substitution falls.

3. Properties of Indifference Curve

i) An Indifference Curve Slopes Negatively or Downwards from the Left to the Right: This important feature grounded on the assumption that a consumer uses less quantity of a commodity if he already consumes more quantity of another. This way, the consumer will yield equal satisfaction from different combinations of commodities. The downward slope of indifference curve is the result of the loss of satisfaction on account of the downward movement that must be made up by the gain through the rightward movement (figure 5) .

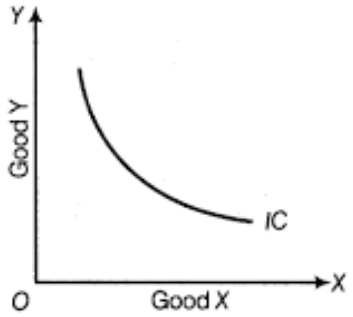

Figure 5

ii) An Indifference Curve is Convex to the Origin:

The indifference curve is always curved (convex) to the origin of axis. The diminishing marginal rate of substitution between the commodities is the reason of this convexity. DMRS is the rate at which an individual agrees to replace one good for another.

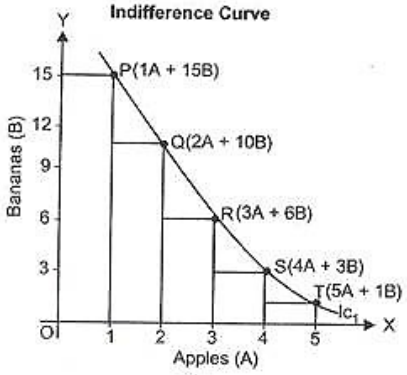

Figure 6

In the figure 6, Consumer substitutes apples for Bananas but with a diminishing MRS.

iii) Indifference Curve to the right (higher) represents Higher Level of Satisfaction

As visible in the figure 7, the indifference curve positioned on higher level indicates the higher level of satisfaction when compared to the lower one. The higher indifference curve signifies the combination of two different commodities which gives higher satisfaction to the consumer. In figure 7, the higher indifference curve i.e. IC_2 embodies more units of both the commodities and lower indifference curve i.e. IC_1 represents the lesser units. Consumer yields more satisfaction on point Q on IC_2 in comparison to

point P on IC_1. Hence, point Q is more valued and favoured combination in order to get the maximum satisfaction.

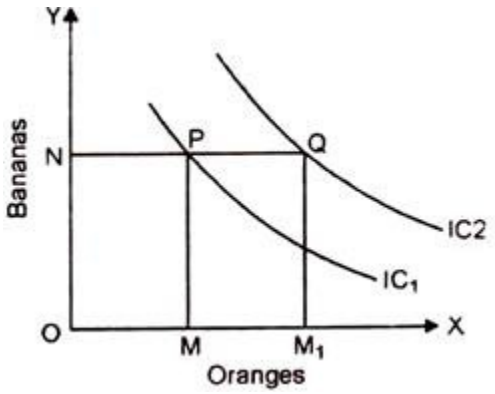

Figure 7

iv) Indifference Curves can neither touch nor Intersect each other:

Different Indifference curves represents the different level of combination and satisfaction that is why they never touches or intersect each other. In figure 8, the indifference curves IC_1 and IC_2 touches each other at the point C. According to the figure, point C and B yield equal satisfaction (being on the same indifference curve) and point C and A also give the equal satisfaction. It signifies the equal level of satisfaction on all the combinations, that is not possible because on A and B point consumer is having different quantities of oranges.

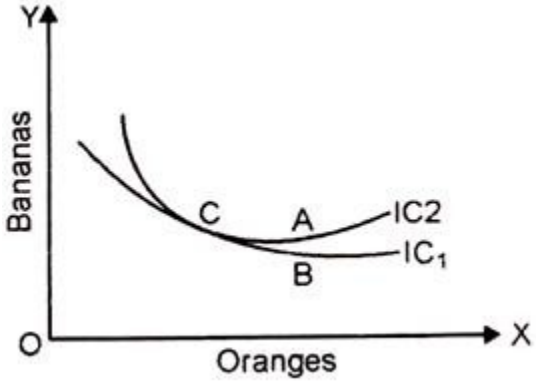

Figure 8

v) Indifference Curves are not Inevitably Equivalent to each other

As depicted in figure 9, the indifference curves do not need to be equivalent/parallel to each other. The slope of each curve is decided by their MRS and the rate of fall may or may not be equal for all

indifference curves. The curves are parallel to each other only in case of equal MRS.

Figure 9

vi) Indifference Curves are like Bangles:

The curves are convex to the point of origin and negatively sloped. In figure 10, a consumer can choose the higher indifference curves (I_2 and I_3) until he attains the saturation point S. Point S presents the level of maximum satisfaction. The total utility will decrease in case of consumption beyond X and Y (dotted portion of indifference curves) and consumer will get negative utility.

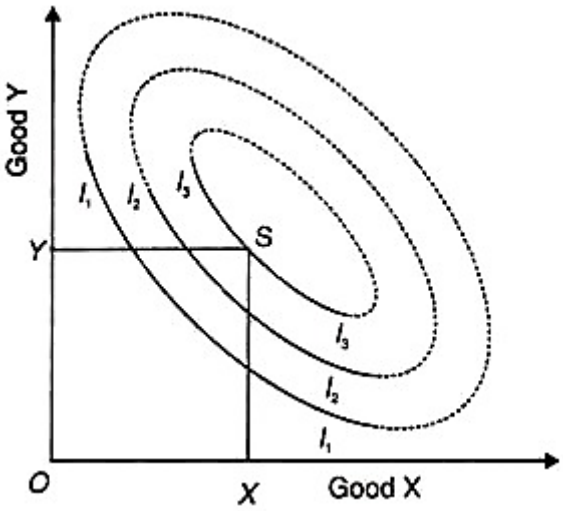

Figure 10

vii) An Indifference Curve cannot touch either Axis:

As visible in the figure 11, if the indifference curve I_2 touches Y axis at point L, then consumer is having only good Y and none of good X.

Figure 11

Similarly, if the indifference curve I_1 touches X axis that means consumer is having only units of good X and zero unit of good Y. But according to the assumption of indifference curve, consumer is supposed to have two goods in combinations, and the above situation is in contradiction to the assumption.

4. Significance of Indifference Curve

i) An indifference curve helps in finding the demand curve and the equilibrium position for consumer.

ii) The derivation of demand curve is possible with the help of demand curve

iii) The indifference curve approach helps in measurement of consumer's surplus in a more realistic manner

iv) An indifference curve also assists a producer in knowing the equilibrium position i.e. iso-product curve.

v) One can know the rate of exchange between two individuals by applying MRS concept to achieve maximum satisfaction.

vi) The indifference curve technique is used to measure the effects of government subsidy on low income groups.

In short, it is an improved technique to analyse consumer behaviour in comparison to utility analysis.

Demand Estimation/ Forecasting

Demand forecasting or estimation is a significant tool for effective and efficient production planning that enables the business firms in assessing potential demand for their products. It assists the management in producing the required quantities timely by arranging inputs like material, labour, machinery, etc. well in advance. In this way, it helps the firms in reducing the risks and uncertainties by making the management more confident to cope up with the external environment.

1. Meaning of Demand Forecasting

An estimation or forecast is a prediction of a future event which is likely to happen under given conditions. It is act of foretelling the future demand for the product. The firm attempts to quantify the association between the level of demand and the variables which are causes to it. Thus, demand estimation and forecasting means when, how, where, by whom and how much will be the demand for a product in near future.

- **Definition**

According to **Henry Fayol**, "The act of forecasting is of great benefit to all who take part in the process and is the best means of ensuring adaptability to changing circumstances. The collaboration of all concerned lead to a unified front, an understanding of the reasons for decisions and a broadened outlook".

According to **Evan J. Douglas,** "Demand estimation may be defined as the process of finding values for the demand in future time periods"

2. Features of Demand Forecasting

The main features of the demand forecasting are:

i) Demand Forecasting helps in measuring the forces that impacts the sale of new and existing commodities.

ii) It estimate the future demand for a product under uncertain business environment

iii) It is fundamentally an educated and well planned speculation in terms of specific quantities

iv) It can be measured in the form of money or units for a product

v) Demand Forecasting is done for a specific period of time

vi) It is based on historical and present information

vii) It expresses only the approximate expected future demand for a product based on certain assumptions and cannot be 100 per cent accurate

3. Objectives/ Uses/ Purpose of Demand Forecasting

The process of demand forecasting is exercised for both short and long run time period:

- **Uses of Short-term Demand Forecasting**

i) This strategy enables the management to avoid under and over production problems and develop suitable production policy

ii) The early demand estimation helps the firm in reducing various costs like inventory, raw material, etc.

iii) It assists the management in determining appropriate price policy to maintain the consistent sales in unexpected market conditions

iv) Demand forecasting aids in locating sales targets and establishing control over selling and salesmen activities

v) Helpful in estimating short-term financial requirements well in advance to arrange adequate financial resources on reasonable terms

vi) Helpful in arranging the labour force to maintain the production process and avoid obstacle in production

- **Uses of Long-term Demand Forecasting**

i. It helps the firms in expansion or planning for new units.

ii. Demand forecasting helps in long term financial requirements and management can arrange funds on right time.

iii. long-term sales forecasting helps in sketching man power planning that fulfil the long term sales objectives

4. Demand Forecasting Methods

Managerial economists use various techniques of demand estimation depending upon the factors such as nature of business, market condition, cost involved, time period, availability of resources, etc. The forecasting techniques are broadly categorised in two approaches:

A. Survey Methods

B. Statistical Methods

A. Survey Methods

This approach of demand forecasting is the most common and direct method in the short run.

i) Opinion Polling Technique: It is a demand forecasting method in which the market trends are analysed on the basis of opinion from buyers, sales-force, and experts. As **Mark Herschey** and **James L. Pappas** said, "The consumer survey or interview method requires questioning customers or potential customers is an attempt to estimate the relation between the demand of a firm's product and a variety of factors thought to be important for marketing and profit-planning purposes." Buyers' intentions are recorded through interviews (personal or telephonically), mails, etc. by trained investigators. The questions may be based on the topics like price, quality, packing, etc.

ii) Delphi Method: This method is also known as Experts' Opinion method for demand forecasting in which a group of experts are requested to offer their opinion regarding demand and its determinants. Each experts is provided with the estimates mad by fellow experts while their names are kept secret. In this way, the estimates are cross checked among experts to reach more accurate decision making. The suggestions on other's estimates are also requested to ease fair judgement and minimise the halo effect. This method is fast and cheap that is mostly used for the newly introduced products.

iii) **Market Experiment Method:** This technique of the demand forecasting carries out the investigations on the behaviour of consumer in actual market settings. The markets with the similar characteristics like likings and taste of consumers, population, income levels, cultural backgrounds, etc. are selected to carry out the experiments with price changes in order to record the future demand.

B. Statistical Methods

The following statistical methods are used to predict the demand of the products:

i) **Trend Projection Method:**A large amount of reliable data is required for forecasting demand according to this method. The factors responsible for past trends like sales and demand are assumed to be remain the same in future. The forecasts are made by analyzing previous data recorded in the books. In case of the newly established firms, the data of other firms working in the same industry are used and analyzed for demand forecasting. This method undertakes following three more methods in account:

a) **Graphical Technique:** It is also known as Freehand Method. A freehand curve is drawn on graph by plotting the values of sales of different areas or years. The only limitation of this method is that it only shows the trend but doesn't measure it.

b) **Fitting Trend Method:** In this method, a trend line is built to the sales and output data by applying statistical techniques. Linear trend and exponential trend are taken into consideration while calculating trends.

c) **Box-Jenkins Method:** This method is used only for short-term predictions where time series data depicts monthly or seasonal variations with some degrees of regularity like sales forecasts of woolen clothes during the winter season.

ii) **Barometric Method:** In this method, the future demand is forecasted on the basis of past variables or indicators prevailing in present. This method predicts the economic indicators like saving, income, investment, etc. These predictions are very helpful for the business organization in determining general trends for their economic activities. Let's simplify it with the help of an example. Government allots land to WXY society for construction. This clearly indicates the demand of bricks, cement, steel, and construction material will be increasing in near future. This method is not application in situation where there is no time gap between demand and indicator of a particular business activity.

iii) **Econometric Technique:** In this method, economic theories are being used with the statistical tools for demand forecasting. These forecast are more reliable than other techniques. Regression methods and simultaneous equations are used for demand forecasting in this technique. In regression model, demand is dependent factor which depends on the determinants affecting demand of a particular product. If there is only one factor affecting the demand, it is called simple regression technique and if there are more than one variable affecting demand, it is called multiple regression. The other method used in econometric technique is simultaneous equation. Two types of variables are used for demand forecasting i.e. exogenous and endogenous variable.

5. Fundamentals/Essentials/Features of a Good Demand Forecasting Method

i) The demand forecasting method should be simple and comprehensive as it will ease decision making.

ii) The method should be economic and there should be a balance between increased cost and benefits of the model.

iii) The used technique should be able to produce the meaningful, quick and well understood results to the management.

iv) The estimation should be durable and hold well over a period.

v) The sales forecasts should be as much accurate as possible because the demand forecasting serves as the basis of future marketing and planning.

Questions

Short Answer Type Questions

1. What do you understand by managerial economics?
2. Briefly explain the nature of managerial economics.
3. Explain three points of the scope of managerial economics.
4. How is managerial economics related to traditional economics or statistics or mathematics?
5. Write any three objectives of managerial economics.
6. What is meant by opportunity cost?
7. How time perspective is important for a managerial economist?
8. Define equi-marginal principle.
9. Define demand. Name the factors affecting demand for a commodity by a consumer.
10. What is the difference between demand and quantity demanded?
11. Why do households buy more of a good at a lower price?
12. Define the meaning of elasticity of demand.
13. What is point elasticity?
14. Give the formula of expenditure method.
15. Define the term utility.
16. What is understood by consumer's equilibrium?
17. Define the modern statement of law of equi-marginal utility.
18. What is an indifference curve?
19. What is marginal rate of substitution?

20. State the law of diminishing marginal rate of substitution.
21. What is an indifference map?
22. What is meant by budget line?
23. Define consumer's surplus.
24. Define price effect.
25. State substitution effect.
26. What is meant by income effect?
27. What is demand forecasting? State its main features.
28. Discuss the purpose of demand estimation.
29. State in brief, the determinants of demand estimation.
30. State three criteria of good estimation method.

Long Answer Type Questions

1. "Managerial Economics is a study of the behaviour of the firms in theory and practice." Discuss.
2. Discuss the nature and scope of managerial economics.
3. Define managerial economics. Discuss the scope of managerial economics in brief.
4. "Managerial economics is the integration of economic theory with managerial practice for the purpose of facilitating decision-making." Explain
5. What is meant by managerial economics? Discuss the relationships of managerial economics with other disciplines.
6. "Managerial economics bridges the gap between economic theory and managerial practice." Explain.
7. Explain the fundamental concepts of managerial economics.
8. What is opportunity cost? How is it calculated?
9. The discounting principle and incremental cost concepts are both special application of opportunity cost reasoning. Explain.
10. Explain the principle of time perspective.
11. Explain the law of demand with the help of a demand schedule.
12. Define increase in demand. State the factors causes increase in demand.
13. How is the demand for a commodity affected by increase in the price of other commodities?
14. Define elasticity of demand. Explain the factors which determine elasticity of demand.
15. Discuss the types of elasticity of demand in detail.

16. Define price elasticity of demand. What are various methods to measure it?
17. Define price elasticity, income elasticity and cross elasticity of demand. Explain the various methods of measuring price elasticity.
18. Define types of utility in detail.
19. What do you mean by equilibrium of a consumer? Explain it with the help of utility analysis.
20. Explain the law of diminishing marginal utility. Discuss the importance and limitations of this law.
21. Explain the law of equi-marginal utility. How is it modified in life due to the influence of custom and fashion?
22. State and explain the law of equi-marginal utility. Give its limitations and importance.
23. What is meant by cardinal utility analysis? Give its main criticisms.
24. Draw an indifference curve and explain its convexity to the point of origin.
25. What happens if indifference curves intersect each other? Explain using a suitable diagram.
26. How would you explain the situations when (i) indifference curves happen to be horizontal straight lines and (ii) indifference curves happen to be U-shaped?
27. What is demand estimation? State its importance.
28. What steps are involved in demand estimation?
29. What are the various methods of demand estimation?
30. Tell the criteria of a good estimation method.
31. What is demand estimation? What are the various methods used for demand estimation?
32. Define demand estimation. What are the determinants of demand estimation?

Unit – II

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Objectives of Unit –II

After going through this unit the students will be able to:

- Discuss the production function and its managerial uses
- Understand the laws of production and their applicability
- Summarise the concepts of isoquant curve and isocost curves Describe the cost function and various cost concept
- Compare traditional and modern theory of short-run and long-run cost curves
- Understand economies and diseconomies of scale and scope

Theory of Production

"Knowledge is the only instrument of production that is not subject to diminishing returns – J. M. Clark, 1957."

1. Production Function: Meaning and Definitions

The business firms are actually technical or procedural units. Here in these units inputs or raw materials are converted into output for the consumption of consumers (may be individual or other firms). The collective and correct collaboration of land, labour, capital and organization results in the production. The producer of the business firm combines all the above factors in a best methodological combination to maximize the return at the minimum cost. The conversion process of converting inputs into output is deeply studied in the theory of production with the production function as the basic concept.Inputs are the factors of production mentioned above and the outputs are the quantity of a good produced with a particular grade of quality.

The Basic concept of the Production Function

The production function represents the technical and physical relation between the inputs and outputs. The production function tells about how much output can be expected with the available inputs. And thus we can calculate that for the maximum output of a business firm with the given raw material or inputs.

- **Definitions**

According to **Prof. L.R. Klein** "The production function is a technical or engineering relation between input and output. As long as the natural laws of technology remain unchanged, the production function remains unchanged."

In the words of **Prof. Koutsoyiannis** "The production function is purely a technical relation which connects factor inputs and output."

Prof. Watson says, "The relation between a firm's physical production (output) and the material factors of production (inputs)."

In the words of **Prof. G. J. Stigler,** "Production function is the relationship between inputs of productive services per unit of time and outputs of product per unit of time."

It is clear from above statements that for a given level of technological knowledge or skill, the production function displays the relation between the physical quantities of inputs and the quantities of outputs achieved with a specific level of quality during a production process in a given time.

Basically, the production function is expressed mathematically as:

$Q = f (L, C, N)$

Where Q, L, C and N represent the quantity of Output, Labour, Capital and Land respectively.

Here Q is a dependant variable and as shown in the expression, it depends on L, C and N.

In the simplest case, where only L and C are available, the production function can be expressed as $Q = f (L, C)$.

If the firm wishes to increase the volume of output, the firm can achieve it by increasing the inputs of one or both factors of production. The speed of with which different kinds of factors can be varied largely depends on the time period under consideration. Here, we assume that the firm is making decisions within two time periods- the short-run and the long-run.

2. Managerial Uses of Production Function

It is the responsibility of a manager to compute a combination of inputs having minimum cost for their given level to obtain the maximum output. Followings are the various managerial uses of the production function:

i) It is used by managers to compute a combination of inputs having minimum cost for their given level to obtain the maximum output.

ii) The production function assists in determining the additional value, if needed, of any variable input for the sustenance of maximum output.

iii) The production function helps in taking decision for the selection of a product in the long-run on the basis of demand and supply.

iv) With the proper information available, the returns can be maximised for the given expenditure and also any additional use of the inputs is thereby stopped.

v) The production function also helps the business unit in the field of decision making like product planning, pricing decisions, profit planning, cost minimization, etc.

vi) The managers can understand various complex and difficult production functions which help them to decide whether to increase or decrease the production.

vii) It helps the managers in understanding various other plans and strategies and then costs of inputs involved in them.

viii) It also helps the managers in cost estimation or calculations.

3. Types of Factors of production (or inputs)

i) Fixed Factors: The inputs which continue to be fixed or unchanged with the change in output in short run and thus these are independent of output e.g. machines, computer system, premises like buildings & offices, etc.

ii) Variable Factors: These are the inputs which change with the increase or decrease in the output in short run. e.g. raw materials, labour, energy, etc. For a desired output, a firm can adjust the units of labourers, raw materials and power. This implies the increase in variable factors with the increase in production and vice-versa. It is important to note that in the long-run all factors of production are variable.

4. Time period Classification

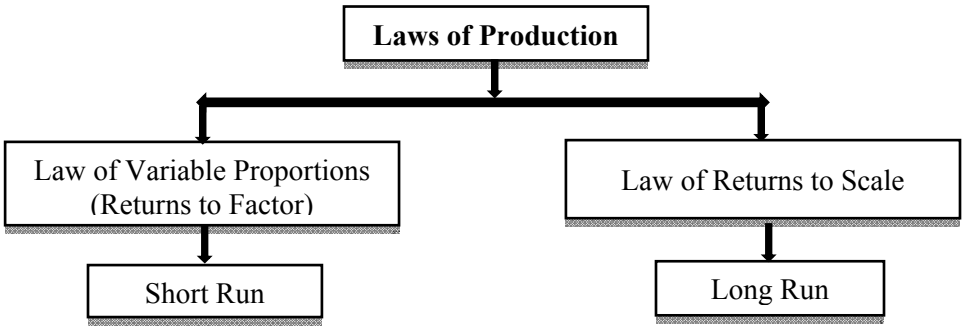
The variability of factors of production depends on the available time periods when a firm wishes to alter its output level. A firm makes decisions on the basis of two time scales- one is the short-run and other is the long-run.

i) **The Short-Run time period:** This is the period over which one or more factors of production are fixed and others are variable. Generally, land, capital, plant and equipment are treated as fixed factors. In short-run, the production function defines the limitations in choice of inputs with a firm. A firm can only alter its production by making changes in variable inputs such as labour.

ii) **The Long-Run time period:**This is the period in which all factors of production are variable. A firm can change the quantities of its inputs in order to get the desired production level. The long-run also permits factor substitution.

5. Laws of Production

The production function defines the technical possibilities to increase or decrease the production. The below two laws are working in the field of production:



Laws of production are categorised on the basis of short run production function and long run production function as given below:

A. Law of Variable Proportions (Returns to Factor): Short Run

B. Law of Returns to Scale: Long Run

A. The Law of Variable Proportions

The law of variable proportions came into action when a firm increased its output by applying additional variable inputs with a given quantity of fixed factors. Land, premises like offices and machinery are the fixed factors of production and labour, power and raw materials are the variable factors.

Now if any business firm increases the number of labourers to obtain larger output, the ratio between fixed and variable factors is restructured. This is where the Law of variable proportions comes into play.

According to **Prof. Leftwitch, "The law of variable proportions states that if a variable quantity of one resource is applied to a fixed amount of other input, output per unit of variable input will increase but beyond some point the resulting increases will be less and less, with total output reaching a maximum before it finally begins to decline."**

It can be understood that if more and more units of a variable factor are brought in, keeping the quantities of a fixed factor constant, a point will come beyond which marginal productwill diminish at initial stage, average product in midway and total product finally. Thus the law of variable proportions is also called as the law of diminishing returns.

- **Assumptions**

  i) Only one factor is variable while others are fixed.

  ii) Change in the proportions is possible where the various inputs or factors are combined.

  iii) All the units of the variable inputs are homogeneous.

  iv) It works in short-run time period.

  v) Technology is assumed to be constant.

  vi) The quantity of product is measured in units like quintals, tonnes, etc.

  vii) The price of the product is remains constant as it is given.

- **Explanation of the Law**

The law is illustrated with the help of below given Table 1, where the variable factor (labour) is employed on the fixed factor (land of 4 acres units) to obtain the desired level of output.

Table 1: Output in Physical Units

1 **Land (Acres)**	**2** **Units of Labour**	**3** **Total Product (TP)**	**4** **Average Product (AP)**	**5** **Marginal Product (MP)**	**Stages**
4	1	8	8	8	Stage I
4	2	20	10	12	
4	3	36	12	16	
4	4	48	12	12	Stage II
4	5	55	11	7	
4	6	60	10	5	
4	7	60	8.6	0	Stage III
4	8	56	7	-4	

The column 1 exhibit the units of fixed factors and column 2 exhibit the units of variable factors of production i.e. Land and Labour respectively. The columns 3, 4, and 5 exhibit the total product, average product, and marginal product respectively. The addition made in TP by employing one additional unit of variable product is called MP. The AP is determined by dividing the TP by the labour units employed.

The table portrays that the total product, average product and marginal products rise up to a maximum levels and then started declining as also shown in figure 1.

i) It is clear from the table that the TP reaches its maximum value when 7 units of labour are employed and then it diminishes.

ii) The AP continues to increase till the 4th unit of labour comes into action and then it diminishes.

iii) The MP reaches at its maximum value at the 3rd unit of labour, and then it diminishes.

iv) It is important to note that the point of diminishing output is not the same for the TP, MP and AP. First of all, the MP begins to fall followed by the AP and then the TP.

v) The law of variable proportions is explained in the below given figure explaining the three stages.

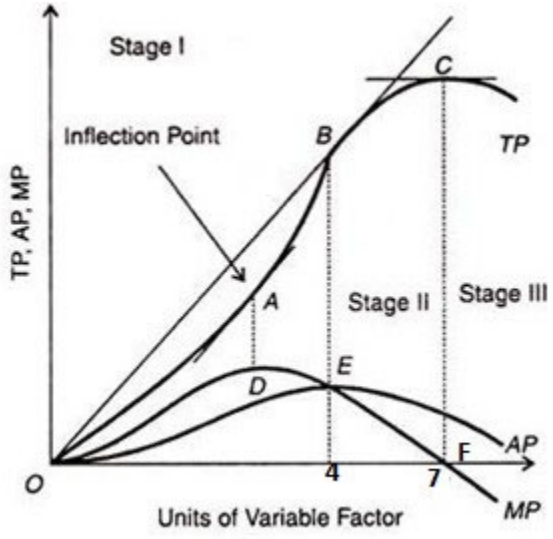


Figure 1

Various Stages of Production Function under the Law of Variable Proporion

i) Stage I of Increasing Returns: The stage is started from the point of origin 'O' to the point 'E'.The average product (AP) reaches its maximum and equals the MP when 4 labourers are employed with the constant units of land which is a fixed factor. Here at the point E, the AP and MP curves encounter as well as there is rapid increase in TP curve. As the units of land is employed too much as compare to the units of labour, there are the increasing average returns and to cultivate land in this stage is purely uneconomical.

ii) Stage II of Diminishing Returns: This is the most important stage as it is the only stage in which production is feasible and profitable. This stage is shown from point 'E' (where the AP is at its maximum) to the point 'F' (where the MP is zero) & to the point 'C' (where TP is the highest). During this stage, the labour units (variable factor) is increased from 4 to 7 (shown from EB to FC) to cultivate the given fixed land (Fixed Factor) in order to increase the output. The units of land are used intensively in this stage. During this stage, the TP increases at a diminishing/slow rate and the AP & MP decline. The MP is below the AP throughout this stage.

iii) Stage III of Negative Marginal Returns: Here during this stage, the point where the 8th labour is employed during a production process as shown in table, there happens a decline in the TP and MP becomes negative. It implies that the employed labour units (variable factor) are too much in

relation to the available land (fixed factor) making it absolutely impossible to cultivate. It is clear from here that after the point F, the variable input (labour) is used excessively and thus, the production cannot be said to take place.

- **The Best Stage or The Stage of Rational Decision: The Stage II**
  - During the stage I, the fixed factor is too much in relation to the variable and thus it is not economical to utilize the given fixed factor (land) optimally because both the AP and TP are increasing. So, there is a need to increase the output.
  - During the stage III, the variable factor is available too much in comparison to the fixed factor. To increase the produce, employment of more units of the variable factor i.e. labour units is uneconomical because there is negative MP and the declining TP.
  - The rational production will always take place in stage II where total product is increasing at a diminishing rate and AP & MP are maximum. After that both start decreasing and the total product (TP) is maximum. Thus, the stage II of diminishing returns is the optimum and the best stage of production for a purely competitive firm.

- **Causes of Applicability of the Law**

In the following situations the law of variable proportions is applicable:

i) The fixed factors like land and machines are under-utilized in the initial stage of production and more additional units of variable factors are required for optimum utilization of fixed factors that increases **the returns to a factor**.

ii) In short run, if only one factor is variable and others are kept constant. The ratio of fixed factor to the variable factor falls with an extra unit of a variable input employed. Here the marginal return of variable factor starts to diminish.

iii) "The imperfect substitution of factors is the main cause for the operation of the law of diminishing returns", according to **Mrs. Joan Robinson**.

iv) As the one factor cannot be substitute the other factor of production. For the increase in the output, the additional variable factors like labour, power, etc. are employed. Also the volume of fixed factor could be increased. But after the optimum use of a fixed factor, it cannot be replaced by another factor.

v) The marginal return of variable factor starts to reduce after optimum i.e. the best use of a fixed factor because the ratio of fixed and variable factors become imperfect. Thus, TP increases a little bit and the MP diminishes.

- **Applicability of the Law of Variable Proportions**

i) This law is applicable in agricultural production where unlike fixed factors, the variable factors like labour can be increased up to any extent.

ii) The law become operative in industries when the additional available units of labour, capital and initiative are of inferior quality or are accessible at a greater cost.

- **Postponement of the Law**

The postponement of this law may be under following two conditions:

i) Where the improved techniques of production are introduced.

ii) When one factor can be perfectly substituted for the other. In that case the limitation of the fixity of factor does not exist.

6. Laws of Returns to a Factor

Returns to a factor is actually related to the law of variable proportionsas the short run production function. Here one factor is happen to be a variable and the other factors are kept fixed to obtain more output. It has three different phases:

A. Increasing Returns to a Factor

During this phase more and more units of a variable factor are hired or employed, keeping other factor constant, the total output rises at an increasing rate. The marginal output of variable factors has the tendency to rise per unit employed in combination with fixed amounts of other factors and the marginal cost has tendency to decline per unit. **Prof. Marshall writes,** "An increase in labour and capital leads generally to improve organisation which increases the efficiency of the work of labour and capital."

B. Constant Returns to a Factor

This phase of Constant Returns become operative when the additional employed units of labour and capital i.e. variable factors, yield the same return as earlier. It is a situation where the additional employment of the variable factor yield no change in marginal output of variable factor. The marginal product and the marginal cost with respect to the variable factor tend to stabilise. In other-words, it can be said that whatever the scale of production, the marginal product and cost per unit remains the same. According to **Stigler**, "When all the productive services are increased in a given proportion, the product is increased in the same proportion."

C. Diminishing Returns to a Factor

The economist **Turgot** first coined the law of diminishing returns. This phase explains the status of returns that when more and more units of a variable factor or input (e.g. labour) are hired or employed with a given value of fixed inputs or factors (land). During this phase the total output may rise at a growing rate initially and then remains at a constant rate, but finally it will rise at diminishing rate eventually. Or we can say that the MP of the additional units of variable inputs will go on diminishing. **Benham** writes about the law of diminishing returns that, "As the proportion of one factor in a combination of factors is increased, after a point, the average and marginal product of that factor will diminish."

7. Long Run Production Function (Law of Returns to Scale)

This law as a long run production function explains the relation between inputs and outputs **when all the factors of production are variable**. The firms can increase the level of production by varying all the inputs in the same proportion as all the inputs are assumed to be elastic. It is also termed as law of

Returns to Scale. This law actually describes the relation between outputs and the scale of inputs in the long-run where all the inputs or the factors of production are increased in the same proportion.

Roger Miller says about this law a**s, "To the relationship between changes in output and proportionate changes in all factors of production."**

In the words of **Koutsoyiannis**, "The term returns to scale refers to the changes in output as all factors change by the same proportion."

According to **Leibhafsky**, "Returns to scale relates to the behaviour of total output as all inputs are varied and is a long run concept."

Assumptions of the Law

i) All inputs are variable

ii) Production technology is constant

iii) A perfect competitive market is there.

iv) The labour (which is an input or factor) works with given tools and implements

Explanation

The firms can increase the level of output by increasing all the inputs in same or different proportions. Generally, returns to scale is the result of increase in all the inputs in the same proportion.

Suppose, originally the production function is:

P = f (L, K)

As per this law, when both the labour and capital are increased in the same proportion, say 'n' then the new production function will be:

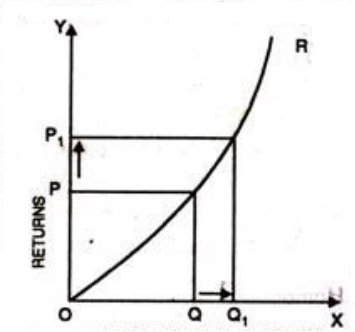
P = f (nL, nK)

Table 2: Returns to Scale

Units of Capital	**Units of Labour**	**% Increase in Capital & Labour**	**Total Product**	**% Increase in Total Product**	**Returns to Scale**
3	1	-	10	-	
9	2	100	30	200	
9	3	50	60	100	Increasing
12	4	33	80	33	Constant
15	5	25	100	25	
18	6	20	120	10	Decreasing
21	7	16.6	130	8.3	

All Facets of the law of Returns to Scale:

I. **Increasing Returns to Scaleor diminishing cost** refers to a situation in which output increases at a more increasing rate when all factors of production are increased. For example, if we doubled all the inputs or factors of production, then the output increases at a higher rate than the double. Division of external economies of scale may be one of the reason for this.This stage is illustrated in the figure 2.



Units of Capital & Labour

(Figure 2)

Here X-axis signifies the increase in capital and labour and the Y-axis displays the returns or the increase in output. An increase in the capital and labour from Q to Q_1 along the X-axis is smaller than the increase in output level from P to P_1.

II. **Constant Returns to Scale or constant cost** is that stage where the output increases exactly to the same level as that of inputs/factors of production. We can say if we doubled the factors of production, then there is exact doubling of the output. Here the internal and external economies of scale are closely or exactly equal to the internal and external diseconomies of scale respectively.

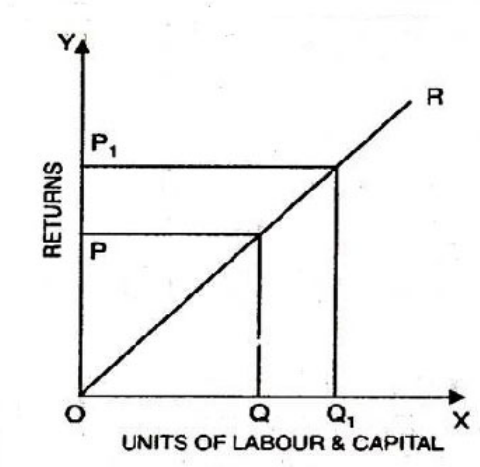


Figure 3

That is why it is also called as homogeneous production function. This phase is illustrated in figure 3. The increase in factors of production i.e. capital and labour are equal to the increase in output.

III. **Diminishing Returns to Scale:** This is the stage when all the factors or inputs are increased or employed in a specific proportion, but the resultant output increases in a comparatively smaller amount. In other words, if a firm doubled the inputs then, the level of output will be less than doubled. It is an instance of shrinking/diminishing returns to scale. Here, the internal and external economies are less than internal and external diseconomies respectively. Figure 4 clearly depicts the situation.

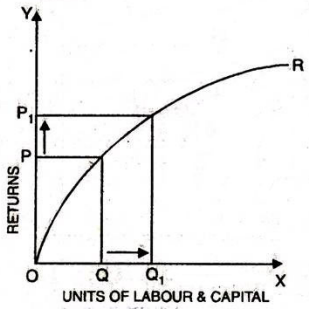


Figure 4

Here the X-axis represents the inputs like labour and the Y-axis represents the output. The increase from P to P1 (output) is less than the increase from Q to Q1 (input) which describes the diminishing returns to scale.

Isoquants

1. Meaning of Isoquants

The expression Iso-quant consists of two words: 'Iso' which means equal and 'quant' which means quantity or product. It is also called as Iso-product. The whole term refers to equal quantity or equal product. Iso-quant curve shows the various combinations or arrangements of two inputs (or factors) which at last yield the same total product. It also indicates the maximum amount of output that can be obtained from a fixed amount of resources or inputs or production factors.

It usually takes the following general form:

Q = f (K, L, t, etc.)

(Here Q = output, K = capital, L = labour, t = Production Technology and the term 'etc.' indicates that other inputs may also be relevant such as land, or raw materials)

When the different combinations of two inputs or factors of production yielding the same level of total output and this relation is presented diagrammatically in the form of a curve, then it is termed as iso-product or iso-quant curve. As iso-quant curve is an extension of indifference curve analysis from the theory of consumption to the theory of production, it is also called as the production indifference curve.

- **Definition**

Prof. Bilas defines, "The Iso-product curves show the different combinations of two resources with which a firm can produce equal amount of product."

In the words of **Prof. Samuelson**, "Iso-product curve shows the different input combinations that will produce a given output." We will discuss following points for the better understanding of iso-quants.

2. Assumptions

i) Only two factors/inputs are used to obtain a product for ease.

ii) The production factors can be divided into small parts.

iii) Production technique is assumed to be constant

iv) The technical substitution is possible between two factors.

v) The production factors are used in the optimum and efficient combination under the given technique.

- **Explanation**

The isoquant schedule can be illustrated by Table 2 and Figure 5 which show the various possible combinations of two inputs/factors e.g. Capital and Labour to produce 200 meters fabric.

Table 2 Isoquant Schedule

Combination	Units of Labour	Units of Capital used	Output of Fabric (in meters)
A	1	15	200
B	2	11	200
C	3	8	200
D	4	6	200
E	5	5	200

The above schedule portrays the five different possible combinations of capital and labour to yield the same output level of production i.e. 200 meter fabric. The different possible combinations shown in the isoquant schedule can also be displayed diagrammatically where IQ is presenting the iso-quant curve, as presented in figure 5.

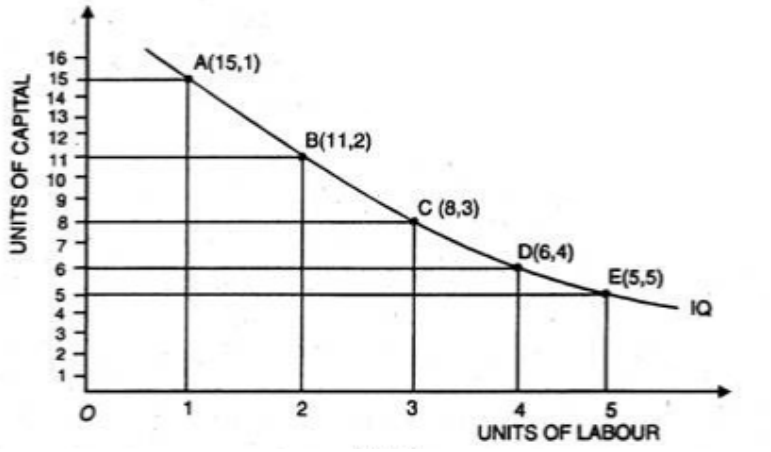


Figure 5

The figure displays the different possible combinations highlighted through different points i.e. A, B, C, D, and E that are equally capable to yield an equal level of output.

- **Isoquant Map/ Equal Product Map**

An Isoquant map expresses a family of Isoquant curves plotted in one diagram (as shown in figure 6). Figure displays a set of different isoquant curves with various levels of output. **Katz and Rosen** say, "Isoquant map is the collection of all isoquants corresponding to a given production function." The isoquant maps show different iso-quant curves with respective different levels of output where a higher iso-quant curve denotes a higher level of output.

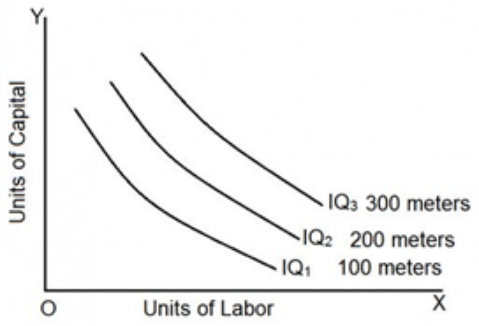


Figure 6

3. Properties of an Isoquant Curve

i) **An isoquant curve slopes downwards:** It slopes downwards from the left side to the right side which is illustrated in the figure 7 given below. The law of diminishing marginal rate of technical substitution is the logic behind this. One factor of production is substituted in place of another factor in order to maintain a given constant level of output.

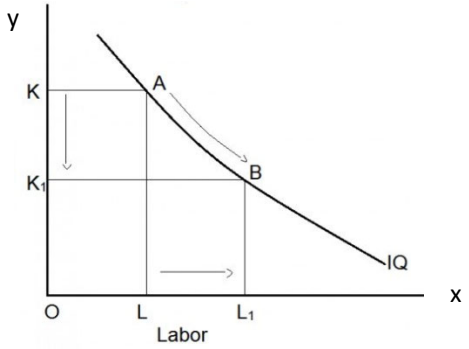


Figure 7

ii) **A higher Isoquant represents a higher level of output:** An isoquant curve lying on the higher and on the right side of another isoquant curve clearly depicts a higher level of output. Figure 8 illustrates the IQ_2 which represents higher level of output as the units of labour are used more as compare to the output level of IQ_1.

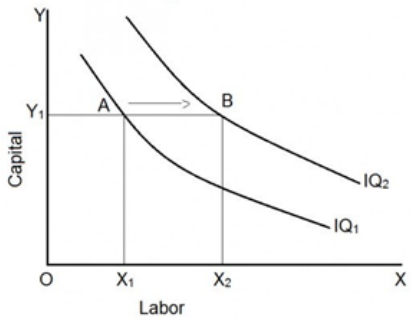


Figure 8

iii) Two Isoquants never Intersect each other: The IQ curves never touches each other (Figure 9) as each isoquant curve denotes a different level of output. If the two intersect each other, there would be a contradiction of earlier assertion and we shall have a common point corresponding to both the IQs. This common point indicate the two different level of output that further contradict our assumption that each point on isoquant depicts the same level of output.

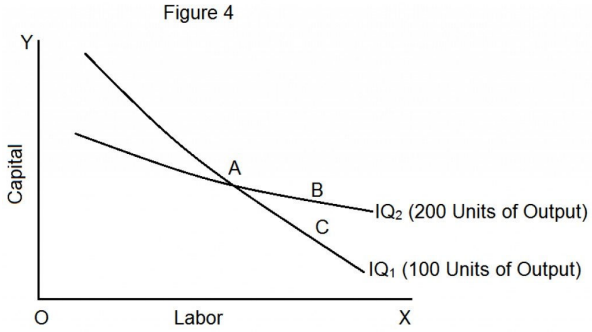


Figure 9

iv) Isoquants are convex to the Origin: This embodies that the factors are not perfect substitute. The application of the principle of diminishing **marginal rate of technical substitution (MRTS)** is also the reason behind this property. MRTS is the rate at which additional unit of an input or production factor can be replaced for another input for the same level of output**.**

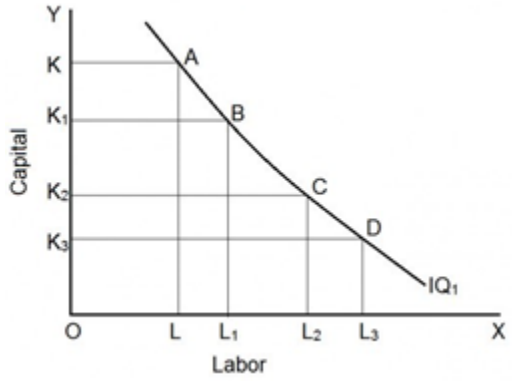


Figure 10

v) No Isoquant can touch either of the Axis: The isoquants cannot touch either of the axis as shown in Figure 11 If it does touch X-axis then it indicates production only with help of OL units

of labour and without any capital. Moreover, it is not possible to produce the output without the association of any other input/factor.

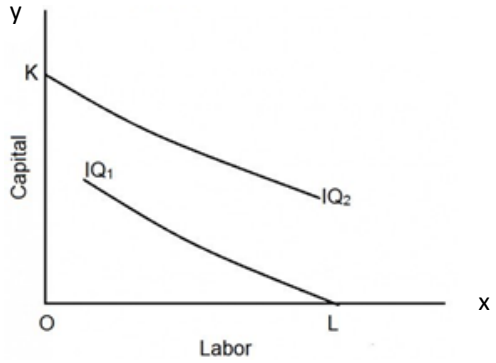


Figure 11

vi) **Isoquants need not to be parallel**: The shape of an isoquant curves depends upon the MRTS. As the rate of substitution between two factors/inputs need not essentially be the same in all the isoquant schedules, so they need not to be parallel to one another.

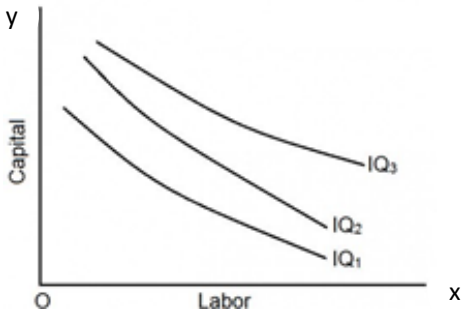


Figure 12

4. Optimal Combination of Inputs

Isoquant portrays the various possible combination of two factors of production which yield equal level of output. But, these combinations are not equal as far as cost is concerned. A producer is required to understand the respective price of inputs and total expenses to be incurred. A producer can only get the **equal cost combinations** if the various possible input combinations would cost equally and such combinations are represented by a line called **iso-cost line**.

5. Least Cost Combinations/ Producer's Equilibrium

A producer is considered to be in the position of equilibrium at the point where he gets the maximum profit and yielding a particular level of output with the least cost incurrence. A least cost combination is a situation where: (a) the output is maximum with a given constant level of inputs or (b) the cost incurred is minimum at a particular level of output.

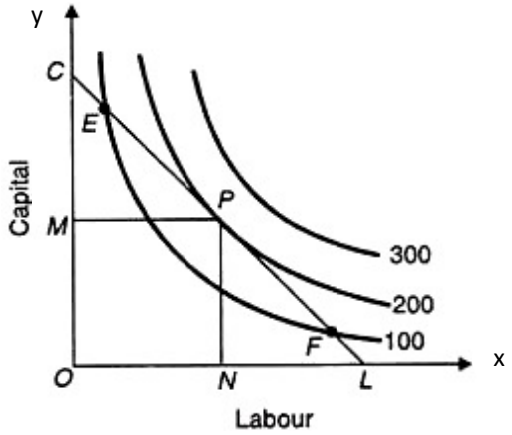


Figure 13

Figure 13 shows the possible combinations C, E, P and F that shows the situation of producer's equilibrium or optimum combination of inputs or factors. The units of labour are presented by the X-axis and the capital is shown on the Y-axis. If a firm/ producer needs to produce 200 units of output, then it is in the position of equilibrium at point P representing by iso-cost line CL. At this point, the profits of the firm are maximum on 200 units of output. The firm is employing optimal or least cost combination of OM capital and ON labour to produce CL level of output. There will be no other point of equilibrium on the point E or F as both the point yield a comparatively lower level of output (100 units). The firm can only get the optimal factor combination and maximum output by moving along iso-cost line because cost remains the same a particular iso-cost line.

Theory of costs

1. Introduction

The structure and behaviour of the costs and revenue largely affects a firm's profit maximizing output. The present topic analyses the various theories of costs. The firm uses variable as well as fixed factors for production, which is a monetary expense, called cost of production. The different types or concepts of costs like money cost, accounting cost, economic cost, opportunity cost are used to analyse the behaviour of costs. It is derived from that production function which defines the technical relationship between output and costs. It also studies the nature and structure of the supply curve for a commodity in case of a firm and industry as well. It assists the firm in determining the level of profit maximizing or cost minimization output.

2. Cost Concepts

The cost analysis used a variety of costs to study the cost behaviour:

i) **Money Cost:** It is referred to the cost incurred for producing certain specific level of output of a commodity and is equal to the sum of all the payments made to the factors (i.e. inputs) and to the non-factor means engaged in producing that commodity. It includes the wages, premises rent, raw materials, taxes, insurance, lighting, fuel, power, etc.

ii) **Business Cost/Accounting Cost:** It refers to the cash or out of pocket payments made to the factors and non-factor resources, depreciation, and book keeping entries. It is also called as direct cost or absolute cost, as it directly paid to the outside resources.

iii) **Real Cost:** It is the total sum of all the efforts of the diverse labour that are directly or indirectly engaged in the production process together. It is a subjective phenomenon. Generally, the expression of the real cost happens in term of efforts instead in terms of money. For instance, the number of hours used by an artist in making pottery is the real cost of the pottery.

iv) **Opportunity Cost:** This extremely important cost concept refers to the cost of next best inevitable and necessary alternative. It is basically the foregone alternate product that could have produced in place of the current product. **Ferguson** defined it as, "The alternate or opportunity cost of producing one unit of commodity 'X' is the amount of commodity 'Y' that must be sacrificed in order to use resources to produce 'X' rather than 'Y'."

v) **Social Cost:** It is referred to the total sum of all the costs to whole society caused by production process or activity such as **noise** and **pollution**. These costs are not considered by the firms in determining their respective prices for various products and born by the society as a whole.

vi) **Economic Cost:** It is the combination of both the opportunity cost and accounting cost. Economic cost is the monetary payments made to all the self-owned and self-employed resources which they could have earned in their best alternative options. It includes both implicit (i.e. indirect) and explicit (i.e. direct) costs.

vii) **Private Cost:** According to **Miler**, "Private costs are cost incurred by the firm or the individual producer as a result of their own decisions". It also includes both implicit and explicit cost incurred by a firm individually.

viii) **Implicit Cost:** It refers to the cost of using self-owned and self-employed factors of production. It does not required to make payment to anyone outside the firm but the firm give up the opportunity to receive payment from someone else to whom it could provide that resource.

ix) **Explicit Cost:** It is the total sum of all the monetary payments to all bought and hired inputs involved in production process. The explicit costs are made to the outsiders for providing their services and goods like wages, raw material, transportation charges, interest on loan, depreciation, etc.

x) **Direct and Indirect Costs:** The direct costs are directly attributed to the given product like labour, raw material, machine hours, etc. On the other hand, indirect cost cannot separately be attributed to a particular unit of output such as office and administrative expenses, electricity, insurance, depreciation charges, etc.

xi) **Incremental and Sunk Cost:** The incremental cost is the added cost that arises due to change in production level or nature. **Sunk cost** refers to the costs which are incurred only once and does not change with the changes in production level i.e. cost of constructing a factory.

3. Theories of Costs

It isthe functional relationship between the output and its costs pertaining to the time scale of short-run and long-run. The theories of production **cost** can be studied in two parts: **Traditional Theory and Modern Theory**. The shape of the cost curves clearly differentiate the two streams. The average and marginal cost curves are happened to be 'U' shaped according to the traditional economist, while the modern economist consider them to be of 'L' shaped.

A. Traditional Theory

I. Short-run Costs

These costs are related to the short-run productivity and can be classified as total cost (TC), average cost (AC), and marginal cost (MC).

i) Total Cost (TC): Total cost is the cost of all the fixed and variable inputs i.e. factors of production employed to produce a specific level of output. According to **Prof. Browning**, "The total cost is the sum of total fixed cost total variable cost for each output level." The total cost increases with the increase in production as more inputs are required to produce more.Total cost further can be divided into two parts viz. Total Fixed Cost (TFC) and Total Variable Cost (TVC) which can be expressed as below:

$$\mathbf{TC = TFC + TVC}$$

- **Total Fixed Cost (TFC):** This is also known as supplementary costs and are referred to the costs of fixed inputs of production. Fixed cost remain constant or do not alter with the alteration in the level of production.

$$\mathbf{TFC = Units\ of\ Fixed\ Inputs \times Price\ of\ the\ Input}$$

- **Total Variable Cost (TVC):** These costs are spent on the variable inputs of production. "Total variable cost is the sum of amounts spent for each of the variable inputs used", says **Ferguson.** These are also termed as Avoidable Costs, Prime Costs, and Direct Costs. The variable costs fluctuate with the production level as these costs fall with the decrease in production level and increase with the rise in production level such as raw material expenses, wages, etc. (as shown in Figure 14)

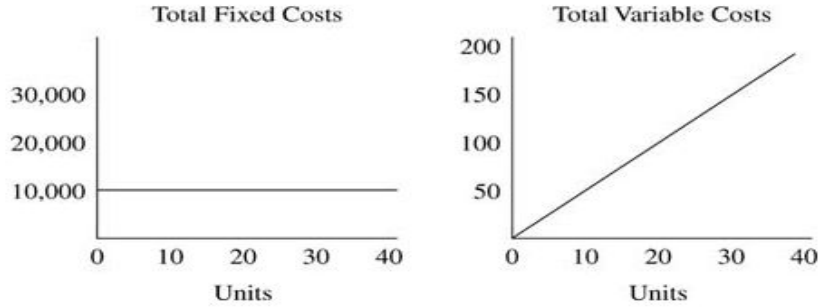


Figure 14

- **Total Cost** is the sum of TFC and TVC. We can conclude that the total cost of a product increases with the increase in the level of production and vice-versa. (Figure 15).

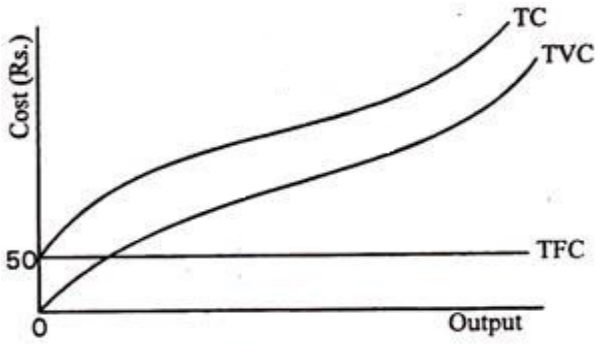


Figure 15

ii) Average Cost

Average cost refers to per unit cost of producing a commodity. It can be calculated as ratio of the total cost divided to the number of units produced during a period of time. The average cost is categorized in three aspects: Average Total Cost (ATC), Average Fixed Cost (AFC) and Average Variable Cost (AVC).

ATC = AFC + AVC

- **Average Fixed Cost (AFC):** It is referred to the per-unit fixed cost of a given level of output and is determined by dividing the total fixed cost by the quantity (of products or commodities produced). AFC can be expressed as:

  AFC= TFC/Q

  (Where TFC is the Total Fixed Cost, and Q is the Quantity)

  The AFC will be lesser with the higher level of output, as total fixed cost remains constant. The average fixed cost curve is of rectangular hyperbola as showing the same level of fixed cost at different level of production.

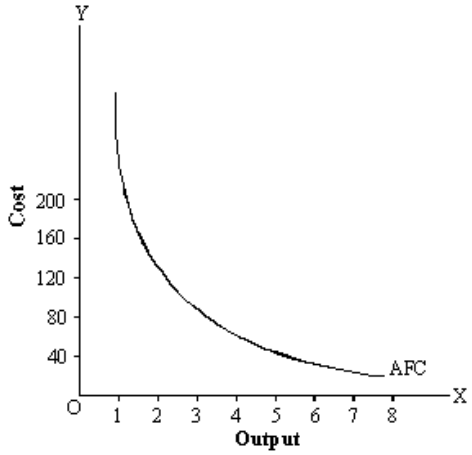


Figure 16

- **Average Variable Cost (AVC):** It is referred to the per-unit variable cost of a given level of output and is determined by dividing the total variable cost by quantity (of products or commodities produced). AVC can be expressed as:

$$\mathbf{AVC = TVC/Q}$$

(Where TVC is the Total Variable Cost and Q is the Quantity)

The AVC curve falls at the initial level of production as the production capacity of variable factor increases. After that, the cost curve reaches its maximum level where the whole production unit or plant is operating at its optimum level and then the cost curve rises beyond that point.

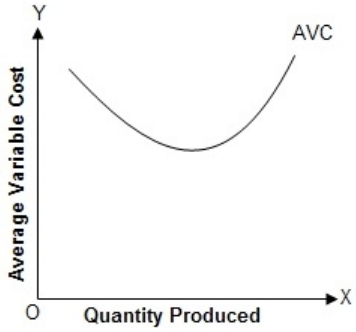


Figure 17

- **Average Total Cost (ATC) / Average Cost (AC):** AC is referred to the per unit total cost of a given level of output. It is calculated by dividing the total cost (AFC + AVC) by the quantity Q.

iii) Marginal Cost (MC)

Marginal cost refers to the addition in the total cost of production when the output of a particular commodity is increased by one unit.

"Marginal cost may be defined as the additional cost of producing one more unit of output", says **McConell**.

$$\mathbf{MC = \Delta TC / \Delta Q \text{ or } TC_n - TC_{n-1}}$$

(Here, MC stands for Marginal Cost, ΔTC for Change in Total Cost, ΔQ for Change in Quantity, TC_n for Total Cost of n Units and TC_{n-1} for Total Cost of n-1Units)

The marginal cost tends to decrease first with the increase in production and later it tends to rise and is of U-shaped (As shown in figure 18).

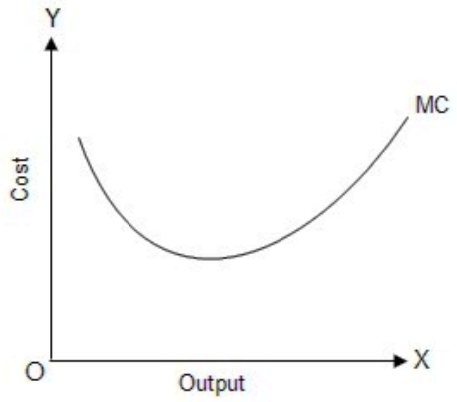


Figure 18

- **U-Shaped Marginal Cost Curve**

When there is some addition or increase in the total cost or variable cost because of the production of one extra unit of a commodity/product, that addition is called marginal cost. At the initial stage of production, both the total cost and variable costs tends to increase at a diminishing rate. The reason for which is the 'law of increasing returns to a factor' at the early stage of production. With the production of every additional unit, the cost also inclines to decrease which makes MC to decrease. Further, MC is minimum at a particular point due to the minimum rate of increase in TC and VC. After the minimum point of MC, both the total and variable cost start rising at an growing rate due to the application of 'law of diminishing returns to a factor' or several diseconomies. Resultant, marginal cost also rises after touching the minimum point and thus the curve takes a 'U' shape.

II. Long-Run Costs

All the factors or inputs of production are happened to be variable always in the long-run as the producer has enough time to alter all the inputs in order to maximise output with minimum factor cost. The long run time period is also termed as **'Planning Horizon'** as a firm can plan ahead and choose many short-run production strategies. The long-run horizon contains all the potential aspects of short run from which a producer can choose the best possible way of least cost combination. In other words, a firm plan in long run while operate in short run.

The following three aspects are studied when it comes to long-run costs:

i) **Long-run Total Cost (LTC):** As all the inputs are variable here in this time period and there is no fixed or variable costs, so there is single aspect of cost i.e. long-run total cost. The long run total cost refers to that minimum possible cost at which a firm produces its different levels of output. "The long run total cost of production (LTC) is the least possible cost of producing any given level of output when all inputs are variable." tells **Leibhafasky.**

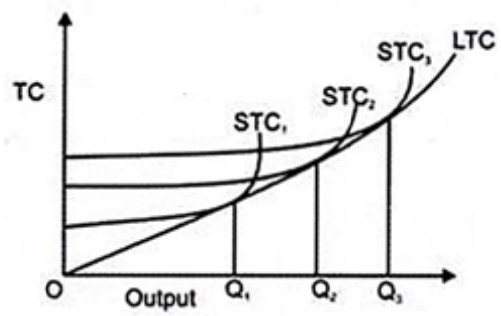


Figure 19

Figure 19 shows the short run total costs i.e. STC_1, STC_2, and STC_3 associated with different plant sizes. LTC represents the minimum cost points of different short run plants. The LTC curve is derived by linking the lowest points of different STCs curve at different level of production.

ii) **Long-run Average Cost Curve (LAC curve)/ Envelope Curve:** It is the minimum possible per unit cost for producing various levels of output in the long-run. According to **Mansfield**, "The long run average cost curve is that curve which shows the minimum cost per unit of producing each output level, corresponding to different scales of productivity".

LAC= LTC/Q

(Here, LAC= Long Run Average Cost Curve, LTC= Long Run Total Cost Curve, and Q is the Quantity produced)

A rational producer operate its production activity by using different sizes of plant and attain the lowest possible average cost when viewed on long-run scenario. He can change the size of plant according of the changing demand for the commodities. The LAC curve is estimated with the help of different short-run average cost curves with respect to different plant sizes.

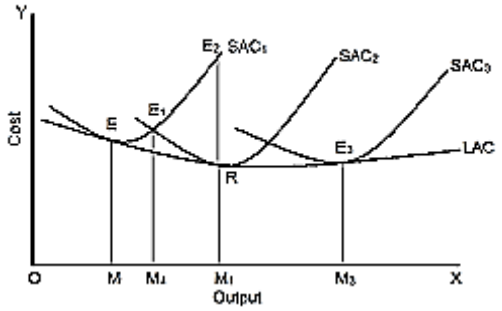


Figure 20

Figure 20 shows the three short-run average cost curves for 3 different plant sizes. A firm can invest in the least costly and most profitable plant. If a firm want to yield OM quantity of output, then it can attain the lowest average cost with the help of plant size 1 (SAC_1) with the lowest short run average cost EM. If the same level of output will be yielded by the other plant SAC_2, then the cost will reach E_1M_1. Further, if the firm wants to produce more output (OM_1), then it will use the plant size 2 (SAC_2) having the lowest average cost (RM_1). But, if it take decision to

produce the OM_1 level of output with the assistance of earlier plant (SAC_1), the cost will goes to E_2M_1. Similarly, if a producer needs to increase the output to OM_3 level, it should employ the plant size 3 with the minimum average cost (E_3M_3).

The LAC curve is also termed as envelope curve because it envelopes all the short-run average cost curves. It is clear that long run average cost cannot exceed short run average cost. In the long run, all the factors of production are used to their full capacity and LAC will not cut SAC curve. The LAC curve is always U-Shaped signifies that it slopes downward in the initial stage of the production, becomes constant after some time and begins to rise after some time due to many reasons such as economics and diseconomies of scale.

iii) **Long-run Marginal Cost (LMC):** It refers to the addition made in the total cost for production of one extra unit of product. According to **Ferguson**, "long run marginal cost is addition to total cost attributable to an additional unit of output when all inputs are optionally adjusted."

Figure 21 displays the LMC with LAC. It signifies the fall at initial level, then reaches a minimum point and rises after a certain level of output.

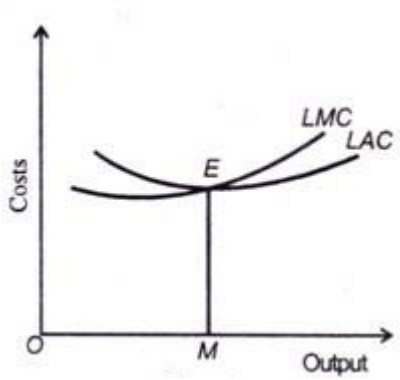


Figure 21

B. Modern Theory of Cost Curves

The famous economist like **Stiglar, Andrews** and **Friedman** propounded the modern theory of cost curves and then proved that the cost curves are L-shaped in real life.

I) Modern Theory of Short-Run Cost Curves tells about the four types of short-run cost curves:

i) Average Fixed Cost: It consists of rent, interest, wages and salaries of administrative staff, depreciation, etc. According to the modern theory of cost curves, a producer always assumes the possibility of future demand at the starting time of plant or machine installation. He can instantly increase the production according to the desired level of output or demand with the help of a big plant. According to **Koutsoyiannis**, "The firm will not necessarily choose the plant which will give him today the least cost, but rather that equipment which will allow him the greatest possible flexibility for minor alternations of his product or his techniques".

The average fixed cost curve signifies that a firm has some minimum capacity machines and some largest capacity machines. The firms can confine their production to lower limit as well can increase the production up-to a desired level in the short-run.

ii) **Average Variable Cost:** It represents a 'saucer' shape curve according to the modern theory of cost curves (Figure 22). Broadly, it looks U-shaped but at AB level of production it becomes completely flat. It is falling downward at the initial level of production because at this stage more and more units are produced by efficiently using the fixed factor and variable factor. On the flat portion of cost curve, the firm uses its reserve capacity and per unit cost remain constant even in the increased level of output i.e. production. Then, the average variable cost start rising upward due to the higher wage rates, wear and tear of machines, misuse of raw material, etc.

iii) **Average Cost:** Figure 22 shows short-run average cost curve according to the modern theory of cost curves which can be seen falling continuously up-to a particular level of output signifies the decreasing average cost. This level of production/output and cost also shows the use of reserve production capacity. If the production increased beyond the reserve capacity, average cost will rise rapidly.

iv) **Marginal Cost:** Figure 22 also portrays the short run marginal cost as per the modern theory of cost curves. It falls at the initial stage of production, then becomes horizontal signifying the constant MC even at the increased level of production. At a particular level, MC becomes equal to the average variable cost because firm is operating at its 'reserved capacity'. Then, MC begins to rise after the production is carried beyond the reserved capacity.

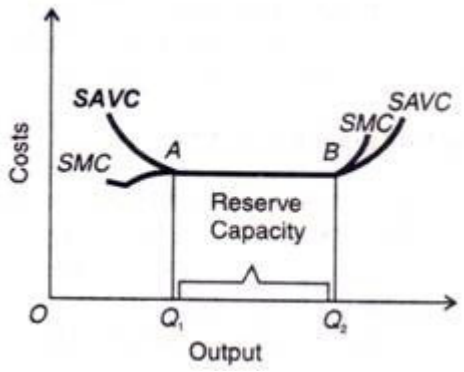


Figure 22

II) Modern Theory of Long-Run Cost Curves

Like the short run costs in modern theory, long run costs are also L-Shaped implies that cost of production falls constantly with the increased output. Long-run costs are categorised into two types namely, **production cost and managerial cost.** At one side, the production costs decreases due to various economies of scale, on another side, the managerial cost increases due to enlarged production scale. So the long-run average cost drops smoothly or remains constant because the fall in the cost of production is greater than the rise in managerial cost.

i) Long-run Average Cost Curve (LAC curve according to the modern theory)

Figure 23 shows the short-run average cost curves (SAC_1, SAC_2, SAC_3, and SAC_4) of a firm's production activity using four types of plants with different capacity. The curve reveals that the producer only uses $2/3^{rd}$ production capacity of its plants and the LAC is estimated on this particular basis. As per the modern theory of cost curves, the LAC is not U-shaped and do not enclose all SACs but intersects them. The LAC curve either L-shaped or inverted J-shaped. In the long run, firm functions to achieve minimum optimum level of production and the costs decline or become constant after the minimum optimum level of production.

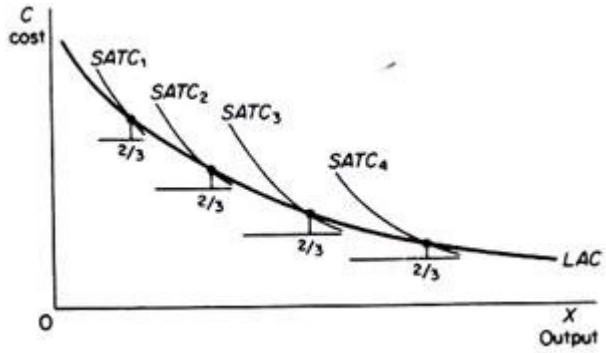


Figure 23

ii) Long Run Marginal Cost Curve or LMC curve corresponds to the shape of long-run average cost curve. As the figure 24 displays that LAC curve is L-shaped and the LMC curve also falls with the falling LAC curve and becomes horizontal after the LMC curve coincide with LAC.

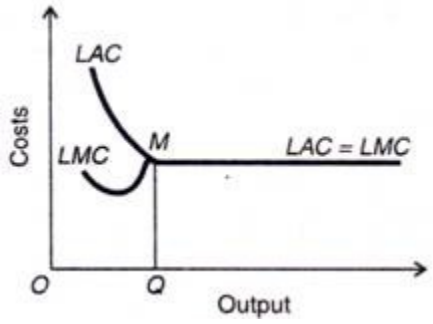


Figure 24

4. Economies of Scale

Economies of Scale defines a situation where the increased scale of production shrinks per unit production cost or raises per unit output of the factor inputs. **Prof. Koutsoyianis** defines, "Returns to scale are only one part of the economies of scale. Returns to scale are technical, while economies of scale include the technical as well as monetary economies."

Economies of scale are broadly categorized in two categories:

- Internal economies of scale which are only availed by single firm and arise due to change in the size of the firm.

- External economies of scale which are available for all the firms of the industry and arise due to growth of the industry.

I) Internal Economies

A firm enjoys internal economies of scale when it increases its scale of production. The increasing returns to scale are actually the result of internal economies. They are called internal economies because these are firm-specific and not shared by other firms in the industry.

Internal economies are categorized into **i) Real Economies and ii) Pecuniary Economies** according to **Prof. Koutsoyianis**.

i) Real Economies: Real economies are arise when a firm reduces its physical quantities of input as raw material, labour, and capital, etc.

- **Economies of Specialization or Labour Economies:** A firm gets many labour economies on the basis of scale of production. There is division of labour and improvements in the specialization or skill of labour as the labour performs just one task repeatedly. This improves the efficiency of labour that further increase the overall productivity.
- **Economies of Indivisibility or Technical Economies:** A firm enjoys technical economies due to indivisibility of fixed capital like machines and plants that means different plants and machines are available in minimum sizes. Only a big firm with the large scale of production can utilize appropriate and different type of machines and plants. In this category, firm enjoys the economies of increased dimension, linked processes and use of by-product, etc.
- **Marketing Economies:** A firm operating on large scale of production may avail many marketing or selling economies like economies on account of advertisement, research and development, appointment of own distributers & dealers, etc.
- **Inventory Economies:** The firm functioning on large scale can possesses large stock of required inputs like raw materials. The firm not need to worry in case of short supply or increased prices of the same. The firm also retains the large stock of small tools and spare parts to tackle when machines goes out of order. In this way, there will be no loss or fear of stoppage of production activities.
- **Managerial Economies:** Only a firm engaged in large scale of production can afford to employ efficient and highly skilled managers. An expert manager is appointed to each different department in the firm who take care of every minute detail relating to his department. As a result of the talented management, the managerial cost goes on sinking with the increase in production.
- **Storage and Transport Economies:** A big firm can have its own transport, storage, and godown facilities to carry and store raw material and finished products. The producers can store their products when prices are not favorable in the market.

- **Risk-bearing Economies:** The larger economies have the large scope to bear risks and can reduce risk by spreading its production activities/ operations. Firm can also reduce the risk by diversification of product, markets, and suppliers.

ii) Pecuniary Economies

Pecuniary economies arise when a firm pays lower prices to the production inputs and to the distribution factors. The firms get its raw materials on the low prices when operating on large scale. The firms need the raw material in bulk and get special discounts from suppliers. Other factors are also responsible for pecuniary economies like low cost of finance, low transport cost, large discounts and commission on advertisement and publicity of their products.

II) External Economies

These are industry specific economies arise the industry as a whole expends its scale of operation. Every firm in the industry can avail external economies owing to overall expansion of the industry, new explored markets, new technologies, etc.

i) **Economies of Disintegration:** The firms functioning in developed industry divide its production activities or processes among themselves and get specialized in the production of a specialized product or process.

ii) **Economies of Information:** The firms do not need to do independent research when the industry is already engaged in research and development activities. The sources to get information become convenient through the publication of scientific and trade journals. The firms can get information regarding new products, new markets, and new production technologies, etc.

iii) **Economies of Concentration:** Firms in an industry get many aids together when they establish themselves in one place like trained labour, by-products, developed means of production/ communication/ transport, new innovations, mutual consultation at the time of general crisis, etc.

iv) **Economies of Welfare:** These economies happen when industry undertake various welfare programmes to help its own staff/workers. Only a developed and big industry can provide better welfare facilities to the workers like setting up housing colonies by getting land on concessional rates, establishing health centres, training centres, and educational institution, etc.

v) **Economies of Physical Factors:** When the industry expands as a whole some physical and environments factors try to reduce the costs like favourable weather, climate, and fertility of the soil.

vi) **International Economies:The** firms get various external economies in the form of international economies like international innovations/ product development, global purchasing of technical know-how/ raw materials, international demand management, etc.

5. Diseconomies of Scale

As explained earlier, large scaled firms enjoy several economies but only up-to a certain limit. These economies turn in to diseconomies after that particular limit and firms get diminishing returns to scale caused by several factors.

Diseconomies are categorised in to two types: **I) Internal Diseconomies of Scale II) External Diseconomies of Scale**

I) Internal Diseconomies of Scale

A particular firm experience internal diseconomies when it enlarges its production scale beyond a limit. Sometimes it is difficult to manage the activities of different sections of a production unit and become a tough task to supervise the work. The major internal diseconomies are:

i) **Managerial Diseconomies:** When the managerial supervision, control, and coordination become tough task due to excess growth.

ii) **Financial Diseconomies:** When the available finance is not adequate for the smooth functioning for increased production processes.

iii) **Technical Diseconomies:** The unit per cost goes on increasing rapidly due to production beyond capacity. The labour supervision and specialisation turn negative beyond a point.

iv) **Marketing Diseconomies:** A mismatch may occur between supply and demand due to the increased scale of production after certain limit. This will negatively impact the prices and sales of the firm.

v) **Labour Diseconomies:** The increased scale of production and labour may lead to the communication gap between labour and management that further lead to various problems like industrial dispute/ unrest for a firm.

II) External Diseconomies of Scale

All the firms functioning in an industry experience external diseconomies arised due to expansion beyond the manageable limits. The major external diseconomies are:

i) **Diseconomies of Pollution:** The localization of a particular industry at a particular place may cause pollution that will act as health threat for its labourers and increase the social cost.

ii) **Diseconomies of High Factor Prices:** The availability of inputs become difficult and costly at the same time due to excessive concentration of an industry.

iii) **Diseconomies of Stress on Infrastructure:** The excessive stress on available infrastructure may lead to increase the difficulty in procuring raw material, increase the transport cost, power, finance, etc.

iv) **Diseconomies of Increased Competition:** The increased competition certainly lead to increase the raw material prices.

6. Economies of Scope

The word ‘economies’ refers to ‘cost saving’ and the term ‘scope’ means expansion of production/services through diversification of products. So, economies of scope refers to the efficiencies formed by variety, not volume. Economies of scope occurs when total cost of producing two or more commodities jointly is less than that of producing these commodities separately. The law of economies

of scope allows a single firm to produce two or more products economically than the two independent specialist firms can produce.

According to **Edwin Mansfield,** "Economies of scope exist when the cost of producing two (or more) products jointly is less than the cost of producing each one alone."

The firms may achieve economies of scope through the efficient use of inputs as well as by improving skills based on learning and knowledge. The term scope is the key driver of strategy which is not concerned with increase in the output quantity but with the products variety.

- **Importance of Economies of Scope**

  i) Economies of scope allows a producer to produce complementary products.

  ii) It assist the management in evaluating the potential of current and prospective product lines of the business.

  iii) It allows the firm to reduce the cost from less waste and changeover costs.

  iv) It also permits the firm to better use of machinery, less in-process inventory, and reduction in stoppage of production due to for broken parts.

  v) The firm can get benefits from reduced risk by selling entire product line to the domestic and foreign markets.

7. Diseconomies of Scope

Diseconomies of scope arises when the total cost of producing two or more commodities is greater than the total cost of producing single commodity. In the words of **Ivan Png**, "There are diseconomies of scope across two products if the total cost of production is higher when two products are produced together than when they are produced separately."

The less significant joint products are the major reason of occurrence of diseconomies of scope. In this situation producing one product increase the cost of producing other jointly with the same production amenities. E.g. if a firm working in the basic clothing also operating in the business of fast food. In this type of combined business, there is no significant joint cost and the producer would rather bear diseconomies of scope. In an industry where the diseconomies of scope prevails, it is advised to produce various commodities separately. Then, there is narrow scope of economies of scope and management should concentrate on producing commodities in separate production facilities. The cost of producing specialised products will be lower that combine production of two or more commodities.

Firms' Behaviour under Various Market Situations

Perfect Competition

1. Introduction

The market consist huge number of buyers and sellers as well as known a perfect competitive market. Homogeneous commodities, freedom of entry and exit of the firms in industry, perfect knowledge of the commodities and price among buyers and sellers, mobile production factors are the features of perfect competition. According to **Mrs J. Robinson,** "Perfect Competition prevails when the demand for the

output of each producer is perfectly elastic." In the words of **Boulding,** "A Perfect Competition market may be defined as a large number of buyers and sellers all engaged in the purchase and sale of identically similar commodities, who are in close contact with one another and who buy and sell freely among themselves."

2. Assumptions or Features

Here are the basic features of perfect competitive market:

- **i)** There are huge numbers of sellers and buyers
- **ii)** Every firm has homogeneous product
- **iii)** Each firm can enter or exit the market freely
- **iv)** There is no advertisement and transaction costs.
- **v)** Buyers and sellers are assumed to be rational.
- **vi)** All the firms have free mobility to the market
- **vii)** There is no government interference
- **viii)** Every firm earns normal profits
- **ix)** Every firm is price taker not price maker

3. Price and Output Determination

No individual buyer or seller under perfect competition can affect the price of the commodity. The powers of market supply and demand determined the competitive price. According to **Marshall**, "Both the elements of demand and supply are required for the determination of price of a commodity in the same manner as both the blades of scissors are required to cut a cloth."

As is clear that firm is a price taker not the price maker under perfect competition. The price is fixed by the intersection of product demand and product supply here. This intersection point is known as the point of equilibrium and the product demand and supply is equal at this point. The figure 25 displays the equilibrium point E where demand and supply of the product is equal. Let us assume the initial price is OP and initial output is OQ. The supply of the product will increases when the price increases to OM. At this price, supply is greater than the demanded quantity and the AB quantity remained unsold. Then due to application of law of demand, the price will automatically come down to OP. In another case, there will be higher demand if the price decreases to OL. The price will automatically goes up to OP level with the application of law of demand. Hence, it is evident that the forces of demand and supply decide the price for the product in perfect competition.

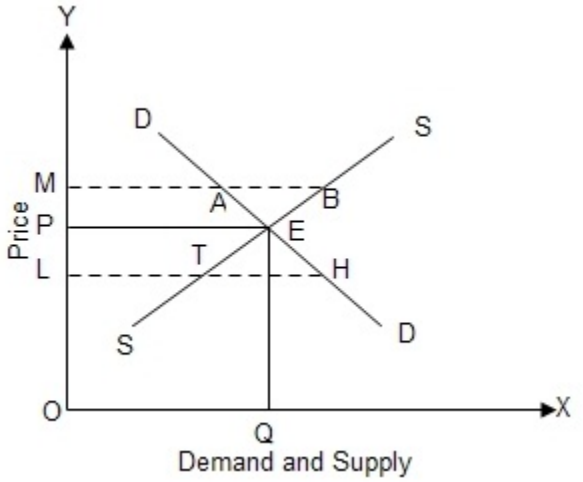


Figure 25

4. Equilibrium of the Firm

"A firm is a unit engaged in the production for sale at a profit and with the objective of maximizing profit", says Watson. Any firm is said to be in equilibrium, if, it can be satisfied by its existing output level. If a firm achieves highest profits and minimum loss at its output level, then, this situation is referred as firm's equilibrium. "Where profits are maximized, we say the firm is in equilibrium", says Prof. Bilas

- **Conditions of Equilibrium**

The basic conditions of Firm's Equilibrium are as follows:

i) The profits of the firm should be maximum

ii) Marginal Cost (MC) = Marginal Revenue (MR)

iii) Marginal Cost (MC) must cut the Marginal Revenue (MR) from below

The above said conditions of equilibrium may be studied in following ways:

I. TR and TC Approach

II. MR and MC Approach

I. TR and TC Approach

In short run, a firm functions on that output level at which its profits are maximised and losses are minimised. The profits can be calculated by subtracting total costs from total revenue as it's the difference of revenue and cost.

Profit Equation: $\pi = TR - TC$

Greater the difference between total revenue and total cost, greater the profits. It can easily be understand by following figure.

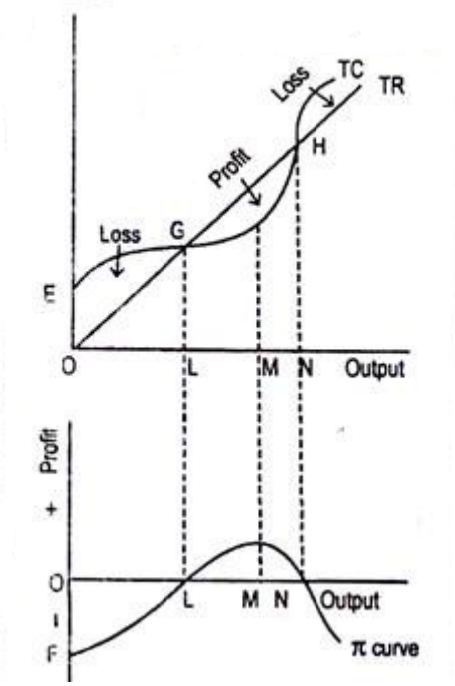


Figure 26

The figure 26 displays the equilibrium point with the help of total revenue and total cost approach. The figure shows the total costs curve (TC), total revenue curve (TR), output level and total profit curve (π). O is the zero level of production where TR and profits are also zero but TC is OE. The OL level of production, where total revenue and total cost is equal at point G, signifies no profit no loss situation. It is also termed as break-even point. Beyond the production level OL, the gap between TR and TC starts increasing due to various economies of scale and maximum at OM level of production. After OM level of production, the gap between revenue and cost decreases. The firm experiences another break-even point at ON level of production where firm is earning zero profits. If the firm decides to produce beyond the production level ON, it will incur loss as costs are higher than revenues. So, the firm is in equilibrium at the production level OM where revenues are higher than costs and gap between revenues and costs is maximum.

II. Marginal Revenue and Marginal Cost Approach:

MR and MC approach for firm's equilibrium is used by Joan Robinson. In this method, the profits can be calculated at the different levels of output by using MR and MC approach. According to this approach the firm will be in the position of equilibrium where MR is equal to MC. The figure 27 shows the equilibrium of the firm at point F where MC curve cut the MR curve from below and MR=MC. The figure shows two BEP points where firm is facing the situation of no profit no loss. But the equilibrium point is F as both the condition are satisfied here.

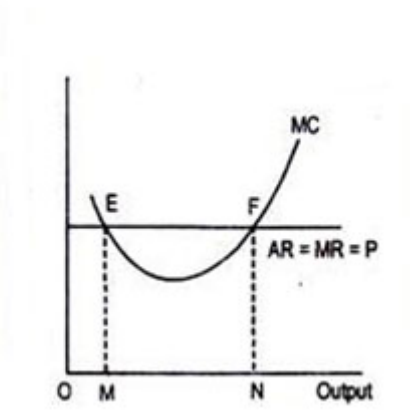


Figure 27

- **Short Run Equilibrium**

Assumptions

i) Each firm has homogeneous factors of production.

ii) Each Firm operates on different level of efficiency.

iii) Every firm has different cost curves.

iv) All firms trade its products at uniform price fixed through demand and supply and hence P = MR= AR

v) Output level of each firm may not be similar

In case of short run, a firm faces any of three situation i.e. super normal profit, normal profits and minimum losses.

a) Abnormal Profits

When a firm's total revenues exceed total costs it will enjoy super normal profits. In short run, it is not possible for the new firms to enter the industry. The figure 28 illustrate the equilibrium point E1 where MR= MC and MC curve cuts MR from below. Here, TSE_1P area is the abnormal profits.

b) Normal Profits

In short run, a firm may also experience normal profits where total revenues are equal to total cost. The firm is only recovering its production costs. Firms are assumed to be earning normal profits even when TR= TC as profits are already in the cost of production. Here, E_2 point of the equilibrium situation where MR =MC and MC curve cuts MR from below.

c) Minimum Loss

In short run, the firm can possibly bear minimum losses where its TR are less than TC. The firm only recovers its average variable cost and has to bear the loss of total fixed cost. As visible in figure 28 that the firm is in equilibrium at point E_1 where MR is just equal to MC and MC curve cuts MR from below. The equilibrium output is OQ_3 with the equilibrium price OP where firm is bearing loss of fixed cost equal to the shaded area of ABE_1P.

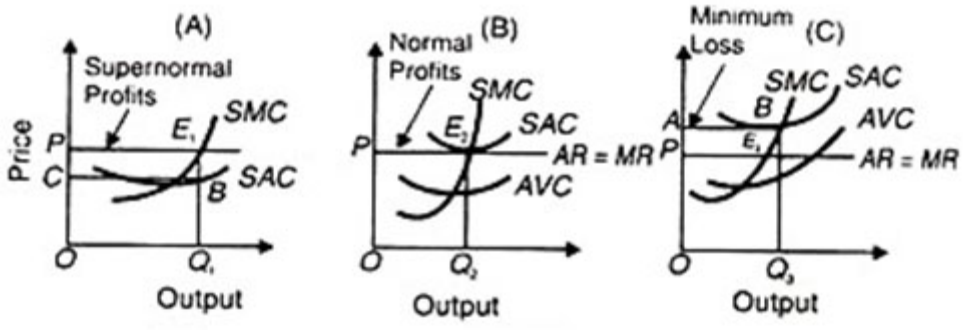


Figure 28

- **Long-Run Equilibrium**

A firm can alter all resources in long run and all costs are also variable rather than fixed. A firm is said to be in the position of equilibrium when it is producing optimal level. As well as "Its long run marginal cost is equal to marginal revenue and long run marginal cost curve cuts marginal revenue curve from below." A firm can only earn normal profits in long run as the entry and exit of the firm is not prohibited.

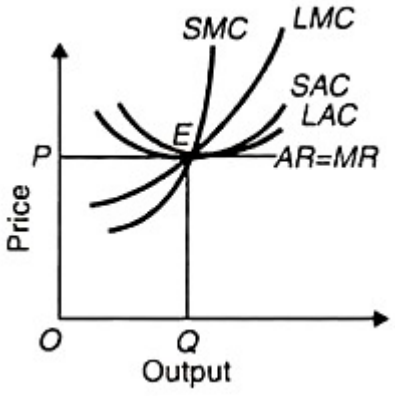


Figure 29

In figure 29, firm is in equilibrium at point E and earning normal profits. Long run equilibrium equation:

MR= AR= LMC= SMC= SAC= minimum LAC

5. Monopoly: Introduction

The word monopoly, summation of two terms: Mono (single) and poly (control), refers to a market with single seller of a particular commodity with no nearby substitutes. Any competitive entry is banned due to various reasons. Moreover, the whole market is in control of one seller and a firm and industry is considered as one unit.

- **Definitions**

In the words of Bilas, "Pure monopoly is represented by a market situation in which there is a single seller of a product for which there are no substitutes; this single seller is unaffected by and does not affect the prices and outputs of other products sold in the economy."

As said by Koutsoyiannis, "Monopoly is a market situation in which there is a single seller. There are no close substitutes of the commodity it produces, there are barriers to entry".

6. Features/ Characteristics/ Assumptions

i) Large number of buyers with single seller

ii) Lack of close substitute for the product sold

iii) Barrier on the entry of new firms

iv) Industry and firm is considered as one unit

v) The monopolist can decide the price under this market

7. Nature of demand and Revenue under Monopoly

As we discussed earlier that there is no difference between industry and firm under monopoly. So, the demand curve of the firm constitutes the demand curve of the industry. The demand curve slopes downward and when a monopolist decreases the price of his product, the demand will increase and vive-versa (as shown in Figure 30).

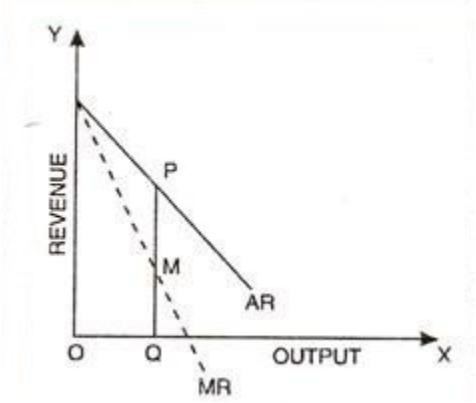


Figure 30

- **Costs under Monopoly**

Cost curves under monoploy are identical to perfect competition. The fixed costs are parallel to OX-axis same as perfect competition and the average fixed cost is in the shape of rectangular hyperbola. The other costs such as average cost, average variable cost, and marginal cost are U-shaped. Here in the monopolistic market, the price is higher than the marginal cost and the marginal cost curve does not surve the purpose of supply curve.

8. Equilibrium of a firm under Monopoly

The following two conditions are necessary for a firm's equilibrium:

- MR must be equal to MC
- MC curve must cut MR curve from below

Equlilibrium: Output and price determination

The two main **approaches** are used to determine equilibrium output and price Under perfect competition:

I. TR and TC

II. MR and MC

I. TR and TC Approach

According to rotal revenue and total cost approach, a monopolist earns maximum profits at the point where its total revenues are more than total costs. As we know that the diffrence of revenue and cost is called profit . A monopolist can make the difference maximum by selling products under the policy of price discrimination. Hence, the equilibrium situation is that production level where the monopolist earns maximum profits as explained in figure 31

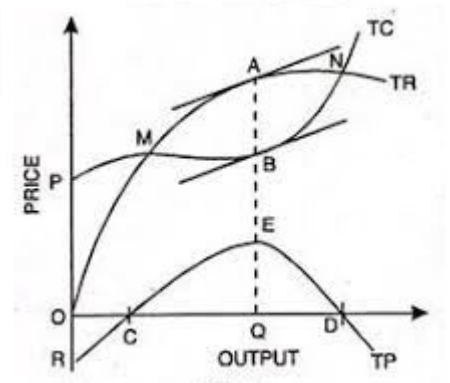


Figure 31

Figure 31 shows the total cost curve (TC) and total revenue curve (TR). The TR will be zero when the output is zero but the firm has to bear the loss of fixed cost even at the zero level of production. TP is the total profit curve starting from point R shows negative profits as TC is higher than TR. The TR starts increasing when firm rises the level of output. But TR rises with lower rate of increase as compared to the rate of increase in TC. Hence, RC part of TP curve shows negative profits. The TR is equal to TC at point M which is called break-even point with no gain no loss situation. On the higher level of production, the gap between TR and TC will be rising and TR will higher than TC. The firm starts earning profit after the point M as TP curve slopes upward. The firm earns maximum profit at point E as the gap of total revenue and total cost is highest and the output here is said to be the equilibrium output.

II. MR and MC Approach

The monopolist will be in equilibrium under two conditions:

- MR=MC
- MC curve must cut MR from below

Under MR and MC approach, two time periods are considered when we study equilibrium:

i) Short Run Time Period

ii) Long Run Time Period

i) Short Run Equilibrium

The short run is the time period in which a firm cannot alter its production capacity and has to produce with the existing plant. The monopolist enjoys three situation of equilibrium: super normal profits, normal profits and also minimum losses.

- **Super Normal Profits**

The monopolist gets super normal profits at the production level when the P= AC. He has to produce upto that level where MC=MR. As shown in Figure 32 the monopolist faces stability (equilibrium) at point E. At point E, both the conditions, MR=MC and MC curve cuts MR from below, are satisfied. The monopolist will produce OQ_1 quantity of output in equilibrium. He will enjoy super normal profits (shaded area ABCD) as the equilibrium price CQ_1 is higher than average cost DQ_1.

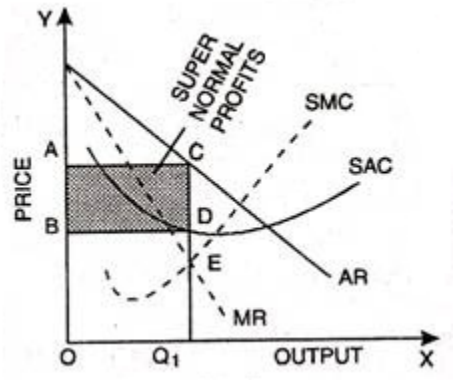


Figure 32

- **Normal Profits**

A monopolist will face normal profit at the level of production where AR is just equal to AC. It is worth mentioning here that the average production cost includes normal profits (as shown in figure 33). E is the point of equilibrium where AR is equal to AC. Here, monopolist is producing OM level of output and selling it on OP price. In this way, the monopolist enjoys normal profits as both conditions of equilibrium are satisfied.

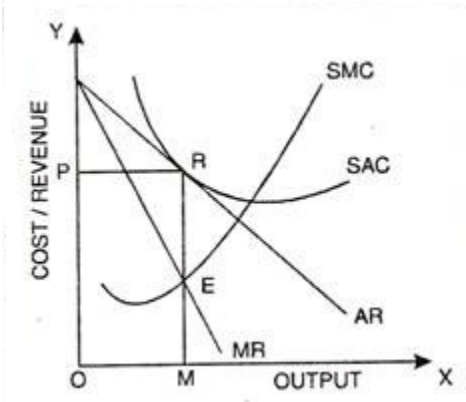


Figure 33

- **Minimum Loss**

The monopolist may also suffer from loss in the short run when the price of his product falls below the variable cost. The reason of price fall may be economic despair or drop in product demand. The monopoly firm will continue production at the level till the price covers the average variable cost. The production level where the price falls below the average variable cost, the firm will cease the production. In this way, a monopolist has to bear the minimum loss (fixed cost). The situation is explained in figure 34 that revealed the equilibrium level at point E where the MR is just equal to MC. The equilibrium price is OP_1 at OM level of output. Further, the AVC curve touches the AR curve implies that the monopolist will cover only average variable cost and bears the loss of fixed cost. The monopolist firm will discontinue the production at the level where the price drops below OP_1. Thus, the monopolist bears the loss equal to the shaded are PP_1AN.

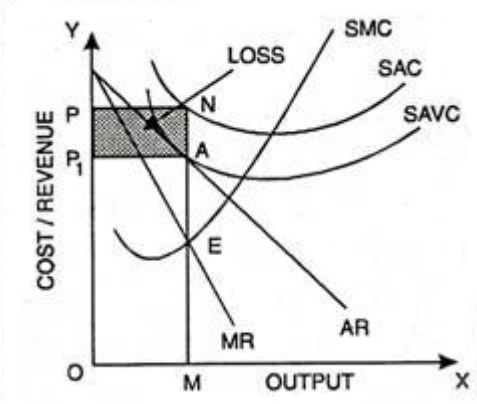


Figure 34

ii) Long Run Equilibrium

In long run time scale, all the inputs such as land, labour, and material are variable and a monopolist can alter them the monopolist can choose the most appropriate size of plant for specific level of demand. As shown in the figure 35 the firm attains its equilibrium at OM level of output where LMC= MR with the price OP. The monopolist here make super normal profits as the price OP is more than LAC. The shaded area $PJHP_1$ shows his total super normal profits.

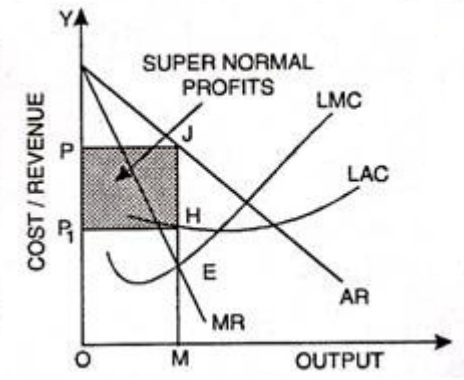


Figure 35

9. Monopolistic Competition: Introduction

The market situation where we find a mixture of competition and a certain degree of monopoly. In simple terms, monopolistic market is a phenomena in which many sellers are selling their differentiated products. The product of each seller varies from each other in particular terms. It is called product differentiation. A seller does not have any noticeable influence on output and pricing policies of other sellers.

- **Definition**

In the words of **Prof. Leftwich** – "Monopolistic Competition (or imperfect competition) is that condition of industrial market in which a particular commodity of one seller creates an idea of difference from that of the other sellers in the minds of the consumers."

As said by **H.H. Liebhafsky,** "Monopolistic competition has today come to mean a state of affairs in which there is a large number of sellers selling non-homogeneous or slightly differentiated products and in which freedom of entry exists."

10. Characteristics or Features

i) Buyers and sellers are in huge number

ii) Each seller's product is different in terms of quality, shape, colour, design, etc.

iii) Each producer can decide the price for his own product

iv) Entry and exit of the firms is not restricted.

v) Selling costs exists in terms of advertisement and publicity

vi) Limited mobility of factors of productions

vii) Lack of perfect knowledge on the part of consumer

viii) Non-price competition

11. Price and Output Determination (Equilibrium) under Monopolistic Competition

The aggregate of all the firms selling commodities is called **Group** instead of industry. The price and output determination will be studied in two cases:

I. **Equilibrium of Firm** **II. Equilibrium of Group**.

I. Firm's behaviour under Monopolistic Competition (Equilibrium)

i) Short-run Equilibrium

ii) Long-run Equilibrium

i) Short-run Equilibrium

The firms can only increase the output up to the existing production capacity of their plants in case of increased demand.

A firm will be in the situation of equilibrium when:

- MR is equal to MC
- MC curve must cut MR from below

A firm will be in equilibrium in three situations

- **Super-Normal Profit**

A firm enjoys super normal profits when its average revenue is greater than its average costs (AR>AC). In figure 36 is the point of equilibrium where both the condition of equilibrium are satisfied. The firm is producing the equilibrium output OX_1 and earning super normal profit equal to the shaded area PLMN.

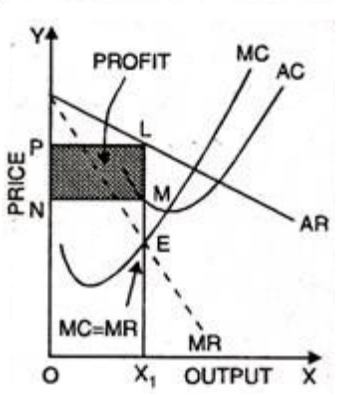


Figure 36

- **Normal Profits**

A firm will earn normal profit when the price of its product is equal to average cost. As evident in figure 37 that the equilibrium point is E where both conditions of a firm's equilibrium are satisfied. At this point, the firm is producing OX_1 level of output and selling it on OP_1 price. The firm is earning normal profits here as AR=AC.

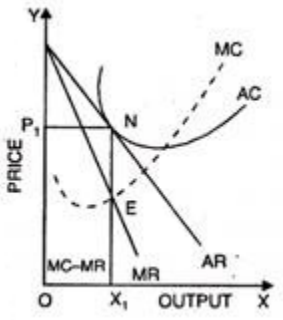


Figure 37

- **Minimum Loss**

Firms under monopolistic competition may also encounter minimum loss in case of unfavourable demand of its product. As shown in figure 38, the firm is in equilibrium at point E, where both the conditions of equilibrium are fulfilled. The firm is producing equilibrium output equal to OX_1 & selling it on equilibrium price OP. Equilibrium price is here equal to its AVC. Thus, the firm will only get its AVC & sustain minimum losses equal to PLMN as its AC is more than AR at equilibrium point E.

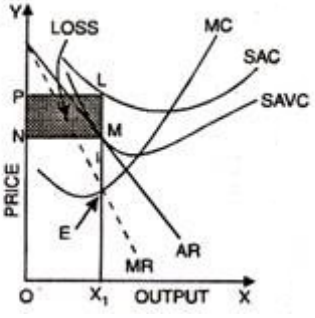


Figure 38

ii) Long Run Equilibrium

The production capacity of the firms can possibly be altered by making changes in its variable as well as fixed means of production. The firms under monopolistic competition can only obtain normal profits in

the stage of equilibrium. In case if the firms are making super normal profit, it can appeal new firms to enter as there is no barrier on the entry and exit of firms. The entry of new firms will leave depressing effect in terms of over production. In the other case if the firms are experiencing minimum losses, the existing firms are free to leave the industry. The firm is in equilibrium at point E (figure 39), where MC=MR and MC curve cuts MR from below. The equilibrium output is OX_1 and price is OP. The firms are earning normal profits in long run as LAC is equal to AR.

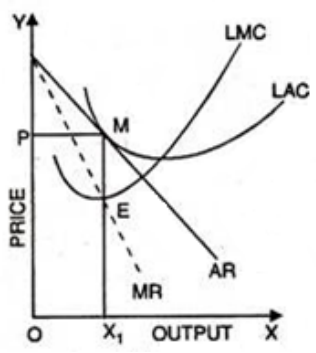


Figure 39

12. Equilibrium of Group

There are two basic assumptions of group equilibrium

- There is same demand and costs of all the firms
- No individual firm can individually influence the price and output of other firms

Equilibrium of the group is explained in figure 40, DD is the demand curve and CC is the cost curve. Each firm fixes the price equal to OP as the gap between revenue (price) and cost is maximum here. The firms get super normal profit equal to the shaded area PBTM. There super profits will attract new firms in the market and total demand will be shared by new firms. The new demand will shift to DD_2. The number of firms will go on increasing until DD_2 curve become tangent to cost curve CC i.e. point K. At this new equilibrium point, the firms will be getting only normal profits where OB is the equilibrium price and ON is the equilibrium output.

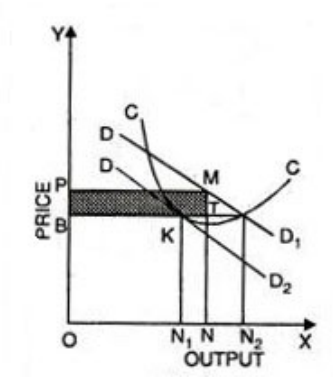


Figure 40

Questions

Short Answer Type Questions

1. Define production functions.
2. What do you mean by variable input?
3. What is meant by returns to a factor?
4. Define returns to scale.
5. Explain law of variable proportions.
6. What is meant by opportunity cost?
7. Define explicit and implicit cost.
8. What is fixed and supplementary cost?
9. What are economies of scale?
10. Give two types of internal economies.
11. Give two types of external economies.
12. What are internal diseconomies?
13. What are external diseconomies?
14. Define economies and diseconomies of scope.
15. Distinguish between economies of scope and economies of scale.
16. What is meant by equilibrium of the firm?
17. What is determined by a firm under perfect competition?
18. Who is the price maker under perfect competition?
19. What is market price?
20. Define normal price.
21. What are the conditions of the equilibrium of the firm under perfect competition?
22. What do you understand by equilibrium of an industry?
23. Discuss the conditions of equilibrium of an industry.
24. Draw diagrams to show short run equilibrium of a firm under perfect competition.
25. Define monopoly.
26. What is the difference between a firm and industry under monopoly?
27. What is discriminating monopoly?
28. When is price discrimination profitable?

29. Why do producers prefer to differentiate their product?
30. Define excess capacity.
31. What is non-price competition?
32. Define game theory.
33. What is meant by minimax strategy?

Long Answer Type Questions

1. Explain the law of variable proportions. Explain various stages of the law by using table and diagrams.
2. Explain the law of diminishing returns. Why does the law operates? Define its limitations.
3. Explain the law of increasing returns to scale in detail.
4. Define least cost combination of factors.
5. What do you mean by isoquant curve?
6. Distinguish between marginal rate of substitution and marginal rate of technical substitution.
7. What do understand by an isoquant? Explain the properties of an isoquant.
8. Explain the law of returns to scale with the help of isoquants.
9. Discuss the various concepts of cost curves. How do they differ in short run and long run?
10. Explain the nature of short run cost curves. Show the relationship between short run average cost (AC) and marginal cost (MC) curves with the help of diagrams.
11. "The long run average cost (LAC) curve is more likely to be L-shaped than U-shaped". Discuss the statement.
12. What is meant by marginal and average cost of production? Show how they are used in determination of price.
13. Discuss the short run costs with the help of suitable diagrams.
14. Explain different cost concepts.
15. What do you mean by economies of scale? Differentiate between internal and external economies?
16. How economies of scale are related to long run average cost? Explain diagrammatically.
17. What are economies of scale? Distinguish between economies of scope and economies of scale. How will you measure economies of scope?
18. "Under perfect competition a firm can only make normal profit in the long run while in the short period it may not be the case. Explain.
19. Describe the process by which the short run supernormal profits in a perfectly competitive industry are slipped out in the long run. Give diagrams.

20. What is meant by perfect competition? Discuss the main features of a perfectly competitive market.
21. Explain the main characteristics of perfect competition. How are price and output of commodity determined in short and long periods in this market?
22. Explain the demand and price determination of a firm under perfect competition in the product market.
23. What are the salient features of perfect competition?
24. "Under perfect competition, the seller is the price taker not the price maker." Explain
25. Distinguish between market price and normal price. How is market price determined?
26. How is normal price determined under different conditions of returns to scale?
27. What are the characteristics of perfect competition? Analyse the short run equilibrium of competitive firm.
28. Discuss the equilibrium of a firm in the short and long periods under perfect competition.
29. What do you mean by monopoly? How are the price and output determined under it? Explain.
30. How are price and output of a commodity determined under monopoly? Is monopoly price always higher than competitive market?
31. Discuss the price output policy of a monopoly firm. Can it earn super-normal profits in the long run? Examine.
32. Explain the necessary conditions for price discrimination and also analyse the allocation of total sale by a monopolist in two different markets. Use diagrams.
33. What is monopoly? Explain the difference between monopoly and perfect competition.
34. What is shape of demand curve under monopolistic competition?
35. Discuss the condition of equilibrium of the firm under monopolistic competition.
36. What is the position of price and output under monopolistic competition?
37. What do you mean by monopolistic competition? Discuss the long run equilibrium of a monopolistic competitive firm and also show excess capacity by using diagram.
38. What are the characteristics of monopolistic competition? Explain the short run equilibrium of a monopolistic competitive firm.
39. Explain the price competition in an oligopoly using prisoner’s dilemma.

Unit – III

Index

Inflation

1. Introduction
2. Types of Inflation
3. Stagflation
4. Theories of inflation
5. Causes of Inflation
6. Measures to control inflation

Economic Growth: Measurement and Determinants

1. Difference between Economic Growth and Economic Development:
2. Measurements and Determinants of Economic Growth

Objectives of Unit III

After going through this unit the students will be able to:

- Understand the nature, scope, assumptions and significance of macro economics
- Discuss various economic issues from macro view point by studying theories of macro economics
- Recognise the monetary and real flows of national income in two, three and four sector economies
- Understand the concept, and assumptions as well as discuss the working of Multiplier by studying its static and dynamic concepts
- Understand various Leakages in the working of Multiplier
- Study the Principle, importance and Working of the Accelerator
- Know the concept and formula of Marginal Efficiency of Capital (MEC)
- Discuss the meaning, types, theories of Inflation
- Discern the various causes of inflation and steps to control Inflation
- Know the meaning of economic growth and development and its various determinants
- Study the concept of National Income as an Index of Development, Per Capita Real Income, Economic Welfare, Standard of Living Criterion, etc.

Nature and Scope of Macroeconomics

1. Introduction

Macroeconomics is considered that division or branch of economics which analyses the collective indicators and various factors of microeconomics such as unemployment, inflation, GDP, rate of growth, etc. and helps the Government and institutions to formulate plan and policies. According to **Shapiro**, "Macroeconomics deals with the functioning of the economy as a whole."According to **Prof. Ragnar Frisch**, "In it economic problems are studied on aggregate level like total consumption of the economy as a whole, general price level, total employment, national income, etc. by semi general equilibrium method. Macroeconomics is also called Theory of income and employment."

2. Characteristics or Features or Nature of Macroeconomics

Keynes gave the key features of macroeconomics in his book "The General Theory of Employment, Interest and Money" which is as follow:

i) It is a study of short run.

ii) It studies economy as whole. In other words, it takes every problem in aggregates.

iii) It is a comprehensive and systematic study.

iv) It is based on reformation. It focuses on saving the capitalism rather than destroy it.

v) It focuses on monetary factors as money has a store value.

vi) It depends on institutional factors.

vii) Under macroeconomics, role of investment is more significant.

viii) It is a general theory as it studies total output, total employment etc.

3. Theories of Macroeconomics

Historical background of macroeconomics is as follow:

i) Classical Theory of Macroeconomics

This theory studies the economic issues from macro view point. It is based on the views of Adam Smith, Malthus Ricardo and J.B. Says et.al. Say's law says "Supply creates its own demand. Production takes place but with a view to consume or sell. It is the production which creates market for the goods"

ii) Keynesian Theory

According to Keynes lack of aggregate demand is the key reason of unemployment. The constituent of demand are "Demand for consumption goods, Demand for investment goods, Government expenditure".

iii) Neo Classical or Monetarism Theory

It is given by Milton Friedman which defines "Level of employment can be achieved and unemployment removed by changing the supply of money".

iv) New Classical or Rational Expectations Theory

It is given by **Prof. Muth, Prof. Lucas** and **Sergeant et.al.** and they defined, "Monetary and fiscal policies should be aimed at maintaining low, stable rate of inflation. They should not attempt to alter real national income and unemployment".

4. Scope of Macroeconomics

The scope of Macroeconomics are as follows:

i) It deals with the **theory of national income**, its various fundamentals, methods of analysis etc

ii) It relates to the problems of different **level of employment** in the economy. It also considers various factors for the determination of employment level such as aggregates demand and supply, collective consumption, saving, etc.

iii) Theory of money: Macroeconomics also studies the money theories and its impact of change in money supply on demand and employment level.

iv) Theory of general price level: Macroeconomics also studies the change in price level and the impact of inflation and then deflation.

v) It relates to **economic development and growth** with per capita income.

vi) It swots up on the **International Trade** for trade and tariff policies all over the world.

5. Assumptions of Macroeconomics

Lord Keynes gives the following assumption of macroeconomics:

i) Macroeconomics theories apply in short period as it is assumed that we will not survive in long run period.

ii) The theories of macroeconomics apply under perfect competition.

iii) For macroeconomics, there is a need of closed or capitalist economy.

iv) Under macroeconomics, Government acts as a taxer and spender.

v) Under macroeconomics, rule of diminishing marginal productivity and law of variable factor of production are applied.

vi) Labour has wrong perception about value of money.

vii) Under macroeconomics, equilibrium position may be attained in case of under employment.

viii) Here, saving depends upon income whereas investment depends upon interest rate.

ix) Under macroeconomics, interest relates to monetary aspects.

6. Significance/Importance/Advantages of Macroeconomics

Following are the significance of macroeconomics:

i) Determination of various functions: It defines the functions of an economy, level of employment and national income, supply and demand of economy and their determinants.

ii) **Policy formulation:** It also provides knowledge to prepare plan, policies, strategies etc. for the smooth functioning of an economy.

iii) **Growth and development:** it also aids in to accomplish the objectives of economic development and analyse the growth pattern of an economy.

iv) **Manage change in price level:** It helps in stabilizes the price level to manage the inflation and deflation and also defines various measures to control them.

v) **Resolves BOP Issues:** It helps in finding the causes of deficit in BoP and also tries to balance the BoP.

vi) **Problem analysis:** It assists to resolve various problems of economy as a whole such as problem of unemployment, scarcity of resources, trade cycle etc.

7. Limitations/Problems/Issues of Macroeconomics

The macroeconomics has numerous issues such as:

i) **Study of Heterogeneous Units:** In macroeconomics heterogeneous units are studied. **Prof. Boulding** had explained this point as follow:

6 Apples + 7 Apples = 13 Apples (Meaningful Aggregate)

6 Apples + 7 Oranges = 13 Fruits (Also a meaningful aggregate)

6 Apples + 7 Houses = 13? (Meaningless aggregate)"

Here it is clear that heterogeneous unit does not give exact solution always.

ii) **Various Ill effects of Macroeconomics:** It does not swot up on the numerous consequences on the different sectors in an economy. For example, if price level increases it gives benefits to the businessmen not to the wage earners.

iii) **Misleading:** Every macroeconomics measures is not proves hundred per cent correct. So it does not reflect the true result.

iv) **Myth of Deductive conclusion:** Macroeconomics always works on aggregates. So the result of individual activities cannot be compare to aggregates and result cannot be drawn.

v) **Generalization**: The macroeconomics focuses on very much generalization as it apply its conclusion drawn on the basis of aggregates to the individuals.

vi) **Not consider individuals:** Macroeconomics does not focus on individual activities. It neglects them.

8. Comparison of Microeconomics and Macroeconomics

Both macro and microeconomics are useful concept in economics. Both concepts are different from each other, while on the other hand they are mutually dependent to each other in following ways:

i) Macroeconomics influences the microeconomics analysis because to study a particular phenomenon or issue, the study of macroeconomics is absolute necessary.

ii) Analysis of microeconomics is indispensable for the study of macroeconomics because microeconomics relates to study an individual aspect while macroeconomics studies the economy as a whole.

Altogether with the dependency, there are some disparity between two is as under:

Basis of difference	Microeconomics	Macroeconomics
Degree of aggregation	In microeconomics, individual economic problem is studied	Whereas, in macroeconomics, problems of economy as a whole are studied
Objectives	It relates to optimum allocation of resources	It relates to growth of resources and level of full employment
Price and income determinants	In microeconomics, key determinant is price	In macroeconomics, key determinant is income
Mode of study	Here method of partial equilibrium analysis is used	Here quasi general equilibrium analysis method is used
Analytical disparity	Microeconomics deals with the performance of variables in equilibrium position	Macroeconomics deals with the performance of aggregates in disequilibrium condition
Assumptions	In microeconomics, assumptions of full employment, equilibrium position, and optimum allocation of resources are taken	In macroeconomics, assumptions are taken in aggregates

Circular Flow of Income

1. Introduction: Circular Flow of National Income

The circular flow of national income is described as unending flows of revenue and expenditure in the country's economy in a circular mode where national income is equals national expenditure.

According to Investopedia, "The circular flow model demonstrates how money moves through society. Money flows from producers to workers as wages and flows back to producers as payment for products. In short, an economy is an endless circular flow of money."

It includes the continuous flows of production of goods and services, income and expenditure of any country and circular redistribution of income of producer and households which may be explained as follow:

- The input made by natural resources known as land for which rent is paid.
- The input made by human known as labour for which wages is paid.
- The input in form of capital for which interest is paid.
- The effort made by entrepreneurship for which profit is paid.

The circular flow of income can be described in two ways:

- **Monetary flow of income:** It includes the flow in form of money as flow of income of factor from manufacturer to household.

Figure 1

Here, factor services include land, labour, capital and entrepreneur and income and expenditure includes rent, wages, profit and interest.

- **Real Flow of Income:**It includes the flow in form of goods and services. Here, flow of factor input such as land, labour, capital etc. to producer and flow from producer to household sector in form of goods and services.

2. Circular Flow of Income in Different Sectors

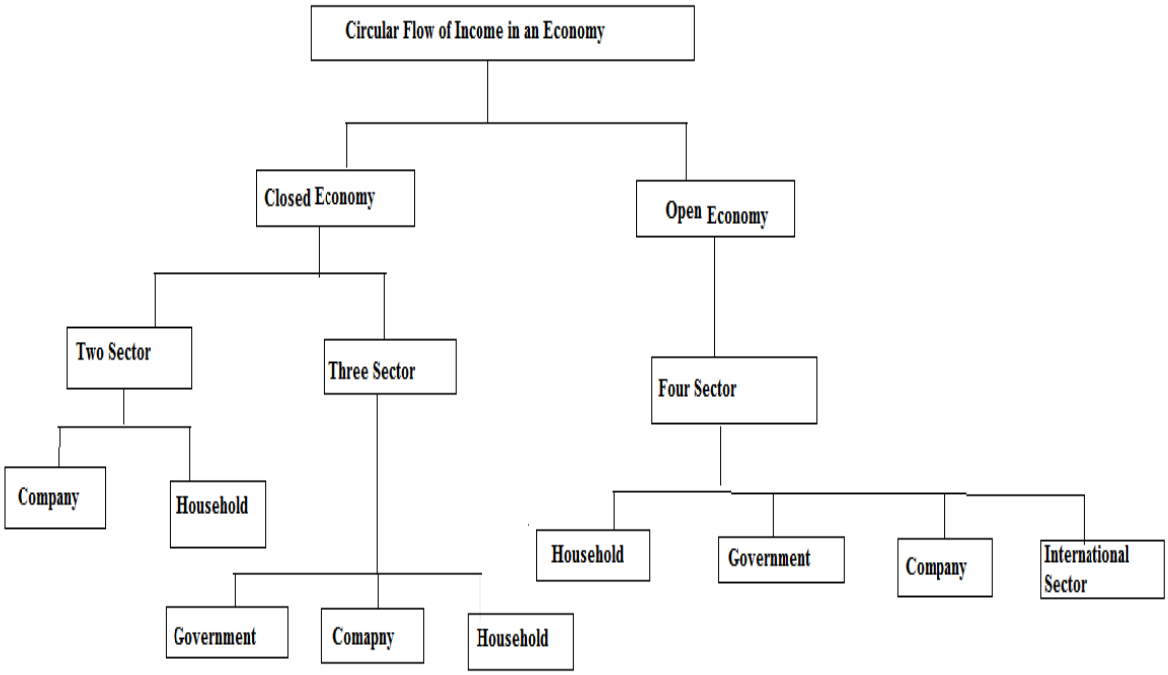


Figure 2

i) Real and Money Flow in a Two Sector Economy

Assumptions:

- Here, one sector is household and other is producing.
- No influence via Government
- No export or import
- There is an closed economy

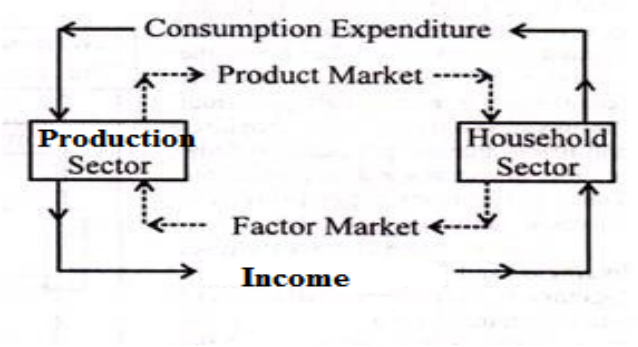


Figure 3

Circular Flow of Saving and Investment in the Economy

It includes the saving of household sector and investment of producing sector.

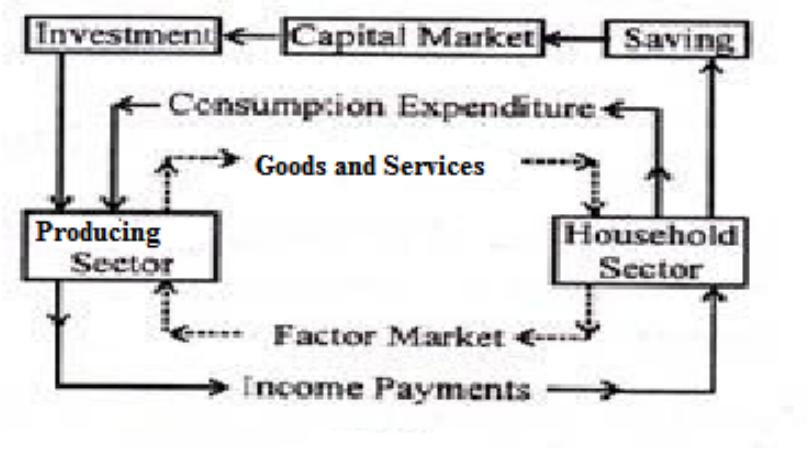


Figure 4

There is a capital market for the flow of saving and investment from households to producing sector. This market organizes the saving and investment of the households and producing sector. The households sector provide saving to these market and producing sector acquires investment from the capital market.

ii) Circular Flow of Income in Three- Sector Closed Economy

Here, we add Government sector in two sector economy.

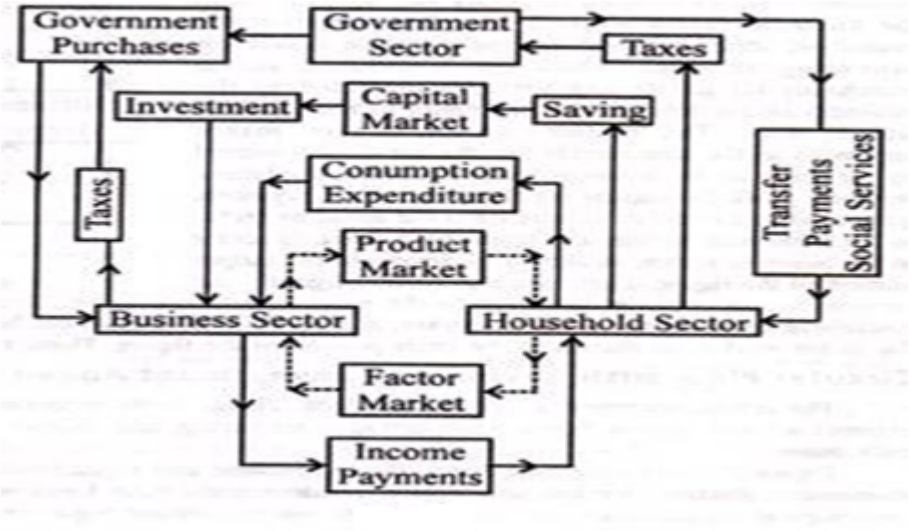


Figure 5

Firstly, household sector pay taxes to Government sector. But, the government purchases services of the households and pay them as old age pensions, sickness benefit, etc and spends on society as social services as education, medical facilities etc. On the other hand, producing sector pays taxes to Government and Government purchases all types of goods from the producing sector and give subsidies to them.

iii) Circular Flow of National Income in a Four-sector Open Economy

Here, one more sector, 'foreign sector' is added to three sector economy.

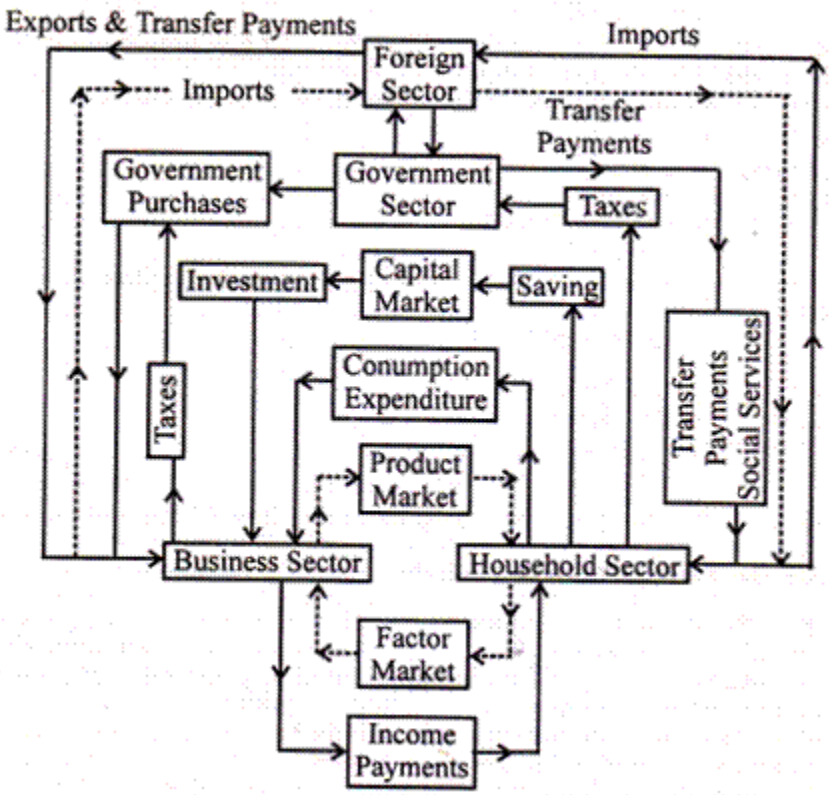


Figure 6

3. Importance/Significance/Benefits of the Circular Flow of National Income

The following are the benefits of circular flow of national income.

i) It helps to find out the problems of disequilibrium and the restitution.

ii) It sets up a link between customers and producers.

iii) It helps in creating marketing network to help customers and producers.

iv) It enables us to swot the impact of leakages on the economy.

v) It helps to study the inflationary and deflationary tendencies.

vi) It assists to know the significance of monetary, trade and fiscal policy.

vii) It provides a base to compute the national income using fund flow statement.

Multiplier

1. Introduction

The Keynesian theory was proposed to understand the income, output and employment relation. Here multiplier acts as a tool of income circulation. It also helps in analysing business cycles. It was called as Investment Multiplier by Keynes whereas others called it Income Multiplier.

Income = Consumption + Investment (Y = C + I)

According to Keynes initial increase in investment increases the final income. A rise or fall in effective demand has multiplier effects on both the income and the employment appeared in an economy.

$$\Delta Y = K \Delta I$$

(Here, K is multiplier, ΔY is increase or decrease i.e. any variation in the investment and ΔI is the change in income)

In other terms, multiplier is equal to the ratio of the rise in income to the rise in investment, which is responsible for the rise in income. Thus, if the investment in the economy increases by Rs. 2 crore and the income rises by Rs. 6 crore, then the multiplier is 3. Keynes used the income multiplier to show the relationship of a small rise in the investment to the final increase in the income. The heavy spending would result in a great national income. Keynes investment multiplier is actually a modification of Kahn's employment multiplier'. The value of multiplier is determined by the MPC (marginal propensity to consume). Its value can never be one as the consumption always increases when income increases (i.e., MPC is never zero). Also its value can never be equal to infinity. In practical sense the actual value of the multiplier varies from 2 to 4.

- **Relation between MPC and Multiplier**

As Y = C + I or I = Y - C and K = ΔY/ΔI

So K = ΔY / ΔY- ΔC, by dividing ΔY we get, K = 1 / (1- ΔC/ ΔY)

As MPC = ΔC/ ΔY, we get K= 1/ (1- MPC)

As MPS = 1 – MPC, we get **K = 1/MPS.**

2. Working of Multiplier

Through the instrument of multiplier, income propagation occurs due to original investment. A new investment causes a rise in the consumption by increasing the demand due to increased income.

The working can be understood in following two concepts:

A. Static Concept

Static concept of multiplier means final change in income results from a change in investment. Keynes' multiplier is based on comparative static concept. In the words of **Prof. Samuelson,** *"The Multiplier is a two-edged sword. It will cut for you or against you. It will amplify downward decrease in investment".*

Let MPC is ½ and investment is Rs. 20 crore.

We get K= 2 {K= 1/ (1- MPC)}

It means the increase in income is 20 x 2 = 40 Cr.

Also the multiplier is the ratio of the increase in income to the increase in investment (40/20= 2). Hence, the multiplier is 2.

There are two ways of multiplier working. One is forward working and other is backward working which are explained in the following figure.

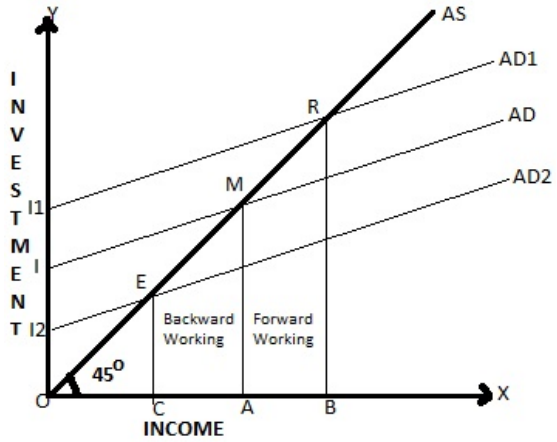


Figure 7

Here:

X-axis is showing income;

Y-axis is showing investment;

AS curve indicates Aggregate Supply;

AD curve indicates Aggregate Demand;

At point M, AS curve and AD curve intersect;

Equilibrium level of income is represented by OA

Forward Action: Income increases from OA to OB with increase in investment to I_1. In this case demand curve shift upwards to AD_1.

Backward Action: Income decreases from OA to OC with decrease in investment to I_2. Here demand curve shifts downward to AD_2.

B. Dynamic Concept

As there is some time gap between change in investment and change in income because it takes time for the income to increase (can be short-term or long-term). According to Hansen, "*the true multiplier is however not tautological, it is based either on a short run normal or long run normal behaviour pattern."*

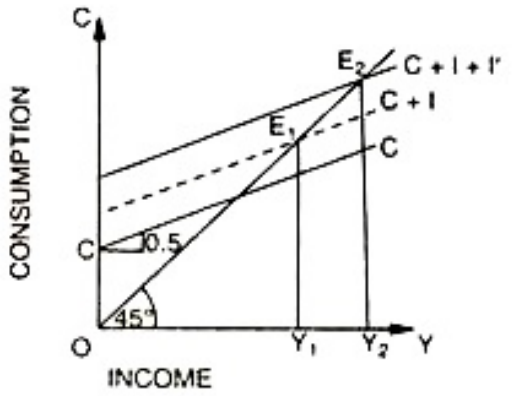


Figure 8

In the above figure, CC is the consumption curve (considering MPC being ½) and E_1Y_1 is the equilibrium level of income. When investment increases from C + I to C + I + I', the new curve intersects the 45° line at E_2 where OY_2 represents the new income level which is more than the old income level i.e. OY_1. Assuming MPC of 1/2 means the multiplier is 2 which implies that this increase in investment results in doubling of income.

3. Assumptions of Multiplier

i) MPC remains almost constant.

ii) Induced investment is taken as zero

iii) The production of consumer goods depends on their effective demand.

iv) There is no government activities like taxation, etc.

v) There is no delay faced for the expenditure after income is received.

vi) The economy is considered closed here.

4. Importance of Multiplier

i) The concept of multiplier enriched economic analysis and very well affected the economic policies. The discovery of the multiplier belongs to **Mr. R.F. Kahn** but **Keynes** transformed it as a tool for analysing the 'income building'.

ii) Multiplier has been of good significance in the economy. It has established its importance in the investment and thus act as an indicator of employment. It tells us that a small investment leads to the many folds increase in the investment and employment and thus in income.

iii) It is very important for understanding business-cycles.

iv) It is a useful tool for implementing employment policies and to know the result.

5. Leakages in the working of Multiplier

The value of the multiplier is neither one nor infinity because total increase in income is not consumed nor is it entirely saved. There are several leakages in the income as explained below:

i) Saving

A part of the increased income is saved. In this manner, the value of the multiplier gets limited in the indirect proportion of the saving.

ii) Paying off debts

The part of income which is spent on paying off the debts or instalments also reduces the multiplier's value.

iii) Imports

The part of increased income which is spent on the imported goods makes an important leakage in multiplier working.

iv) Price Inflation

Price inflation constitutes leakage from increased income as a larger portion of this increased income is dissipated in buying the otherwise costly items.

v) Hoarding

It is that idle cash part of increased income which people hoard or tend to hold.

vi) Buying of Stocks and Securities

When old stocks and securities are purchased with the increased income, it causes some leakage.

6. Criticism

i) The basis of Keynes theory is a very simple assumption that increase in income results in the increase in consumption. But the relationship between income and consumption is not simple.

ii) The static nature of the economy as described in this theory is not suited to the present dynamic world.

iii) It overlooks the effect of induced investment.

iv) It is more about 'marginal propensity to spend' and less about MPC.

v) According to **Haberler**, it appears as an un-verified hypothesis because it has a number of vague observations.

vi) The assumption of linear relation between aggregate consumption and aggregate income questionable.

vii) Also the consumption does not depend on income alone and the MPC is not constant which is contradictory to this theory.

Accelerator

1. Introduction

A decrease or increase in the consumption due to change in the investment can be understood with the help of Accelerator concept. It provides the relationship between investment and change in income. Actually the multiplier and the accelerator are two analogous concepts. In **Hayek's words**, "Since the production of any given amount of final output usually requires an amount of capital several times larger than the output produced with it during any short period (say a year) any increase in final demand will give rise to an additional demand for capital goods several times larger than the new final demand."

In the words **of Lindauer,** "The acceleration principle states that an increase in income causes an increase in capital stock which is many times the increase in income."

2. The Principle of Acceleration

It states that if the demand for goods increases, an increase in the demand for the equipment at a faster rate will occur.

The principle of acceleration is based on the following assumptions:

- **i)** No excess capacity in the industries of consumer goods.
- **ii)** Surplus capacity in industries of producer goods.
- **iii)** Permanent rise in demand.
- **iv)** Increase in production capacity.
- **v)** Capital-output ratio to be fixed.
- **vi)** Elastic supply of resources.

It is the rate of change in consumption and not the consumption which determine the value of Accelerator. Accelerator is the ratio of change in capital to the change in income.

$$\mathbf{W = \Delta K/\Delta Y}$$

When the expenditures on consumption goods are increased, it generally causes the increase in the expenditures for capital goods. It means that the acceleration coefficient is usually greater than zero. In some exceptional cases, the value of accelerator can be zero also where above relation does not suit.

The principle of acceleration is a function of net investment.

Therefore,

$$\mathbf{I_{net} = W.\ (Y_t - Y_t\text{-}1)}$$

(Where Y_t is income in t time period and Y_{t-1} is income in 't-1' time period)

3. Working of the Accelerator

Accelerator depends primarily on the following two factors:

(i) The capital-output ratio

(ii) The durability of the equipments (considered as capital)

Greater is the durability of the machine, greater will be the value of the accelerator (when the capital-output ratio being given)

The following table explains the working of the accelerator assuming the Capital-output ratio 1:10 for all the Cases.

Table 2: Working of Accelerator

Case I. Life of the Machine 10 years.

	Period	Change in consumption	Capital Equipment needed	Gross Investment			Percentage change in Gross investment
				Additions	Replacement	Total	
10% rise in demand	0	1000	100	Nil	10	10	
	1	1100	110	10	10	20	100% increase

Case II. Life of the Machine 20 years.

10% rise in demand	0	1000	100	Nil	5	5	
	1	1100	110	10	5	15	200% increase

Case III. Life of the Machine 5 years.

10% rise in demand	0	1000	100	Nil	20	20	
	1	1100	110	10	20	30	50% increase

Case IV. Life of the Machine 10 years.

10% rise in demand	0	1000	100	Nil	10	10	—
Demand in period 2 remains	1	1100	110	10	10	20	100% increase
Constant	2	1100	110	Nil	10	10	50% fall

Case V. Life of the Machine 10 years.

10% fall in demand	0	1000	100	Nil	10	10	—
	1	900	90	Nil	10—10	0	100% fall

It is clear after studying above cases that a drop in investment due to a drop in the demand for consumption goods cannot exceed the rate of depreciation. Thus accelerator depends upon the change in the rate of consumption, which, in turn, depends upon very unpredictable investment.

4. Importance of Accelerator

i) Accelerator and multiplier together cause variations in income in upward as well as downward direction. The multiplier-accelerator interaction justifies one important feature of business cycle that the investment goods activities change more violently than the consumption-goods industries.

ii) The multiplier-accelerator interaction has increased the understanding of business cycles.

5. Drawbacks of Accelerator

i) It may give misleading results.

ii) The presumption of a fixed ratio of consumer to capital goods is not realistic.

iii) The presumption of constant replacement demand is not practical always.

iv) The presumption of no excess capacity is theoretical only.

v) The presumption of permanence lacks realism.

vi) The acceleration theory is valid only when all machines are in use

Marginal Efficiency of Capital (MEC)

1. Introduction

As we know, mainly two factors affect the investment in any economy viz. marginal efficiency of capital and rate of interest. In the short span of time, the rate of interest may be considered constant, then the investment is mainly affected by MEC.

The term "marginal efficiency of capital" was first ever introduced by J. M. Keynes.The General Theory given by J. M. Keynes defines MEC as "the rate of discount which would make the present value of the series of annuities given by the returns expected from the capital asset during its life just equal its supply price". MEC is actually the predictable cost-effectiveness of a capital asset or in other words its profitability. MEC is the net and maximum possible rate of return over cost projected from the purchase of additional unit of a capital asset. This means that its cost has to be deducted from its return.The MEC needs to be higher than the rate of interest, r, for investment to take place.

Marginal Efficiency of Capital in General: In Dillard's words, *"the marginal efficiency of capital in general is the highest rate of return over cost expected producing an additional or marginal unit of the most profitable of all types of capital assets."*

2. Formula for calculating MEC:

There are two factors which affect MEC and these are also called as **determinants** of MEC:

- **Prospective Yield:** Prospective yield may be defines as expected net return of an asset over its whole life. It can be explained by following equation:

$$Py = Q1 + Q_2 + Q_{3+} \ldots + Q_n.$$

- **Supply Price (SP):** It refers to the manufacturing cost of an asset and also termed as replacement cost.The MEC is the ratio of above two factors which after derivation may be expressed as:

$$(1+m)^n = Py/SP$$

Or

$$1+m = n\sqrt{Py/SP}$$

Where 'm' is MEC, 'n' is asset life time in years, 'Py' is prospective yield and 'SP' is supply price. Thus the discounted prospective yields of capital asset come into parity with the present supply price. If the net Py of a capital asset is greater than its SP, only then investment will take place.

- **MEC Schedule:** Generally, when the quantity of investment rises, MEC declines. It is similar to investment demand schedule.

Table 3: MEC Schedule

Investment	MEC
Rs. 2,000	12%
Rs. 4,000	10%
Rs. 6,000	8%
Rs. 8,000	6%
Rs. 10,000	4%
Rs. 12,000	2%

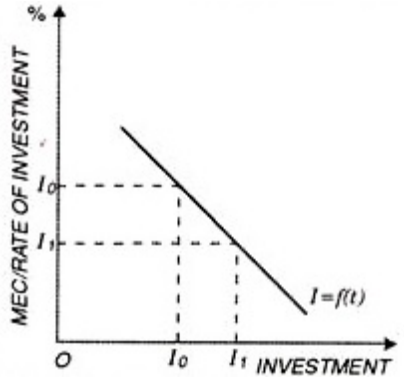


Figure 9

Reduction in selling prices, increase in cost of production and decreasing productivity are the main causes of decline in MEC.

3. Factors Affecting MEC

The factors may be short run or long run which affect MEC:

- **Short-Run Factors**

i) **Expected demand or size of market:** If the demand for the goods is likely to be high in future, the MEC will also be high with increased investment.

ii) **Costs and prices:** When the costs and price are likely to decrease and increase respectively, MEC rises.

iii) **Propensity to consume:** Investment increases with the increase in propensity to consume. Thus MEC also increases.

iv) **Changes in income:** Investment increases with increase in income.

v) **Current state of expectation or return on investment:** If the present situation enhances the investment, MEC will also increase.

vi) **Tax policy and change in business cycle:** Both influence the marginal efficiency of capital

- **Long-Run Factors**

i) **Population Growth:** The rise in population increases demand and thus investment and MEC rise.

ii) **Development in new areas i.e. change in technology:** Such growth increases the investment and hence MEC.

iii) **Level of current investment for supply of capital goods:** If the present investment is already very high, then there will be very little chances of investment.

iv) **Government Policies:** Policies also affect the marginal efficiency of capital.

4. Criticism of MEC (From the Book "The Failure of New Economics" by Prof. Hazlitt):

i) Use of vague and complicated words.

ii) The exact and correct measurement of MEC is very difficult.

iii) The condition of perfect competition is very unrealistic.

iv) The difference between interest-rate and MEC seems wrong.

Criticism of marginal efficiency of capital in general:

i) It is hazy and complex conception.

ii) It is difficult to measure.

iii) It is based on perfect competition which is not a realistic situation.

iv) There is difference between interest rate and marginal efficiency of capital**.**

Inflation

1. Introduction

Inflation means rise in general price level and decrease in the purchasing power of currency. Inflation exists when money supply exceeds available goods and services. Inflation may be defined as 'a sustained upward trend in the general level of prices' and not the price of only one or two goods. **G. Ackley** defined inflation as 'a persistent and appreciable rise in the general level or average of prices'. In other words, inflation is a state of rising prices, but not high prices.

Definitions

According to **Samuelson**, "By inflation we mean a time of generally rising prices."

According to **Gregory**, "Inflation is an increase in the quantity of purchasing power."

According to **Shapiro**, "Inflation is simply a persistent and appreciable rise in general price level."

2. Types of Inflation

i) On the basis of Degree of Government Control

- **Open inflation:** When factor of production and others goods are freely operate in the market without any interruption, it is called open inflation. It leads to hyper-inflation if remains unchecked.
- **Suppressed inflation:** When the government put check on market mechanism, it is known as suppressed inflation. According to Friedman, "Governments themselves are often producers and sellers of wide range of commodities and they want to keep their own prices low by price restrictions and controls. This leads to the breakdown of the free price system."

ii) On the basis of inflation rate:

- **Creeping inflation**: When inflation rate increases gradually i.e. rate of inflation rate increase from 1% to 2%, to 4% a year is known as creeping inflation.

- **Walking inflation**: When rate of inflation rises in single digits as says less than 10 per cent is known as walking inflation. It is also known as moderate inflation.
- **Running inflation**: When inflation rate increases between 10% and 20% in a year is known as running inflation.
- **Galloping inflation**: When inflation rate increases between 20% and 1000% a year is known as galloping inflation.
- **Hyperinflation**: When inflation rate increases greater than 1000% a year is known as hyperinflation.

iii) On the basis of political condition:

- **War-Time Inflation**: If prices increase in order to compensate the war expenses, then this situation is known as War-Time inflation.
- **Post-War Inflation**: Price rise subsequent to the war is called Post-war inflation.
- **Peace-Time Inflation:** Price rise due to huge government spending during a normal situation.

iv) On the basis of scope:

- **Comprehensive Inflation or Wide Inflation:** When prices increase all over the economy.
- **Sporadic Inflation:** Inflation limited to few areas is known as Sporadic Inflation.

3. Stagflation

It is a situation where prices increase but production and employment do not increase. According to **Samuelson,** "Stagflation involves inflationary rise in prices and wages at the same time that people are unable to find jobs and firms are unable to find customers for what their plants can produce."

- **Causes of stagflation**

i) Due to rise in indirect taxes

ii) Rise in the prices of basic raw material

iii) Rise in money wages

iv) Limited labour supply

- **Measures to control stagflation**

i) Prices adjustment of various industries

ii) Decrease in marginal tax rates

iii) Proper labour policies

iv) Skill up gradation

v) Anti-inflationary income policy

4. Theories of inflation

i) Demand Pull Inflation: It relates to inflation due to excess demand in relation to available goods and services at existing rates. It is also known as the traditional theory of inflation. If demand increase, but due to full employment supply does not change, then this situation leads to inflation.

ii) Cost Push Inflation: If cost of factor of production increase, then price rise, but output and employment decrease, then this situation leads to inflation.

5. Causes of Inflation

i) When public expenditure increases, then it leads to inflation.

ii) Increase in money supply

iii) Decrease in production

iv) Increase in disposable income

v) Increase in black money

vi) Decrease in tax rate

vii) Due to natural calamities

6. Steps to control inflation:

i) Monetary or Economic measures such as demonetization, credit control, etc.

ii) Fiscal measures such as increase in taxes and public debts, decrease in public expenditure, etc.

iii) Other measures such as increase in production, proper price policy, etc.

Economic Growth

1. Introduction

When the aggregated market value of the goods and services produced in a country's economy is increased over a time period, it is called as Economic Growth of that economy and measured as the percent rate of increase in the real GDP of that economy. To eliminate the distorting effect of inflation on the prices in the economy, the economic growth is calculated in inflation-adjusted terms. **In the words of Simon Kuznets,** "Modern economic growth reflects a continuing capacity to supply a growing population with an increased volume of commodities and services per capita." The economic growth is the most-watched economic indicator. The Economic growth generates more income for industries which causes stock prices to rise. As a result, the investment and the employment rise which in turn

increases the incomes. Consumers can buy additional goods and services with the increased income that indicates a higher economic growth in the economy.

2. Difference between Economic Growth and Economic Development:

Economic Growth	Economic Development
• Monetary value of all the goods and services produced in the economy increases. • It is one type of quantitative measure which reflects the potential increase of the number of business transactions taking place in the economy. • Economic growth is a narrower and single dimensional concept. • It is measured in terms of the rise in the aggregate market monetary value of additional goods and services produced by using GDP and GNP.	• Health, well-being, and literacy level of the overall population of a country progresses. • It is the qualitative progress in the life of people of a country and is most correctly determined by the Human Development Index i.e. HDI. • Economic Development is comparatively broader and multi-dimensional concept. • Economic development is based on the concepts like employment, technology, standard of living, per capita income, quality of life, hygiene, nutrition, GDP, industrial and infrastructural development, etc.

3. Measurements/ Determinants of Economic Growth

Economic growth of a country or economy is measured by making use of data on GDP of that country. "GDP is a measure of the total income earned by the people of a country through their participation in the production process both inside and outside of the boundary of that country." The measurement of the economic development/growth can be done in the following six ways:

I. National Income as an Index of Development

Kuznets, Meier, Baldwin, Samuelson and few other economists argued that it is the growth of national income of a country that is the most suitable parameter for measuring its economic development. Also the net national product (NNP) is favoured over the gross national product (GNP). It is because of the fact that NNP provides correct indication about the development of that country.

- **Arguments in Favour of National Income**

i) An increased real national income means that there is sure rise in real per capita income of that economy.

ii) The problem of rise or fall in population may be covered by using this approach.

- **Arguments against National Income**

i) Inequitable distribution of income in an economy cannot truly define the economic development for that country.

ii) When a growth or development causes inadvertently depletion of natural resources, it will have an overall negative effect.

iii) The deflators in poorly developed countries are very difficult to measure.

iv) If there is high population growth, there occurs a complication when the average income keeps on rising but unemployment still exists which cannot be define the economic development in true sense.

II. Per Capita Real Income

Some economists like Rostow, Leibenstein, etc. believe that the economic development is actually increased aggregate output that means the real per capita income increases over a long time period.

- **Arguments in favour of per Capita Real Income**

i) The living standard of the people of a country can be assessed more correctly by the per capita income concept rather than the national income concept. In other words, we can say that if the national income is increasing but the per capita income is not increasing, that indicates no economic development.

ii) In the developed economies, the per capita income keeps on increasing continuously as the growth rate of national income exceeds the growth rate of population.

iii) When the per capita real income increases constantly, it leads to the increase in welfare of the people and thus their living standard rises.

- **Arguments against Per Capita Real Income**

i) **Meier and Baldwin write**, "If an increase in per capita income were taken as the measure of development, we would be in the awkward position of having to say that a country had not developed if its real national income had risen, but population has also risen at the same time."

ii) The problem of population is ignored if we get the ratio of national income to the population.

iii) In this measurement, the distributive aspect has also been ignored. It means that if there is unequal distribution of increased income among population, the rise in national income would be worthless.

iv) In the underdeveloped economies, with the rise in per capita income, there is also rise in unemployment, dearth and also income inequalities which cannot be considered as economic development.

v) The social activities like education, public health, nutrition, etc. cannot be measured by per capita real income.

vi) There may be imperfection in the data which may give misleading result.

III. Economic Welfare

Economic welfare means the equal sharing of national income among population and the rise in the purchasing power of money. Some economists suggest economic welfare as a tool for the measurement of economic development. According to them, higher the level of economic welfare, higher will be the economic development.

- **Arguments against Welfare Index**

i) There are a lot of practical difficulties in estimating the economic factors like nature of national income, social cost of production, etc.

ii) Welfare index is considered subjective in nature which cannot be measured.

iii) Welfare may differ from individual to individual.

IV. Comparative Concept

Economic development is considered a comparative concept and the comparison may be done in following ways:

i) Comparison within the Country:

Example:

Income in 1990 is Rs. 1000 cr,

Income in 1995 is Rs. 1800 cr,

Income in 2000 is Rs. 2250 cr,

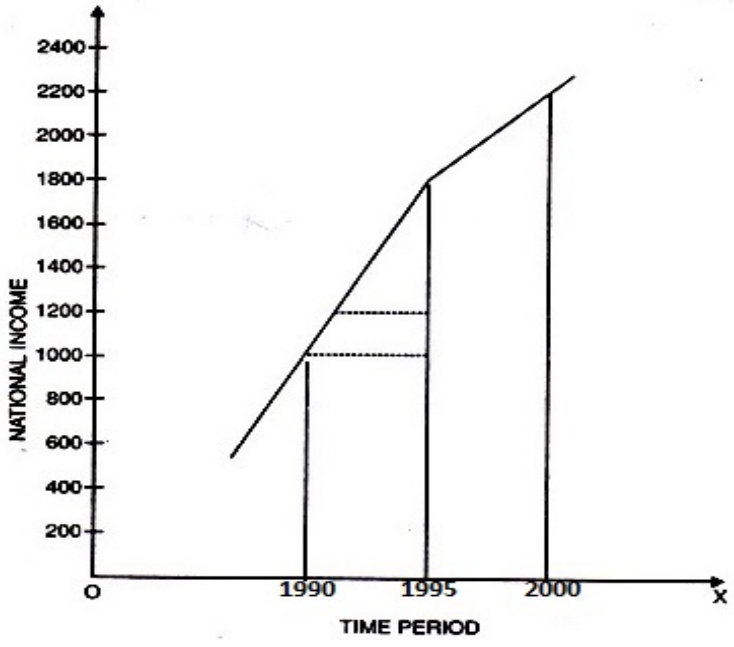


Figure 10

It is clear from the above figure that within the five years from 1990 to 1995 national income increases 80 percent (i.e. 800×100/1000=80%) and from 1995-2000, it rose 25 percent (i.e. 450×100/1800=25%).

ii). **Comparison with Other Countries**.

X-axis represents the time.

Y-axis represents the national income.

AA' represents the path of development (for country P).

BB' represents the path of development (for country M).

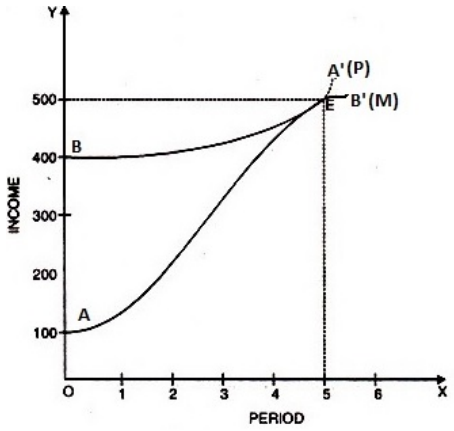


Figure 11

- Initially the country M is having national income higher than that of country P.
- But with time, the rate of economic development in the country P becomes higher than that in the country M.
- At intersection point E, the national incomes of both the countries P and M become equal.
- And later with time, the country P is having a more developing economy than that of country M.

V. Through Work-related Pattern

Some economists like to measure the economic development on the basis of the variations in the occupational pattern. There may be three sectors for the occupations as below:

i) Primary Sector including agriculture, fisheries, forestry, mining etc.

ii) Secondary Sector including construction works, manufacturing, trade, etc.

iii) Tertiary Sector including transport, services, banking, etc.

In under-developed and developing countries, larger portion of the working population is engaged in primary sector while in developed countries the most of the working population works in the tertiary sector. Whenever there is a shift of working population from primary sector to secondary and territory sectors, it is considered economic development.

- **Arguments against occupational pattern:**

i) The exact classification of the occupations is a difficult task in under-developed economies.

ii) Initially the activities in the tertiary sector are not adequate. Hence, there are very less chances of employment in this sector.

VI. Standard of Living Criterion

It refers to the quantity and quality of material goods and services available to a country's population. It also includes basic things needed for quality life such as income, GDP, life expectancy, employment opportunity, economic stability, freedom, environmental quality, safety, etc. But when the government mops up the increased income with heavy taxation or by any other method, then there is little or no probability for the rise in average consumption level (or standard of living).

- **Conclusion**

It depends on the objective of measuring economic development that which method is the best. Still it may be concluded that GNP or per capita is the best method.

Questions

Short Answer Type questions

1. What do you mean by macroeconomics?
2. Describe any three features of macroeconomics.
3. What is circular flow of income?
4. What is real flow of income?
5. Define money flow of income.
6. Define investment multiplier.
7. Give a formula of investment multiplier.
8. What is the relationship between multiplier and marginal propensity to consume?
9. What do you understand by acceleration principle?
10. Define accelerator.
11. Are multiplier and accelerator opposite to each other?
12. Give the formula of accelerator.
13. What is marginal efficiency of capital?
14. Define supply price.
15. Write the formula for marginal efficiency of capital.
16. What is meant by economic growth?
17. Define the term economic development.
18. Distinguish between economic development and economic growth.
19. Explain the meaning of capital formation.
20. What do you understand by the term inflation?
21. What is suppressed inflation?
22. What is galloping inflation?
23. Define inflationary gap.

Long Answer Type Questions

1. What are the basic assumptions and salient features of macroeconomics?
2. Distinguish between microeconomics and macroeconomics. What is the relationship between the two?
3. Show with the help of a diagram the various flows of money in an open economy.

4. Distinguish between "real flows and money flow. Explain and illustrate with the help of a diagram, the Money flow in an open economy.
5. Explain the concept of multiplier. Show its forward and backward working.
6. Discuss the working of multiplier. What is its importance in Keynesian economies?
7. Define investment multiplier. How is it related to marginal propensity to consume? Give its importance.
8. Explain the acceleration principle. What is its significance in macroeconomics?
9. Explain the concept of accelerator. Give its criticism.
10. What is marginal efficiency of capital? Explain the short-run and long-run factors which affect it.
11. What are the expectations? What position do they occupy in Keynesian theory of marginal efficiency of capital?
12. Explain the term economic development. How does it differ from economic growth?
13. Discuss the relative importance of different determinants of economic development.
14. Explain the determinants of economic development.
15. Discuss the methods of measuring economic development.
16. Write notes on: (a) Demand pull inflation, (b) Hyper Inflation (c) Deflation, (d) Cost push inflation, (e) Inflation gap.
17. Critically examine the effect on inflation on economic development. Mention the measures to control inflation.
18. Distinguish between inflation and deflation. How do they affect a country's economic growth?
19. Discuss various theories explaining the concept of inflation.
20. Explain in detail:
    i) Stagflation
    ii) Philips Curve
    iii) Hyperinflation
    iv) Creeping inflation

Unit – IV

Index

5. Composition of Forex reserves in India
6. Statistics of Forex Reserves in India
7. Foreign Exchange Rate Policy
8. Foreign Exchange Flow
9. Major Benefits of the Foreign Exchange Flows
10. Major Problems of the Foreign Exchange Flows

Business Cycles

1. Introdiuction
2. Typesof Business Cycles
3. Patterns of Cyclic Changes
4. Features of Business Cycles
5. Theories of Business Cycles

Objectives of the Unit

After going through this unit the students will be able to:

1. Understand the meaning, objectives, andcomponents of Budget
2. Know the concept of budgetary deficits and its various types
3. Discern the meaning of deficit financing, purpose and how's of deficit financing
4. Understand the concept of deficit financing in India as well as its effects, benefits and shortcomings
5. Study the nature of public debt, its classification, and methods
6. Recognise the concept of BoP management, internal and external balances management
7. Discuss the Forex Reserves in India, its structure, and statistics
8. Know the meaning of business cycles. Discern its patterns, features, and theories.

Budget

1. Introduction

Budget is actually the *Annual Financial Statement* which is an account of estimated receipts and expenditure of the union government during a financial year. E.g. 2017-18, 2018-19, etc. It is mentioned in the Article 112 of the Constitution of India. It is presented on the first day of month of February by the union finance minister since 2017 for the next financial year (i.e. from 1st April to 31st March). Earlier it used to be presented on the last working day of the month of February.

The bills that are discussed and presented in the budget and then passed by the Lok Sabha come into effect on 1April of the upcoming financial year for which the budget was presented. Budget of the State government which is presented in the state assembly is mentioned in Article 202 of the Constitution of India.

The Union budget after India got independence, was first ever presented on 26 Nov, 1947 by the first finance minister of India R. K. Shanmukham Chetty.

2. Objectives of Budget

i) Income Redistribution

ii) Resources Rationalization

iii) Firmness of economy

iv) Public Enterprises Management

- Budget can be classified on the basis of following three assumptions:

i) a balanced budget: revenue = expenditure

ii) a deficit budget: revenue < expenditure

iii) a surplus budget: revenue > expenditure

3. Components: Budget has broadly two components

A. Budget Receipts

B. Budget Expenditure

A. Budget Receipts: This component is further divided into two parts:

a. Revenue receipts which have two segments: **(I) Tax Receipts and (II) Non-tax Receipts**

b. Capital Receipts

Let's discuss about the revenue receipts and its detail

(I) Tax Receipts

Tax receipts or tax revenue consists of the taxes and various duties that are imposed by the Union government. This part is considered the main source for the revenue part of the budget to fund the

expenditure part of the budget that is incurred on giving benefits to the common people. A tax is levied on the income and other profits of individual persons, organizations, companies, etc. and it is to be paid compulsorily. Also the government imposes taxes on sales & manufacturing of goods, sales & purchase of properties, exports & imports, gifts, etc.

Taxes may be **direct or indirect**:

- **Direct Taxes can be of following types:**

  i) Income Tax: It is a direct tax levied on the income or total earnings in a Financial Year (FY) and is calculated on the basis of tax rates set by the government. It is to be clearly understood that year 2019-20 is considered Assessment Year for the FY of 2018-19 and so on.

New tax slabs are announced during union budget presented in February, 2020. However tax payers are free to choose any of the old or new tax slabs.

Table 1: Tax Slabs

Income (in rupees)	Old Rate (up to FY 2019-20)	New Rate (from FY 2020-21)
Up to Rs. 2.5 Lakhs	0	0
Rs. 2.5 Lakhs - Rs. 5 Lakhs	0	0
Rs. 2.5 Lakhs - Rs. 5 Lakhs	5%	5%
Rs. 5 Lakhs - Rs. 7.5 Lakhs	20%	10%
Rs. 7.5 Lakhs - Rs. 10 Lakhs	20%	15%
Rs. 10 Lakhs - Rs. 12.5 Lakhs	30%	20%
Rs. 12.5 Lakhs - Rs. 15 Lakhs	30%	25%
More than Rs. 15 Lakhs	30%	30%

Source: Budget presented in February 2020

ii) Corporation Tax or Company Tax, is a type of direct tax that is levied on the income or capital of both private and public corporations or companies that are registered under the Companies Act 1956.

iii) Gift Tax: Gifts up to Rs 50,000 annually are exempted from any tax liability in India. Also the gifts from relatives like parents, spouse and siblings are exempted from tax while gifts in other cases except these are taxable. Tax on gifts are described in the Income Tax Act 1961 (the Gift Tax Act, 1958 was repealed in 1998).

iv) Wealth Tax: In the budget of FY 2015-16, this wealth tax was abolished but the surcharge was hiked from 2% to 12% for the super-rich category (Individuals having an income of more than one crore rupees and companies having an income of more than ten crore rupees).

v) **Estate Tax**: This type of direct tax is levied on estates whose value surpasses the specific limit as set by rules and is calculated on the basis of market value of that estate.

- **Indirect Taxes can be of following types:**

i) **Sales Tax:** It is actually consumption tax imposed by the government on the sales of goods and services which is collected by the retailer and then passed on to the government.

ii) **Custom Duty:**This indirect tax is imposed on the import and export of goods. The value of imported goods is calculated on the basis of the Rule no. 3(i) of the Customs Valuation (Determination of Value of Imported Goods) Rules, 2007 after which custom duty is levied specifically.

iii) **Excise Duty:** It is imposed on the goods manufactured in the country on the basis of the Schedule I and II of the Central Excise Tariff Act, 1985.

iv) **Entertainment Tax:** It was levied by the government on movie tickets, sport events, music festivals, commercial shows, amusement parks, various exhibitions, theatre shows, and other private festivals which may vary from state to state. It is to be noted that it has been replaced by the Goods and Services Tax (GST) w.e.f. July 01, 2017.

v) **Service Tax:** It was collected for certain goods and services which has been replaced by the Goods and Services Tax (GST) w.e.f. July 01, 2017. Actually the final consumers or end users pay this tax.

vi) **VAT** i.e. Value added tax is imposed on the sale of goods and services to the consumer or end user. It is a type of indirect tax that is paid by customers or end user through the producers. VAT is levied at each step of the production involving both the sale and purchase.

(II) Non-Tax Receipts: These are Income or revenue from sources other than taxes. These are also referred as administrative revenue as these are the result of administrative role of the government. Examples of such type of tax may include interest, return in form of profit, bonus or dividend, fees, penalties or fines, etc. Some of the non-tax receipts are explained below:

i) **Interest:** Government gets interest on loans or advances which it gives to the state governments, private enterprises and even to the people from time to time.

ii) **Profits:** The profit is received by the government from public enterprises like Nationalized Banks, LIC, BHEL, etc. Subsequently the government gets dividends when this earned profit is invested again.

iii) **Fees:** Government receives income when various kinds of fees are charged by it, e.g., tuition fees in government colleges, OPD/medical card fees in hospitals, property registration fees, passport fees, court and legal fees, DL fees, etc.

iv) **Fines/penalties:** This income is received in form of fines and penalties which is imposed by government viz. vehicle challans, etc.

v) **Forfeiture**: It is imposed by legal courts for non-compliance with its orders or penalties as a part of punishment for some crimes.

vi) **Escheat**: For the want of a legal heir, the property goes to the state.

vii) **Special Assessment/Taxation:** With the development activities like roads, streets, electricity, sewage, etc. the value of property in the vicinity rises up. Ultimately it helps in raising the income for the government.

b. Capital Receipts: The components of capital receipts may be described as follows:

i) **Recovery of loans:** Recovery of the loans given by the union government to the state government or public enterprises is considered as capital revenue.

ii) **Disinvestment:** When revenue is generated by raising funds from disinvestment means to sell the whole or a part of the shares/equity of public sector enterprises to the private sector. Though the government assets are reduced due to this exercise. It is criticized by terming disinvestment as privatization.

iii) **Domestic and external Borrowings:** When there is a fiscal deficit, the government may need to borrow. These borrowings are considered as capital receipts but there arises the liability of returning these loans also. The borrowings may be from open market, RBI, foreign governments or international organisations.

iv) **Small Savings:** The small savings like Post Office deposits. PPF deposits, NSC deposits, Kisan Vikas Patras, etc. are also parts of capital receipts.

B. Budget Expenditure: Expenditure related information is prepared in three documents:

a. Expenditure profile

b. Expenditure budget

c. Demand for grants

a. Expenditure Profile:

i) This document is descriptive and helps the government in economic study.

ii) It is having information from all the departments and ministries regarding economic and financial situation.

iii) It also contains various budgetary trends related to gender, welfare of women and children, welfare of SC and ST communities, allocation to N.E. states, etc.

iv) It also contains data about various govt. schemes and subsidies.

v) It also contains information about the investment and resources associated with Public Sector Undertakings.

vi) It also contains the detailed study regarding the Ministry of Railways.

b. Expenditure Budget: It tells about the total expenditure by the government during a financial year. For this, on the basis of end-use, the expenditure is divided into two categories.

- **Capital expenditure**: This part is mainly spent on physical things and investments. The main objective of the capital expenditure is to **create the assets by reducing the liabilities.** It is non-recurring in nature. The capital expenditure enhances the capital stock of a market.It mainly contains:

  i) The investments for creating assets such as construction of roads, metro rail lines, highways, sea ports, hospitals, etc.

  ii) The loans given by the central government to the states.

  iii) The repayments of borrowings or the payments of interest on borrowings

- **Revenue expenditure:** This part is spent on operational purposes like payment of salaries, pensions, interest, administrative expenses, defence, health, and other services in the country. Revenue expenditure neither creates any asset nor does it result in the decrease of any liability. It is recurring in nature.

For further elaboration, the expenditure budget may have two parts:

Charged expenditure	Voted expenditure
• It includes expenditure to be made for the liability of payments of interest on that amount which was borrowed by the government. • It is not required to be approved by the Lok Sabha	• This part includes revenue and capital expenditures. • This need to be approved by the Lok Sabha.

c. Demand for Grants

According to the Article 113 of the Constitution of India, any plan or estimation that requires a withdrawal of money from the C.F.I. (i.e. Consolidated Fund of India) has to be presented and discussed as a part of union budget in the Lok Sabha.

So all the departments and ministries prepare demand for grants including both the voted and charged expenditures. This is actually meant for the expenditure during the next financial year.

4. Budgetary Deficits- Introduction

Whenever spending (or expenses) exceeds income (or revenue), it results into the budgetary deficit. Main consequence due to deficit is inflation which if continue for long may lead to recession and decline in economic activity. Countries generally counter budget deficits by increasing taxes and cutting spending by promoting economic growth through fiscal policies. Budgetary deficit is generally expressed as a percentage of the GDP.

5. Types of Budgetary Deficit

There may be four types of budget deficits:

(i) Revenue deficit

(ii) Fiscal deficit

(iii) Primary deficit

(iv) Monetised deficit

Explanation:

(i) **Revenue Deficit:** When revenue expenses of the government happened to be more than revenue receipts, it give rises to a revenue deficit.

Revenue Deficit = Revenue Expenses – Revenue Receipts

Implications of Revenue Deficit:

- A revenue deficit does not indicate that there is a loss of revenue or receipts. Rather it occurs when the realized net income remains lower than the projected net income for that financial year.
- It adversely affects the credit rating because it shows inability of a government to cover its present and future liabilities.
- If a government with a revenue deficit uses savings allocated to other sectors of the economy for its expenditures, it may adversely affect the economy as a whole in long term.

(ii) Fiscal Deficit: It is a deficit in the income as a whole which is calculated as the percentage of GDP. It is not watched as a 'negative event' generally.

Fiscal Deficit = Total Budget Expenditure (Capital & Revenue) – Total Budget Receipts Other than Borrowings (Capital & Revenue Other than borrowings)

Implications of Fiscal Deficit:

- The gap between income and spending has to be filled by debt.
- Debt circulates more money in market, which may cause inflation.
- Excess debt from foreign countries has its own complications.
- To repay this debt, interest has to be given which increases revenue expenditure and thus more burden accumulates on future economy.

(iii) Primary Deficit: It is expressed as the difference between the fiscal deficit (associated with the current year) and the interest payments (for the debts/borrowings of previous year).

Primary Deficit = (Fiscal Deficit of current year) – (Interest Payments regarding previous year)

It should be clear that the total borrowing requirement during the current year will also include the interest payments liabilities on previous year's borrowings/debts.

Implications of Primary Deficit:

- It shows the degree up to which the government was forced to borrow in the current year.
- It shows to which extent the debts/borrowings are going to cover the excess expenses other than the previous year interest payments.

- The difference between fiscal deficit and primary deficit tells the amount of interest payments made for the borrowings of previous year.
- More the interest payments on the borrowings of previous year, lesser will be the Primary deficit. So, a low or zero primary deficit clearly indicates that the government need to borrow to meet its expenses. It is a very big problem for India.

It is to be noted that if a government wants to decrease the fiscal deficit, the interest payments on previous year borrowings must be reduced as soon as possible by the repayment of principal debts.

(iv) Monetised Deficit: It shows the extent or degree to which the central bank i.e. RBI aids the government in its borrowings to cover its basic obligations and liabilities and expressed as the rise in the net RBI loan/credit/borrowings given to the government.

Implications of Monetised Deficit:

- The increase of money in the market may cause inflation.
- It reflects the need of government to finance its borrowings liability. RBI may have to print extra currency for this.

Steps to Counter Budgetary Deficits:

- Lower the expenditure by government
- Raise the income of government by disinvestment, taxation, etc.

Deficit Financing

1. Introduction

Deficit financing is a tool used to finance the extra expenditure that is in excess of its revenue**.**According to some economists the balanced budget is against the good public policy. But the deficit financing resulting from ineffectiveness of the government, tax evasion or unnecessary expenditure by the government can never be welcomed. Rather this may cause indebtedness of the government to foreign creditors. In the less-developed or developing countries, budget excesses may be required to boost economy.

The National Planning Commission of India has defined deficit financing as "the term used to denote the direct addition to gross national expenditure through budget deficits, whether the deficits are on revenue or on capital account".

2. Purposes of Deficit financing: There may be various purposes or essentialities of the deficit financing:

i) Financing during war time: To finance war-cost (e.g. during the Second World War), massive deficit financing becomes a necessity. However, Keynesian economists counter such practices, According to them, rather deficit financing should be used for developmental purposes.

ii) **Economic Development:** Developing and poor countries aim at achieving higher development and economic growth which requires finances. This becomes responsibility of the government. Deficit financing is an important tool in this regard.

iii) **Mobilisation of unused and excess resources:** In the poor countries people manage to save very little and most of public sector enterprises are almost in loss every time. So the tool of deficit financing is used to mobilise the surplus and unutilised resources. This plays an important role in our planned economic development and raising capital.

iv) **Helpful during unemployment and depression:** Increase in the investment due to deficit financing helps in raising the employment and hence in improving the economy.

3. 'How' of Deficit Financing

Whenever the assessed expenditure surpasses the estimated revenue, a budget deficit occurs which are generally covered by raising taxes or by increasing the prices. The Government may also use its accumulated cash balances or borrowings from the central bank or from foreign countries. To finance the occurred budget deficit, deficit financing is needed.

Deficit Financing in India

- By the use of cash reserves
- By borrowings/debts from the central bank for which extra currency is needed to be printed.
- In both of the above cases, 'new extra money' would be injected in the economy.
- Borrowings by selling bonds do not come under purview of deficit financing.

4. Effects of Deficit Financing

- It is a tool that generates market surplus in a short time period.
- It mobilizes surplus resources during the process of economic development.
- The long term consequences of deficit financing may be inflation and economic instability.

Deficit financing has some inter-related economic effects with Inflation, capital generation & Economic Development and Income Distribution.

5. Relation between Deficit Financing and Inflation

- Deficit financing during war situations may hike inflation by raising expenditure and thus the aggregate demand that may lead to hyperinflation.
- The surplus resources may be diverted towards military needs and thus it may lead to scarcity of resources.
- A developmental spending with the amount raised by deficit financing may be beneficiary which may counter inflation to some extent in short term.

Deficit financing may lead to demand-pull and cost-push inflations because extra money gets circulated in the market in a short term. Due to lack of resources and many other problems in the Least

Development Countries, the actual production falls always short of their full potential. In such cases, some inflation is unavoidable.

6. Relation between Deficit Financing and Capital Formation & Economic Development

There is a justifiable role of deficit financing in economic development, though it may cause inflation. In poor countries, inflation led by deficit financing acts as an important source of capital formation which is a basic necessity for economic development.

While in developed or rich countries, the tool of deficit financing is used to increase the effective demand.The poor countries do not suffer from lack in effective demand. It is the lack of effective supply that affects their development adversely by causing low productivity and hence low output. We can conclude that in the long run, the tool of deficit financing is anti-developmental and inflationary. But in short term it may be developmental. Thus it is a dilemma terming it as a 'necessary evil'.

7. Relation between Deficit Financing and Income Distribution

It is said that the deficit financing causes the situation of income inequality i.e. income distribution is not equal. Deficit financing creates excess purchasing power because of extra money circulation in the market, but due to inactive economy prices of goods rise. It should be balanced by a wise approach towards deficit financing and also by implementing active measures to counter the inflation sidewise.

8. Benefits or essentialities of Deficit Financing

- The deficit financing is considered the easiest, fastest and the most common tool for financing of any deficit.
- It is useful to mobilize surplus resources. Also there are no objections from the taxpayers or the lenders, so this tool is the most popular among others.
- Deficit financing is a cost-free method because it creates additional money by borrowing from the central bank and the interest payments come back to the government as revenue.
- By borrowing money, the government can mobilize unutilized resources effortlessly making this measure very handy.
- It inspires the government to use unemployed, underutilized and underemployed resources which increases incomes and employment.
- As inflation to lesser extent is necessary for the economic development and deficit financing is inflationary in nature so we can say that it will promote economic development which will ultimately counter the inflation.
- Investment increases during inflation for the want of more income and such investment makes an increase in the income which aids in economic development.

9. Disadvantages or shortcomings of Deficit Financing

- Deficit financing causes inflation which may hurdle the economic development if not approached wisely.

- Deficit financing causes unequal distribution of income.
- It alters the investment design because investors always want to invest in quick income-yielding businesses.
- Due to lack of raw materials and other resources in poor countries, deficit financing may not yield justified results in enhancing employment.
- There may be a scarcity of capital due to inflation because purchasing power of money decreases.
- Due to inflation, export declines and import rises. It shows a great inefficiency of a country regarding its balance of payments statement.

Conclusion

The real success of using the tool of deficit financing happens to occur when wise anti-inflationary steps are taken sidewise. Also the extent of deficit financing is to be kept within limit to counter its consequences. It may be considered good in short run. It is rightly said as "necessary evil".

Public Debt Operations and Its Management

1. Public Debt

When expenses exceed revenues, countries need to borrow from various sources. The government may borrow from the public either internally or externally to fund its activities when its revenue fails to meet the wants. As the debts have to be repaid with interest, it cannot be called as income. Rather, it is comprised of public expenditure.

2. Classification of Public Debt

The factors affecting the types of public debt may be the categories of markets, schedules for the repayment, interest rate and the purposes of borrowing. There may be following categories of the public debt:

i) Internal Public Debt and External Public Debt

The borrowings that float in the capital markets & owed to the public and other country's institutions or bodies within the country are called internal debt. On the other hand, the borrowings that float in foreign capital markets & owed to the foreigners or foreign governments or other international institutions are referred to as the external debt.

ii) Short Term Public Debt and Long Term Public Debt

Short term borrowings such as Treasury Bills (maturity period of usually 90 days) cover most part of government's borrowings. Also government borrows from RBI for short term to meet its extra expenses. But for long term borrowings (usually exceeding time period of five years), government needs larger borrowings from public that are required for various development purposes.

iii) Funded Public Debt and Unfunded/Floating Public Debt

Funded debt is actually a long term debt as its repayment is to be made after a long period of time (usually > 1 year) and the government has to maintain a separate fund head for its repayment that is why this type of borrowings is called funded debt.

On the other hand, floating or unfunded debt is a short term debt because it is to be repaid within a short time period (usually < 1 year). There is no separate fund is for its repayment. Its repayment is made out of public revenue, so the unfunded debt is also given the name 'floating debt'.

iv) Voluntary Public Debt and Compulsory Public Debt

The voluntary public debt are those loans or borrowings which are given by the people on their own will and ability. It is also considered that the general nature of the public debt is voluntary. On the other hand, during some national emergencies like war, disasters, etc., public may be compelled by the government to lend it. Such debts or borrowings are referred to as the compulsory or forced public debt.

v) Redeemable Public Debt and Irredeemable Public Debt

Redeemable public debt is that type of public debt for which the sure repayment at some upcoming future date will be made as promised by the government. After the particular maturity period of these borrowings, the government makes repayments to the lenders. That is why these are also referred as the terminable loans. While for the irredeemable borrowings, the government does not make any promise about the repayment, so these are not preferred generally, although the interest is paid on regular basis for such debts.

vi) Productive/reproductive public debt and unproductive/deadweight public debt

The objective of productive debt is to increase the productive power of a country's economy and thus national income is expected to increase These debts are raised for spending on agriculture, education, railways, growth of industries, irrigation works, transport, etc. Unproductive public debt is spent on such purposes which do not provide any income to the government, e.g. migrants' rehabilitation, relief work during famines, financing for war, etc. Unproductive debts are called deadweight debts as these do not increase the productive power of the economy.

3. Methods of Public Debt Redemption

The government has to redeem its public loans to rise the confidence of the lenders but the extreme step like denial of the debt repayment is discouraging which is also unsound economically for a country.

i) **Refunding:** It is to issue new bonds and securities which will raise new loans and pay off the old debts.

ii) **Conversion:** it is to reduce higher interest load on old loans by converting them into new loans with low interest.

iii) **Sinking Fund:** In sinking fund, some part of revenue is kept annually so that payment of debt can be done at maturity.

iv) **Capital Levy:** It is a special tax/levy on the capital imposed for payment of public debt.

v) **Terminal Annuity:** the public debt can be paid on the basis of terminal in equal instalments annually.

vi) **Budget Surplus:** The government may use the budgetary surplus to pay the public debt or to buy back its own bonds and securities which were issued in the past.

vii) **Compulsory decrease in interest rate:** The government by passing an ordinance can reduce the interest rate on the public debt in situations like financial crisis or large budgetary deficit.

Management of Balance of Payment (BoP)

1. Introduction

Balance of Payment is an organized record of all the financial transactions during a particular time period made between the people or residents of one country and the remaining world. It records all the flows/movements of money coming in and going out of a country. Thus it helps in keeping an eye on the monetary movements in the economy.

BoP must sum up to zero statistically when all the records are properly entered. But this doesn't happen mostly.BOP statement tells about the financial status of a country. It has all the financial transactions entered in debit and credit heads which indicates whether the funds are in surplus or in deficit.

- When exports > imports, it means the funds are in surplus.
- When imports > exports, it means the funds are in deficit.

2. Importance of BoP Statement

i) BoP tells about the financial/economic position of a country.

ii) It is an indicator for the extent of depreciation or appreciation of a currency

iii) Economic policies of a country are made by keeping BoP in mind.

iv) It tells about financial relation of a country with others.

v) It helps in giving direction to the measures to be taken to boost the economy.

3. Components of BoP

It is having three components as explained below:

i) Current account that includes goods and services.

ii) Capital account that includes assets.

iii) Financial account that includes investments and intangibles.

Current account = Capital account + Financial account

i) **Current Account:** It is used to observe and monitor the influx and outflux of goods and services between that country and other countries. This account cover all the transactions of receipts and payments made in this respect. All the goods and services when combined together make Balance of Trade (BoT) of a country.

Trading can be visible or invisible.

- Visible trading: Trading in goods i.e. visible items
- Invisible trading: Trading in services (banking, IT, etc.) i.e. invisible items.

ii) **Capital Account:** It records all the capital transactions including the flow of taxes, purchase and sale of land and properties, etc. It is important to note that the deficit or surplus in the current account of BoP is balanced by the capital account and vice-versa. Capital account is having 3 main components further:

- **Loans & Borrowings:** It includes all types of loans or borrowings received from the public as well as private sectors from the foreign countries.
- **Investments:** Investments made by the non-residents.
- **Foreign Exchange Reserves:** These funds are held by the central bank i.e. RBI to control the exchange rate.

iii) **Financial Account:** This account monitors the flow of funds/money from and to the other countries. It measures whether a country is selling or acquiring the assets with the help of changes in ownership of the assets like stocks, gold, equity, etc. There may be two type of changes with respect to this.

- Change in the foreign ownership of the domestic assets OR
- Change in the domestic ownership of the foreign assets

4. Management of Internal and External Balances

- Differences between the internal balance and the external balances:

Internal Balance	**External Balance**
An economy when maintains full employment and stable price levels as a function of a total output of a country, is said to be in internal balance. Internal balance = Consumption + Investment + Spending by Govt. + Current Account.	When the current account of a country is neither too far in surplus nor in deficit i.e. near to balance, the economy is said to be in external balance. External balance = surplus or deficit amount in current account.

- To maintain the internal and external balances, monetary as well as fiscal policy are required. Under the floating exchange rate system, a country can use both the tools for maintaining balance while the tool of monetary policy may not be used under fixed exchange rate system.

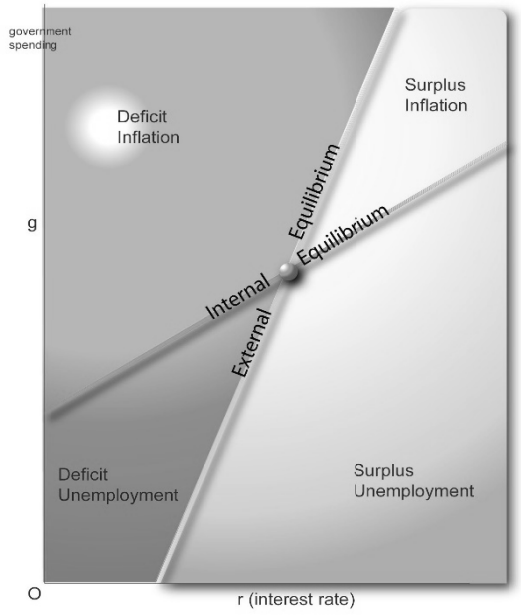


Figure 1

i) **Internal equilibrium or balance**: When within the economy i.e. internally, all the variables are likely to be recurrent/repetitive at the same level. An economy is said to be in stage of internal equilibrium when the volumes of consumption, imports, savings and investment remain the similar from one time period to other, provided with some constant value of propensities to consume, import, save and invest.The situations like inflation and unemployment indicates the internal imbalance of the economy.

ii) **External equilibrium or balance**: When the projected purchases of foreign goods & services, securities and transfer payments made to foreigners becomes equal to predicted purchases of goods & services, borrowings from the country concerned and transfer payments made to home residents, the economy is said to be in state of external equilibrium.

Gerald M. Meier defines the balance of payments equilibrium or an external equilibrium in the following words, "We shall consider the balance of payments to be in equilibrium if over the relevant time period a country can meet its international payments out of international receipts from current transactions and autonomous (ordinary or "acceptable") capital inflows, without being compelled to endure excessive unemployment or to restrict imports merely to avoid a deficit in the balance of payments. When a passive balance on current account is not covered by an autonomous capital inflow, there is a need for induced (accommodating or "distress") capital inflows, without being compelled to endure excessive unemployment or to restrict imports merely to avoid a deficit in the balance of payments. When a passive balance on current account is not covered by an autonomous capital inflow, there is a need for induced (accommodating or "distress") capital transaction or a gold outflow. The country then suffers from an external disequilibrium which requires remedial action".

In a closed economic system, national income, national expenditure and national output are essentially equal.

The National output (O) is expressed as:

$O = C + I + (X – M)$ ……. (a)

National Output = Consumption + Home Investment + Net Trade Balance

{C = consumption, I = home investment, X = value of all exports, M = value of imports of goods and services and (X-M) = net trade balance]

While in an open system, the value of national income (Y) may differ from the national output by the amount of net payments received from or made to abroad [i.e. (+R) or (-R)]

$Y = O \pm R$ ……. (b)

From equations (a) and (b), we get equation (c).

$Y = C + I + (X – M) \pm R$ ……. (c)

As we know that the total domestic expenditure is equal to aggregate of domestic consumption and investment,

$E = C + I$ ……. (d)

So we can get…

$Y = E + (X – M) \pm R$ ……. (e)

Or in other form we can get…

$(X-M) \pm R = (Y-E)$ …….(f)

It is clear from the above equations that the excess expenditure over income results in an external deficit and if the aggregate income is greater than expenditure, there is the state of external surplus. Hence the external imbalance may be a direct consequence of internal disequilibrium because of the gap between income and expenditure.

The relationship between internal and external imbalances mentioned above is also visible when the Harrod-Domar theory of equilibrium growth is applied to the balance of payments. Harrod's fundamental growth equation for an open model is written as:

$G \times C = s – b$ …….(g)

Where G is the ratio of increment in production to total production,

C is the ratio of increment of capital (investment) to an increment in production,

's' is the saving-income ratio and b is the ratio of balance of trade to income or output.

Thus equation (g), given above can be expressed as-

$$\frac{\delta Y}{Y}\cdot\frac{\delta K}{\delta Y} = \frac{S}{Y}-\frac{(X-M)}{Y}$$

$$\frac{\delta K}{Y} = \frac{S}{Y}-\frac{(X-M)}{Y}$$

$$\frac{I}{Y} = \frac{S}{Y}-\frac{(X-M)}{Y}$$

or $$I = S-(X-M)$$

$$I = S-X+M$$

$$I+X = S+M$$

The equality between (I+X) and (S+M) represents a state of equilibrium or balance. But this equilibrium condition of an economy is no guarantee of external equilibrium.

In the case of developing and poor countries, the problem of external disequilibrium upon an increase in income is more serious, since the tendencies to import, save and invest do not actually remain constant.The tendency to import is substantially high in these countries. The changes in distribution of income in favour of some people also cause the imports to rise rapidly since these groups have a great tendency to import goods for noticeable consumption.

According to **Meier**, "The poor country thus confronts a conflict between accelerating its internal development and maintaining external balance."

So the rate of maximum investment should be maintained such that it can be sustained without having the BoP problems. This can be attempted in terms of Harrod-Domar theory. If the rate of investment is greater than this balanced maximum investment, the rise in imports will be much higher than the exports and the developing economy may face balance of payments problems.

Reserves Foreign Exchange

1. Introduction

The term 'Foreign exchange' generally connotes two things viz. Foreign Currency and Exchange Rate. According to **Hartly Withers**, "*Foreign Exchange is the art and science of international monetary exchange*".

Foreign Exchange Market

For the foreign exchange to occur among countries, there is need for a foreign exchange market.

In terms of **Lipsey & Charystal,** *"The foreign exchange markets are the markets in which one currency can be traded for other."* In such markets, transactions occur with a worldwide coverage between sellers and buyers for making a profit.

For a long time due to their limited availability, Forex reserves in India were treated as a controlled commodity. Earlier the management of Forex reserves was mainly based on regulating the demand only. In India the exchange control was introduced first ever, that too temporarily under **the Defence of India**

Rules on September 3, 1939. Later the statutory power for exchange control was provided by the Foreign Exchange Regulation Act (FERA) of 1947.

It was then replaced by the Foreign Exchange Regulation Act, 1973. This Act empowered the RBI, and to some extent the Central Government, to control and regulate the foreign exchange payments with other countries, trade, acquisition of immovable property in and outside India, transfer of securities between residents and NRI, etc.

A lot of changes in the rules controlling foreign exchange were done after the Economic Liberalisation in India, 1991 and later the Act was amended as a new Foreign Exchange Regulation (Amendment) Act 1993. As a result of this following developments happened in the external sector of Indian economy:

- substantial increase in Forex reserves,
- growth in trade,
- liberalisation of Indian investments abroad,
- Rationalisation of tariffs,
- Current account convertibility,
- Increased access to external borrowings by Indian corporates
- Participation of foreign institutional investors (FII) in Indian stock market.

These all changes resulted in a changed economic environment. This made the Indian government to enact the Foreign Exchange Management Act (FEMA) which became effective from June 1, 2000 to replace FERA.

- **Foreign-exchange reserves (Forex Reserves in India)**

India has a large Forex reserves. These reserves are in terms of cash holdings, bonds, bank deposits and other monetary assets denominated in the currencies other than national currency i.e. the Indian rupee (INR). These reserves are managed entirely by the Reserve Bank of India.

India's foreign exchange reserves are mainly composed of US dollar and about six percent of forex reserves is in gold. As of December, 2019 India is at seventh position worldwide by foreign-exchange reserves.

2. Exchange Rate

In the foreign exchange market, a country's one unit of currency is exchanged with some number of units of currencies of other countries. This rate of currency exchange is referred as the exchange rate. In words of **Haines**, *"Exchange rate is the price of the currency stated in terms of another currency."*Established in 1945, the International Monetary Fund had its main objective to stabilise the exchange rate.The exchange Rate can be classified into two viz. Fixed rate of exchange and Flexible rate of exchange.

i) Fixed rate of Exchange

This rate of exchange is fixed by the government. The fixed rate is not affected by market activities or fluctuations. The government perform Pegging Operations to enforce this rate. The government need to fix its currency in terms of gold and dollar.

The advantages of Fixed rate of exchange include enhancement of international trade, end of speculation, internal stability, economic development, etc. While its disadvantages may include unreal nature, unnecessity for particular areas, international crisis, etc.

- **Determination of fixed rate of Exchange**

Fixed rate of exchange is determined by the government only. Before 1930, the Gold Standard was prevailing. After the establishment of IMF in 1945, all of its member countries had to declare the value of their respective currencies in terms of gold. Thus determination of fixed rate of exchange depends on the gold price of the currency as declared by the respective governments of the member countries.

ii) Flexible rate of Exchange

In this type of rate exchange, value of a currency changes according to the market conditions (i.e. demand and supply). This means that fixed rate of exchange is not pegged by government.

The advantages of Flexible rate of exchange include full employment, regulated export & import, justified balance of payments and increase in liquidity.

Some disadvantages of this system include uncertainty, speculation, inflation and its impractical nature.

- **Determination of Flexible Rate of Exchange**

It is determined by the market forces like demand and supply and not by the government. The demand and supply in the market lead to the equilibrium price automatically.

3. Equilibrium Rate of Exchange

At this rate the supply of foreign exchange equals to the demand for the foreign exchange

(Par Rate of Exchange: when demand for the foreign currency equals to its supply).

E.g. in the context of India, if there is rise in the rupee-per-dollar exchange rate, it means that Indian goods are cheaper to foreigners' goods (in terms of dollars). This will compel India to export more and there will be an increased supply of foreign exchange.

Conversely, a fall in rupee-per-dollar exchange rate causes decrease supply of foreign exchange.

- **Explanation**

In the figure 2, DD curve is representing demand for foreign exchange and SS curve is representing supply of the foreign exchange.

The demand and supply curves are brought together to determine the foreign exchange rate and the equilibrium exchange rate is determined at that point where both the curves intersect each other. At this point, the demand for foreign exchange becomes equal to the supply of foreign exchange. So in the following figure, Point E is the equilibrium point where DD and SS curves intersect each other. At this

point, the foreign exchange rate is OP and the foreign exchange demanded becomes equal to the foreign exchange supplied and both are determined by OM.

If the present exchange rate (OP_1) surpasses the equilibrium rate of exchange (OP), then there will be an excess supply of foreign currency (i.e. dollar) in the economy by the quantity 'ab'. To counter this, there will be steps to lower the exchange rate, so that excess supply of foreign exchange can be reduced and exchange rate can be brought back to equilibrium i.e. OP.

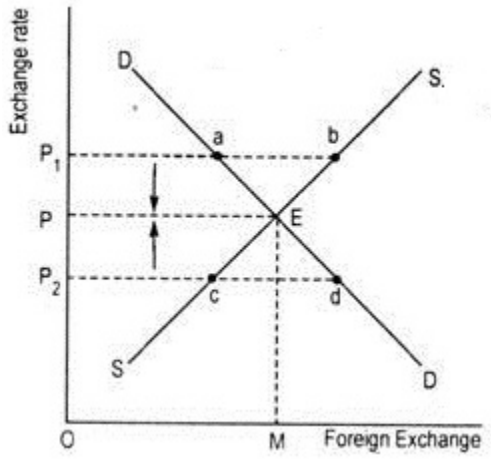


Figure 2

Likewise, if the exchange rate (OP_2) falls below OP, the economy experience a lack of foreign currency and the rate of foreign exchange will increase till the demand equals supply of foreign exchange.In floating exchange rate system, DD and SS curves move up and down in accordance with change in demand and supply forces.

E.g. a rise in the demand in the economy compels a country to import more goods and services. This will increase the demand for foreign currency and hence the exchange rate increases. So in this situation the demand curve shifts upwards and the exchange rate rises as from OP to OP_1.

Similarly, if a country's export increases, supply of foreign currency rises and hence the exchange rate decreases. It can be illustrated by a rightward shift of supply curve and the new exchange rate in this situation would be OP_2.It is important to note that the Managed exchange-rate is suggested for balancing. Here, the exchange rate is determined by the demand and supply of foreign exchange. But the RBI intervenes whenever necessary to stabilise the exchange rate and inflation.

4. Theories of Exchange Rate Determination

To calculate the par values of different currencies of different countries various theories have been given. The most important theories are following:

i) Mint Parity Theory

ii) The Purchasing Power Parity Theory

iii) The Balance of Payments Theory

i) The Mint Parity Theory

This was the earliest theory of foreign exchange. This theory was applicable to the economies/countries which had same metallic standard i.e. either gold or silver.

The value of currency unit is determined in terms of weight of gold of a specified purity. E.g. 22 carat, 24 carat, etc.

According to this theory, the exchange rate or mint rate is equivalent to the gold content of one currency relative to that of another. Here comes the mint price into play. Mint price is the price at which the standard currency unit of a country is convertible into the gold. The central bank of the country perform the function to buy and sell its gold reserves to maintain balance. The Mint Parity is actually the reciprocal of the gold content ratios between the two currencies.

Mint Parity of 'A' = Gold per unit of currency A / Gold per unit of currency B.

Let's understand it with an example. The economies of England and America were under gold standard before First World War.One British pound was equivalent to 113.0016 grains of gold. On the other hand, One American dollar contained 23.2200 grains of gold. The exchange rate is determined as follows:

1 Pound = 113.0016 ÷ 23.22 = 4.866 Dollars

Here the rate of exchange is determined on weight-to-weight basis of the metallic contents of currencies. It is called as mint par of exchange or the mint parity. As the export and import of gold involved many other costs like that of packing, transport, insurance, etc. the actual rate of exchange could vary.

The mint parity theory can be described by the following figure 3:

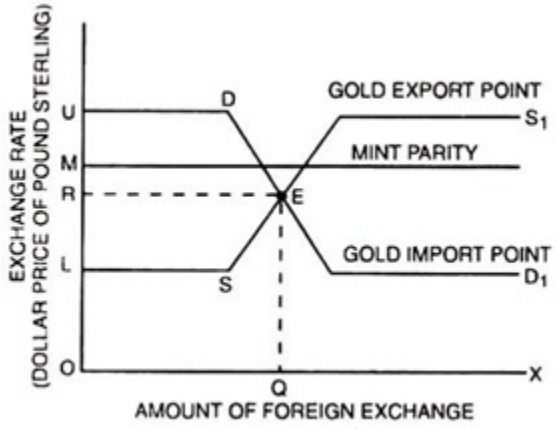


Figure 3

The amount of foreign exchange is determined on X-axis and the exchange rate is determined on the Y-axis. DD_1 curve represents the demand for foreign exchange and SS_1 curve represents the supply of foreign exchange. The equilibrium rate of exchange is determined by the intersection of demand and supply curves at point E. Here both demand and supply are equal and Amount of foreign exchange is represented by OQ and the equilibrium rate of exchange is represented by OR.

The horizontal line at M is representing the Mint parity which do not necessarily coincide with the rate of exchange.

The horizontal lines at U and L are representing the gold export point and gold import point respectively. The horizontal portion S_1 of the supply curve SS_1 corresponds with the upper specie point and the horizontal portion D_1 of the demand curve DD_1 corresponds with the lower specie point. Two important facts are concluded by this theory. First, the actual rate of exchange is not necessarily equal to the equilibrium rate of exchange. Second, fluctuations in the rate of exchange cannot take place beyond the specified limits

Criticism

(a) None of the countries in the world is on gold standard now.

(b) Free buying and selling of gold is not allowed by the different governments.

(c) Most countries prefer paper standard or fiat currency standard.

(d) The gold standard depends on flexible market situations but it is impossible to apply this theory throughout the world uniformly.

ii) The Purchasing Power Parity (PPP) Theory:

This theory put up by the Swedish economist Gustav Cassel, explains a systematic way to determine the rate of exchange between two nonconvertible paper currencies.

According to this theory, the equilibrium rate of exchange is determined by the equality of the purchasing power of two nonconvertible paper currencies based upon the internal price level of two countries.

This theory was explained in two versions:

(a) The Absolute Version and

(b) The Relative Version

(a) The Absolute Version:

When the price levels of two countries are in a state of parity, the rate of exchange is determined by the ratio of internal purchasing power of their currencies to buy a particular set of goods.

$$\text{Rate of exchange, } R = \frac{PB \times Q}{PA \times Q} = \frac{PB}{PA}$$

Where R is the price of a currency in country A w.r.to price of currency in country B, PA is price of goods in country A, PB is price of goods in country B and Q is that quantity of goods.

It may be illustrated with an example. Suppose 100 units of commodity Z can be bought through spending Rs. 900 in Country A and 15 dollars in the country B. It means that the purchasing power of 15 dollars is equivalent to Rs. 900. Hence 1 Dollar = 60 Rupees.

According to the formula above, R= 15/900 = 1/60

Criticism

This version is very simple but it has certain shortcomings. First, it was just an attempt to determine the money value in absolute terms, not in relative terms. Second, the differentiation among the types and qualities of commodities in two countries was not taken into consideration. Third, there are also several other factors which were not taken into account like demand pattern, technology, freight costs, tariff application and tax policies. Fourth, the determination of exchange rate according to this theory in two or more currencies in absolute terms does not seem possible.

(b) The Relative Version

This version of PPP theory attempts to describe the variations in the equilibrium rate of exchange between the currencies of two or more countries. It uses the relation between the changes in the equilibrium rate of exchange and the changes in the purchasing power parities of currencies of different countries for the determination of exchange rate.

$$R_1 = R_0 . \frac{P_{B1}/P_{B0}}{P_{A1}/P_{A0}}$$

Or R1=R0 x (PB1/PB0) x (PA0/PA1)

R1 is the equilibrium rate of exchange in the current period,

R0 is the equilibrium rate of exchange in the base period,

PA1 and PA0 are the price indices of current and base periods in country A,

PB1 and PB0 are the price indices of current and base periods in country B.

Let's illustrate this with the help of following example:

Suppose that the rate of exchange between rupee and dollar in the base period is $ 1 = Rs. 50.

The price index in the U.S.A. (country A) in the current period ($P_{A1)}$ is 150 and the price index in India (country B) in the current period (P_{B1}) is 180 and the price indices of two countries in the base period (PA0 & PB0) are 100.

As R0=50/1, so R1 = 50/1 x (180/100) x (100/150) = 60.

When compared with the base period, it is clearly visible that rupee has depreciated.

It is, of course, true that the purchasing power parity between the two currencies is determined by the quotient of their respective purchasing power. This parity is modified by the cost of transportation including freights, insurance and other charges. These costs lay down the limits within which the rate of exchange will fluctuate.

The upper limit of various costs incurred (transports, insurance, etc.) is called as the commodity export point whereas the lower limit is called as the commodity import point.

- **Explanation of PPP theory**

In the figure 4, the purchasing power parity curve is fluctuating in nature i.e. a moving parity above and below which are the fluctuating commodity export and commodity import points respectively. The rate of exchange is determined by the point at which the demand curve DD and supply curve SS intersect. At equilibrium point the rate of exchange is determined by OR and demand & supply which are equal are determined by OQ.

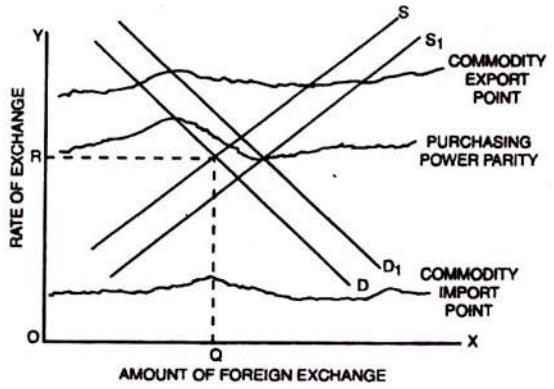


Figure 4

With the change in demand and supply of foreign exchange demand and supply curves shift accordingly.

Criticism

- There is no relation between the purchasing power and the rate of exchange as propounded in this theory.
- The prices of goods at national and international level fluctuate disproportionately which is critical to this theory.
- Problems in the Construction of Price Index Numbers:
- Relationship between Price Level and Exchange Rate does not always satisfy the assumption of this theory.
- This theory neglect the Capital Account system.
- This theory neglect the real effects of demand and supply forces**.**

iii) The Balance of Payments (BOP) Theory

According to this theory the exchange rate is determined by the factors like internal price level and money supply. It simply means that the rate of exchange is significantly affected by the balance of payments situation of the country.

In an economy, the deficit in the balance of payments statement leads to the increase in the demand for the foreign exchange at a particular exchange rate due to increase in the demand for foreign goods and services. The demand pressure of the foreign exchange causes appreciation of foreign currency and depreciation of home currency. A balance of payments surplus signifies an excess of the supply of

foreign currency over the demand for it. In such a situation, there is a depreciation of foreign currency but an appreciation of the currency of the home country.

The equilibrium rate of exchange is determined when there is the BOP equilibrium in a country's economy. The determination of equilibrium rate of exchange can be explained through the following figure:

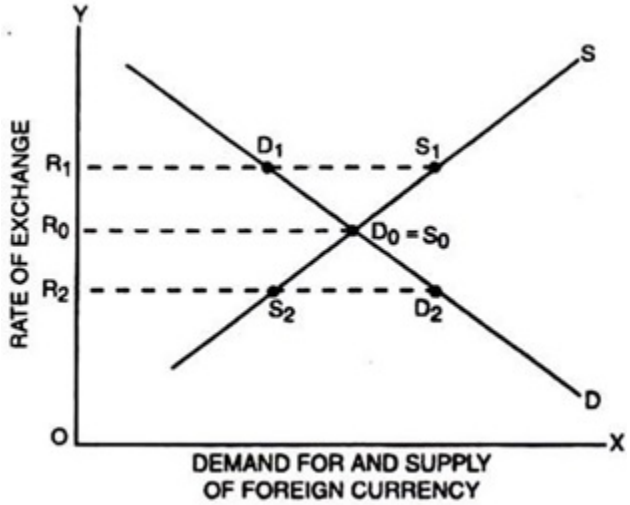


Figure 5

It is clear that the D curve is the negatively sloping presenting the demand role of the foreign currency and the S curve is the positively sloping presenting the supply role of foreign currency. The point of their intersection signifies the equilibrium rate of exchange to be OR_0 where the demand and supply of the foreign exchange remains equal which in turn signifies the BOP equilibrium in the economy of that country. A higher rate of exchange (OR1) causes the surplus in BOP because supply of foreign exchange (S1R1) exceeds the demand for foreign currency (D1R1).

Later this appreciation of the home currency decreases the exports and increases imports which in turn causes the reduction in the surplus BOP and the economy moves towards the equilibrium. This all happens in reverse manner also. The changes in demand or supply of foreign exchange and various other factors influenced the rate of exchange accordingly.

Criticism

- There are various restrictions imposed on trade by the different countries which is contrary to this theory
- According to this theory there is no link between rate of exchange and price level which is a false assumption.
- This theory neglects the basic value of currency.
- This theory is just a truism because there may be equilibrium in the economy even with the BOP deficit or surplus as the equilibrium exchange rate may not necessarily coincide with equilibrium point.
- It appears an indeterminate theory.

5. Composition of Forex reserves in India

Reserve Bank of India Act and the Foreign Exchange Management Act, 1999 provide the legal provisions for managing the Forex reserves. RBI gathers foreign currency reserves by purchasing from authorized sources in open market operations. Forex reserves of India act as a cushion against rupee volatility.

The Forex reserves of India consists of four categories

- **Foreign Currency Assets:** FCAs constitute the largest component of Indian Forex.
- **Gold**
- **Special Drawing Rights (SDRs):** The SDRs were created by the International Monetary Fund (IMF) in 1969 as an asset to supplement its member countries' reserves. It is actually an artificial currency used by the IMF.
- **Reserve Tranche Position**

Foreign-exchange reserves act as "the first line of defence" for an economy in case of any economic slowdown. Forex reserves mainly helps a country in external trade and payment.

6. Statistics of Forex Reserves in India

- In 1960, forex reserves could cover just 8.6 weeks of imports while these reached $100 billion mark in 2004.
- India was forced to sell U$35 billion Forex reserves in the spot markets in Financial Year 2009 due to 22% depreciation of rupee against dollar.
- In 2009, India purchased 200 tonnes of gold from the IMF worth US$6.7 billion.
- Forex reserves stand at around US$476.092 billion in February, 2020, the highest ever.

  Foreign exchange assets (FCA) =US$ 441.949 billion

  Gold reserves = US$ 29.123 billion

  SDRs =US$ 1.430 billion,

Reserve position, as per Reserve Bank of India's (RBI) = US$ 3.590 billion.

7. Foreign Exchange Rate Policy

India's foreign exchange rate policy has evolved with many changes since independence. The period after independence was characterised by a fixed exchange rate system in line with the Bretton Woods system. Due to British rule, the Indian Rupee was pegged to the Pound Sterling obviously. With the collapse of Bretton Woods System in the seventies, the Indian Rupee was unlinked from the Pound Sterling of Britain in September 1975.

Subsequently the exchange rate came to be determined with reference to exchange rate fluctuations in the currencies of India's major trading partners. Later the value of rupee was allowed to be determined by market forces in a phased manner but that lead to the difficulties in the balance of payment in the

nineties. All these imbalances created a need for some economic reforms. In 1991, a significant 2-step downward adjustment in the exchange rate of the Rupee was made. On March 1, 1992 for the dual exchange rate, Liberalised Exchange Rate Management System (LERMS) was introduced. Modified LERMS (single market-determined exchange rate system based on the demand and supply of foreign exchange) replaced the LERMS on March 1, 1993.

The Reserve Bank's exchange rate policy closely monitors the developments in the financial markets of Indian and its trading partners. Whenever necessary, it intervenes in the market by buying or selling foreign currencies to keep balances. The market operations are undertaken either directly or via public sector banks for ensuring balanced conditions in the foreign exchange market.

RBI has also allowed trading in Rupee-foreign currency swaps, forward rate agreements, currency futures, etc.

8. Foreign Exchange Flow

After the Liberalisation in 1991, there happened very dramatic changes. The Foreign exchange inflow was historically high. Foreign Direct Investment (FDI) played a major role.

Some of the foreign exchange flows were debt liabilities:

- Loans
- External Commercial Borrowings
- Trade Credit

Some of the foreign exchange flows were non-debt flows:

- FDI
- Portfolio investment

9. Major Benefits of the Foreign Exchange Flows

Some of the major benefits related to foreign exchange flows are as follows:

i) Foreign Exchange stimulates the economic growth of a country.

ii) Foreign Exchange helps in balancing between the income & consumption and the demand & supply.

iii) There happens a good portfolio diversification internationally.

10. Major Problems of the Foreign Exchange Flows

i) There are obvious chances of marked widening of current account deficit.

ii) There are a greater risk of financial crisis due to large international capital flows.

iii) In the past, heavy foreign exchange flows lead to inflation in some countries due to sharp real appreciation of currencies.

Business Cycles

1. Introduction

When there is high income, output and employment in an economy that period is called **as expansion or prosperity or upswing**. But when there is low income, output and employment in the economy, it is called as the state of **contraction or depression or recession or downswing**. With the past experience worldwide, it has been observed that the period of prosperity and the period of recession alternate each other. These alternating periods of expansion and contraction in a country's economy are called as **business cycles or trade cycles**. These cycles occur periodically one after another in a more or less regular manner. The use of the word 'cycles' means that these are recurring in nature.

J.M. Keynes writes, "*A trade cycle is composed of periods of good trade characterized by rising prices and low unemployment percentages with periods of bad trade characterized by falling prices and high unemployment percentages.*"

2. Types of Business Cycles

There are three types of business cycles according to Professor Schumpeter:

1. Major Cycles (Juglar Cycles): which last for 8-12 years.
2. Minor Cycles (Kitchen Cycles): which last for 2-5 years.
3. Very Long Cycles (Kondratieff Cycles): Duration of these cycles may vary from 50-60 years.

The period or duration for a business cycle varies a lot. It can be from 02 years to a maximum of 10-12 years. However, there has been no clear clue that these fluctuations occur in very regular fashion with same duration. Further, a very long cycle consists of many major and minor cycles.

During recession, unemployment increases which results in loss of output. Many businessmen suffer heavy losses and thus may go bankrupt. The level of living of people goes down. Recession also gives a blow to the investments which further causes loss to economy.

As we know that the inflation reallocates the income in favour of rich people. So we can say that even a boom with inflation reduces the income of mainly poor people. **Crowther** writes, "On the one hand, there is the misery and shame of unemployment with all the individual poverty and social disturbances that it may create. On the other hand, there is the loss of wealth represented by so much wasted and idle labour and capital."

3. Patterns of Cyclic Changes i.e. fluctuations:

Changes in the Business Cycles may occur in 2 patterns:

- First pattern is where fluctuations happen around a stable equilibrium as shown in the figure below.

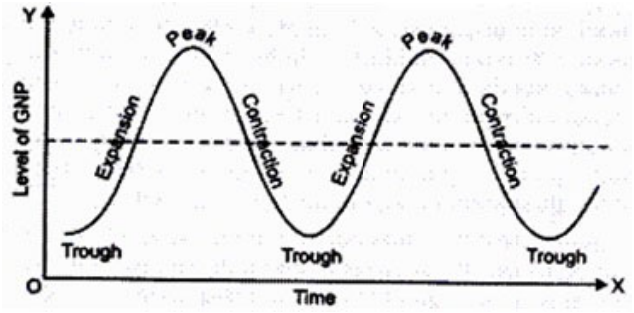
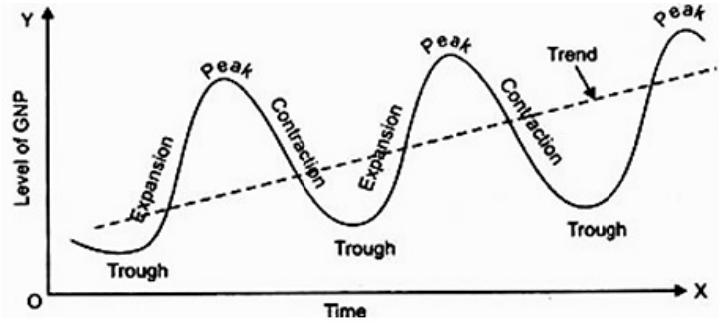


Figure 6

(Four Phase of Business Cycles without Growth Trend)

In the figure 6, the horizontal line shows dynamic stability where changes occur but without growth. At trough or depression, the level of production and employment is at minimum level. Or we can say that there is lowest economic activity. With the revival or upswing in the economy, it comes into the expansion phase and after reaching peak, contraction or downswing starts (as the expansion cannot go indefinitely). When the contraction gathers momentum, it results in the depression till the lowest turning point i.e. trough is reached. In this way cycle is complete and repeating of all phases goes on.

- Unlike the first pattern, the second pattern is where the cyclical changes in the economy take place around the growth trend.



Cycles with Trend (i.e. Growth)

Figure 7

i) Expansion and Prosperity

In this phase, both the output and the employment keep increasing till the stages of full employment and the maximum production reach. The remains of unemployment in the economy are only of frictional and structural types.

ii) Peak:

At the maximum expansion, the gap between potential GNP and actual GNP becomes zero. Here the production reaches at the maximum level. The demand is also very high. Generally the prices rise during the expansion phase but this is neutralised by the high economic activity.

Now here banks and other financial institutions may reduce borrowings or hike interest rates for more profit which make entrepreneurs pessimistic about future state of the market and investments fall. This results in the collapse of the expansion phase.

iii) Contraction and Depression

As we discussed above, the expansion phase is trailed by the contraction phase.

During contraction phase, there is a drop in real GNP and fall in employment level. The involuntary unemployment seems to be appeared on a big scale. The decrease in the investment further causes decrease in production and demand. Prices generally fall due to decrease in aggregate demand. Also people start keeping money with them due to very low interest rate. A very high contraction or recession in an economy is termed as Depression, e.g. the depression of 1929-33.

iv) Trough and Revival

The level of economic activity can fall only up to a level (the lowest level of economic activity is trough). If the banking system starts expanding credit and expected level of profit, there is an increase in investment activity and this stimulation brings about the revival of depressed economy. The economy enters into expansion phase from the depression phase. With the rise in investment, there is an increase in induced consumption. So the industries start producing more to supply the rising aggregate demand. The level of employment increases. With this the cycle is complete with the growth trend.

4. Features of Business Cycles

Business cycles have following common features though these differ in duration and intensity:

- Business cycles are recurring in nature periodically if not regularly.
- Business cycles are synchronic in nature which means that recession as well as prosperity cover whole the economy.
- Fluctuations occur in every sector of the economy viz. production, employment, investment, consumption, rate of interest, inflation rate.
- Mostly the investment and consumption of durable consumer goods are affected by fluctuations.
- Consumption of nondurable goods and services changes very little during these fluctuations.
- During depression, the inventories go beyond the desired level resulting in the decrease in the production of goods and vice-versa.
- It is the profit which fluctuates the most.
- Business cycles are global in nature i.e. spread from one country to other through trade relations. E.g. the Great Depression of 1929-33 of USA covered the entire world.

5. Theories explaining the Business Cycles

Many assumptions were given:

- Economists like Adam Smith and Miller linked the economic activities with the Say's law according to which market stability largely depends on market forces.
- Keynes and Hick suggested other theories to describe the fluctuations.

Some important theories describing the business cycles are as under:

i) Pure Monetary Theory

ii) Monetary Over-Investment Theory

iii) Schumpeter's Theory of Innovation

iv) Keynes Theory

v) Samuelson's Model of Multiplier Accelerator Interaction

vi) Hicks's Theory

Detailed description of these theories is as under:

i) Pure Monetary Theory

According to **Hawtrey** the business cycles are the continuous and cyclic phases of inflation and deflation and fluctuations occur when there are changes in the money-flow and borrowing mechanism in the market.

- With the increase in money supply, there will be increase in prices, income, and total output. This will enhance the growth of an economy.
- Banks help in increasing the money flow in the market by providing loans. With this economic growth increases because it leads to the enhancement of investment necessary for the revival of economy.
- Contrary to this, the economic growth is hampered when the banks and other financial institutions stop crediting.

Criticism:

- The factors like need of new investment, cost structure and profit expectations were not taken into account.
- This theory could not explain well the transitional phases of business cycles.
- Businessmen are more concerned about the future opportunities actually, not about the interest rates as mentioned in this theory.

ii) Monetary Over-Investment Theory

Proposed by Hayek, this theory emphases on the imbalance between real and expected investments in the market. According to this theory, in a balanced economy the real investment is much greater than the desired investment and the voluntary savings should be equal to the real investment. This will result in no expansion or contraction, thus balancing the economy. The fluctuations in the economy are the result

of fluctuations in the money supply and investment in the market by causing the imbalance between the investment and consumer demand.

Criticism:

a) Business cycles happen to occur under improper utilization of resources also and not always under balanced conditions as proposed by this theory.

b) Factors like cost of capital goods and entrepreneurs expectations can also affect the investment and not always the rate of interest as proposed by this theory.

c) Balance or imbalance between consumer goods and investment is not a very necessary thing.

iii) Schumpeter's Theory of Innovation

This theory proposes that the innovations and modernization related to business structure and ideas are responsible for the quick changes in investment which then cause fluctuations in the economy. Schumpeter wrote, "*Business cycles are almost exclusively the result of innovations in the industrial and commercial organization. Innovations are such changes of the combination of the factors of production as cannot be effected by infinitesimal steps or variations on the margin. Innovation consists primarily changes in methods of production and transportation, or changes in industrial organization, or in the production of a new article, or opening of a new market or of new sources of material*."

First approximation and Second approximation are considered as the two stages of a business cycle according to this theory.

First Approximation: It is associated with the starting effect of new, latest and innovatory ideas on business in an economy. It is the first stage of innovation in which the economy is in balance (i.e. Marginal Cost = Marginal Revenue, and Average Cost = Price). At this stage, there is nil involuntary unemployment.

In equilibrium, organizations lack surplus funds for investment. Banks here are the only source of funds for innovators to purchase inputs of production. Increase in prices of inputs causes the rise in prices of output. As a result of competition, the output and profit of firms start increasing.

But after a certain period of time, profit declines due to a drop in prices. At the same time, borrowers need to repay their liabilities to the banks thereby decreasing the money flow in the market which will further result in the recession/contraction.

(b) Second Approximation deals with the subsequent effects of the first approximation and the expectations of future economic conditions. On the basis of first approximation inspired by innovations, investors take large amounts of loans from the banks. But in the second approximation, investors observe the future economic conditions like demand. They may start purchasing goods with loan amount. If the prices of the goods fall, borrowers will fail to repay the loan causing depression in the economy.

iv) Keynes Theory

When the whole world was under the Great Depression in 1930s, Keynes developed his theory to explain business fluctuations contrary to classical economists.

Keynes described that it is the total demand (demand of consumer and capital goods) in the economy that determines the income, employment, and output. The classical economists, on the other hand, stressed upon the idea that demand and supply try to bring back the full employment if unemployment in the economy is high. Here the total investment and expenditure in a business is more than normal and this increases the employment and with this income rises.

Hence we can say that the changes (either decrease or increase) in the income and output are determined by the changes in the aggregate demand which is further affected by changes in investment. It is to be noted that investment largely depends on the interest charged and expected profit in the future.

According to Keynes, the marginal efficiency of capital is actually the expected rate of profit which can be expressed as:

"Expected rate of profit = Expected revenue generated - cost incurred".

When the expected rate of profit is more than the current rate of interest, investment rises. Marginal efficiency decreases if there is fall in prices, rise in costs, etc. According to this theory, during the expansion phase, investors generally start to overestimate the profit but the profit increases only till the full employment is not achieved. At full employment i.e. boom phase, investors are unable to expect the profit correctly and the profit starts declining resulting in the contraction of economy. A higher rate of interest encourages people to save the money and discourages the investment. It will cause a decrease in the demand, income & employment and thus the economy goes into depression.

There are three types of propensities according to this theory:

1. Propensity to save
2. Propensity to consume
3. Propensity of marginal efficiency of capital

   An increase in marginal efficiency of capital compels the investors to invest more which causes the production, income and consumption to rise and hence the profit increases. This presents the recovery phase of an economy.

Criticism:

a. This theory is unable to describe the recurrence of phases or fluctuations.
b. This theory is unable to describe the role of accelerator in explaining the fluctuations of business cycles.
c. The whole concept of business cycles could not be explained.

v) Samuelson's Model of Multiplier Accelerator Interaction

It was the first model that describe the relation between multiplier and accelerator concepts for their role in creating economic fluctuations. The theory also explains the role of this interaction in income generation and then for increase in consumption and demand.

The following two concepts were used in this theory:

1. **Autonomous investment** occurs due to external factors like market, new and different product and innovation in production technique. With the increase in investment the income level increases. With more income, there is an obvious rise in demand for consumer goods. Which further causes more investment in the economy to increase the production for meeting the rising demand.
2. **Derived investment** is the investment in capital goods which rises because of the rise in the demand of consumer goods (As the consumption affects the demand of investment).

Multiplier-Acceleration interaction explanation: If there is an increase in the income level that will cause an obvious increase in the demand of consumer goods. This describes the interaction and relation between the multiplier and accelerator. Autonomous investment give rises to multiplier effect which in turn is responsible for the derived investment. Derived investment give rises to the accelerator effect. This is called as acceleration of the investment.

Being simpler, his theory fails to explain business cycles completely.

a) This theory fails to consider factors like expectations of entrepreneurs and preferences of consumers.
b) Constant capital to output ratio is not true in all cases.

vi) Hicks's Theory

Hicks explained fluctuations in the economy on the basis of "the growth theory of Harrod-Domar". This theory explains that the business cycles occur parallel (concurrently) with the growth in the economy.

Following four concepts were used to explain business cycles in this theory:

i. Relation between saving and investment and multiplier concept (of Keynes).
ii. Acceleration concept (of Clark).
iii. Multiplier-acceleration interaction (of Samuelson).
iv. Growth model of Harrod-Domar.

In the below given figure,

Y-axis → represents the output.

X-axis → represents the time.

AA line → represents the autonomous investment.

LL line → represents the trough phase i.e. lower turning point of an economy

EE line → represents the equilibrium.

FF line → represents the full employment (i.e. upper turning point).

- It is also to be noted that employment level in the economy is also shown along with output on the Y-axis.

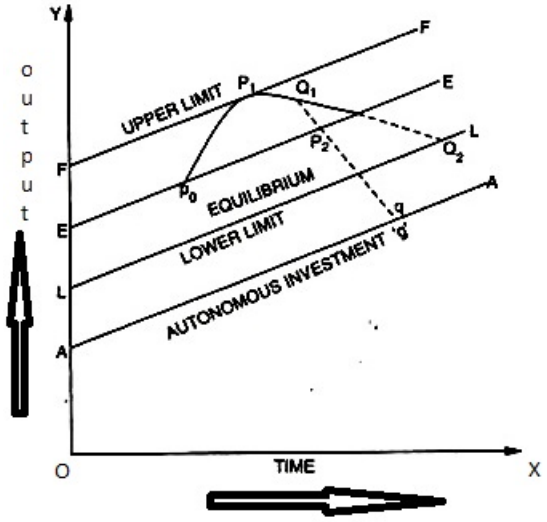


Figure 8

In a balanced economy when the increased autonomous investment (which is stimulated by some external factors as discussed above) causes the rise in output level through the multiplier effect, the economy rises above from the equilibrium path. This increased output give rises to the induced investment for further acceleration in the investment. This multiplier-accelerator interaction results in the economic growth.

- The economy enters in the expansion phase along the path P_0P_1.
- At P_1, the economy is having full employment condition and is expressed as boom. Here the induced investment becomes stable and movement of the economy is restricted to the FF line. But it cannot remain here for forever because the output produced at the FF line becomes insufficient for the available induced investment.
- A decrease in the output at P_1 sends back the economy towards the equilibrium line i.e. EE line but the economy would continue to fall further.
- The path of Q_1Q_2 has zero induced investment and also the autonomous investment is below normal.
- Q_1q represents a rare case of the indefinite decline of economy.
- After reaching at the trough, the economy moves LL line.
- At the AA line the output starts increasing again with the rise in autonomous investment. With this the economy enters into the recovery phase and thereafter accelerator-multiplier interaction provides growth to the economy and the economy again goes into equilibrium.

Limitations

a) This theory could not explain the linear consumption.

b) This theory also does not support the constancy and reliability of multiplier function.

c) This theory seems to be an abstract theory.

Questions

Short Answer Type questions

1. What do you mean by government budget?
2. Distinguish between revenue receipts and capital receipts.
3. State any two objectives of the government budget.
4. What is value added tax (VAT)?
5. What are the components of a government budget?
6. Distinguish between revenue expenditure and capital expenditure.
7. Define progressive tax.
8. What is proportional tax?
9. Give any two merits of deficit budget.
10. Explain the meaning of deficit financing.
11. Explain deficit budget and deficit financing.
12. Define public debt.
13. Distinguish between public debt and private debt.
14. What is meant by balance of trade?
15. What are differences between balance of payments and balance of trade?
16. Define devaluation.
17. What do mean by exchange rate?
18. What is equilibrium rate of foreign exchange?
19. Differentiate between fixed and flexible rate of exchange.
20. What is meant by business cycles?
21. What is the concept of ceiling and floor?
22. What is the position of employment during recession?
23. State the effect of depression on wages.

Long Answer Type questions

1. Bring out the difference between revenue budget and capital budget. Give the items of revenue as well as capital receipts and expenditure of the government.
2. What are the objectives of a budget?

3. Distinguish between balanced and unbalanced budget. Is balanced budget an achievement of the government?
4. Explain the concept of deficit financing. Discuss its role in the economic development of backward country like India.
5. Explain various types of budgetary deficit in detail.
6. Discuss the role and limitations of deficit financing for promoting economic development.
7. Write a detailed note on the meaning and objectives of deficit financing.
8. Explain the various kinds of public debt? How is the public debt paid off?
9. Discuss the increasing role of public debt in a developing economy like India.
10. Discuss the objectives of raising public debt.
11. Explain the public debt burden. Suggest various ways and means to tackle this problem in developing countries.
12. Define the concept of balance of payments. What are its components? Discuss in detail.
13. Explains the factors consisting of the balance of payments. What is the importance of BoP?
14. Define adverse balance of payments. What measures do you suggest to correct?
15. What do you mean by internal and external balance of payments? Discuss in detail.
16. Discuss in detail the purchasing power parity theory of rate of exchange.
17. What is rate of exchange? How is it determined? What are the factors that affect the rate of exchange?
18. Explain balance of payments theory of rate of exchange.
19. What is rate of exchange? Explain its determination with the help of demand and supply foreign exchange
20. What is meant by business cycles? Explain its various phases.
21. Explain the concept of ceiling and floor.
22. Explain the Hicksian model of business cycle. Bring out the difference between Hicks model and Samuelson's model of business cycle.
23. What are the business cycles? Explain the causes and measures to control it.
24. What is meant by trade business? Explain its different phases with suitable examples.

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