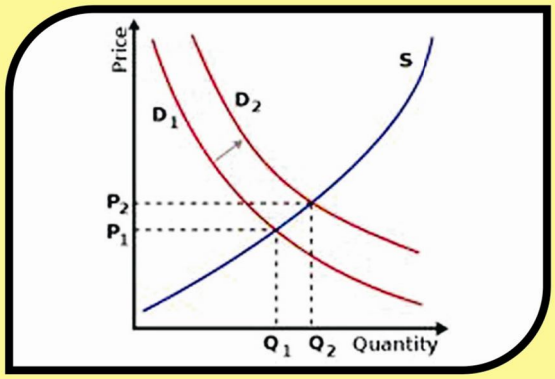
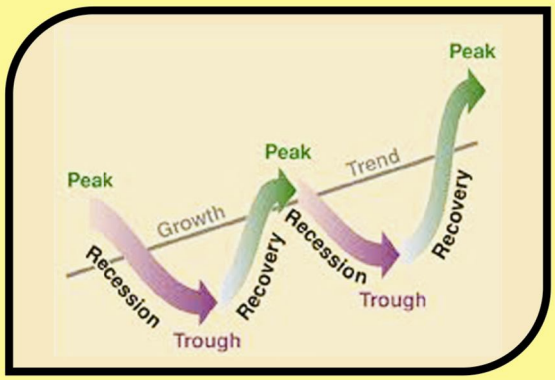
BBA-03

VARDHAMAN MAHAVEER OPEN UNIVERSITY, KOTA





BUSINESS ECONOMICS

BBA - 03

Vardhaman Mahaveer Open University, Kota

Business Economics

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Vardhaman Mahaveer Open University, Kota

CONTENTS

Business Economics

Unit - 1 : Business Economics: An Overview

Structure of Unit

1.0 Objectives

After completing this unit, you will be able to:

- Understand the meaning and definition of economics;
- Explain the concept of positive and normative approach of economics;
- Know different economic systems;
- Describe various perspective of micro and macroeconomics;
- Point out the difference and interdependence between micro and macroeconomics;
- Learn about the approach of business economics, scope and its importance;
- Determine the relationship between business economics and other subjects;
- Point out the difference between business economics and general economics.

1.1 Introduction

The term "Economics" is derived from two Greek words, oikou and nomos, meaning the rule or law of the household. It originally dealt with the way in which a prudent household might best make the most efficient use of the limited income.

As a discipline, Economics is about two hundred years old. It assumed its formal outlook when Adam Smith, the father of economics wrote out his famous book, 'The Nature and Causes of Wealth of Nations' in the year 1776. And with further development in the field of economics, Prof. Marshall authored his book 'Principle of Economics' in 1890. The economics is the study of how societies choose to use scarce productive resources that have alternative uses to satisfy wants (which are unlimited), and of

varying degrees of importance. The source of any economic problem is scarcity. Scarcity of resources forces economic agents to choose among alternatives. Therefore, we can say economic problem is a problem of choice and valuation of alternatives. To further clarify we can say that there are two fundamental facts that (1) The need of human beings are capable of infinite growth and (2) The means of satisfying these needs are relatively scarce-and it explains the existence of the basic issue of economics. Rational management of resources is related to different economic activities. These are activities of production, consumption, investment and exchange.

Production means conversion of inputs into outputs.

Consumption means using of goods and services for the satisfaction of wants.

Investment means using up goods (like tools and machinery) for further production.

Exchange refers to the sale and purchase of goods and services.

With this background in mind, we can say "Economics is a subject matter that studies different economic activities as directed towards the maximization of satisfaction or maximization of profit at the level of an individual and maximization of social welfare at the level of country as a whole".

In our life we come across several economic problems like changes in price of commodities as well as general price level changes; the inequality in economic prosperity and well-being; the problems of unemployment of certain class of persons or in some areas, are some of the matters connected with economic analysis. The study of economics will help in analyzing the possible causes contributory to these problems and might suggest a number of alternative courses, which could be adopted for tackling these problems. However, it is necessary to remember that most economic problems are of a complex nature which are affected by several forces other then economics so the study of economics cannot ensure that all the problems will be tackled by it but surely it would enable a student to examine a problem in its right perspective and would help in finding suitable measures to tackle those problems.

1.2 Definition of Economics

Several definition of the subject of economics has been given. For the sake of convenience let us classify the various definitions into four groups:

1. Wealth Centered Definitions
2. Material Well-being Centered Definitions
3. Scarcity Centered Definitions
4. Development Centered Definitions

1. Wealth Centered Definitions:

The ancient economists have defined economics as the science of wealth. Adam smith, J. B. Say, F. A. Walker and other contemporary economists have defined economics as follows:

According to Adam Smith, "Economics is a subject concerned with an enquiry into nature and causes of wealth of Nation."

According to J.B. Say, "Economics is the science which deals with wealth"

According to Walker, "Economics is the name of that part of knowledge which relates to wealth."

The economics as a 'Science of Wealth' has been severely criticized. In fact, when this definition came up, religion and ethics had a strong grip of society and wealth and rich were looked down with

contempt. Since economics was defined in terms of wealth, it did not find favours among people. In fact, it was condemned as 'Gospel of Mammon' and 'a dismal science'. It was contended that economists have ignored the finer values of life and are running after the formulation of laws, which enrich both the people and the country.

Truly speaking there is nothing wrong in defining economics as a science connected with wealth-earning and wealth-spending activities. Moreover, in the context of the national economy every country will like to become rich and prosper. However, welfare of the people cannot be increased without creating wealth. Its improper use is on account of the greed of man and no fault of wealth as such. However, the above criticisms of the earlier definition led later economists to modify the definition of economics.

2. Welfare Centered Definition:

Marshall, the famous economist said that wealth is only means and not the end. According to him, "Economics is a study of mankind in the ordinary business of life. It examines that part of individual and social action, which is most closely connected with the attainment and with the use of the material requisites of well-being. Thus, it is on the one side a study of wealth and on the other and more important side a part of the study of the man".

In this definition Professor Marshall has clearly pointed that economics is the study of wealth but more important is the study of man. Thus, man gets precedence over wealth.

These views were well supported by economists like Prof. Pigou, Prof. Beverridge and Clark etc. According to them the definitions of economics are as follows:

According to A. C. Pigou, "The range of our inquiry becomes restricted to that part of social welfare that can be brought directly or indirectly into relation with the measuring rod of money"

According to Prof. Beverridge "Economics is the study of general methods by which men co-operate to meet their needs"

Pigou emphasized social welfare but only that part of it which can be measured by the measuring rod of money. Non-material welfare, which cannot be precisely measured with the aid of money, is outside the scope of economics.

These definitions also criticized by Robbins on the following grounds:

(i) It is not correct to say that Economics is concerned only with material things and welfare related to it. In actual life, we enquire into the prices of not only material things but also into the prices of immaterial services

(ii) According to Robbins, it is very difficult to say objectively which things would lead to welfare and which would not. According to Robbins economics is not at all concerned with welfare. It studies the problems that have arisen because of scarcity of resources that help in the production of goods. Goods like liquor, cigarettes, etc. are although hardly conducive to human welfare are produced because they are scarce and have a price. Therefore, according to Robbins, we would study all those goods which carry a price and which have a demand in the market whether they promote welfare or not.

3. Scarcity Centered Definitions:

Welfare centered definitions of economics suffered from several deficiencies. Hence, Prof. Robbins propounded scarcity concept. His views were supported by Prof. Stigler.

According to Prof. Robbins, "Economics is the science which studies human behaviour as relationship between ends scarce means which have alternative uses."

According to Prof. Stiglar, "Economics is the study of the principles governing the allocation of scarce means among competiting ends when the objectives of allocation are to maximize the attainment of ends."

The definition of Robbins deals with the following four aspects:

(a) Economics is a Science: This is because it contains as systematized knowledge in regard to human endeavour to optimize certain objective functions under given constraints. There are economic laws establishing relationship between cause and effect which help in this process of optimization. On the basis of these laws forecasting is also possible.

(b) Unlimited Wants: The basic fact of economic life is that ends are unlimited, i.e. man's wants are infinite. If wants were limited or finite, the economic problem would have not arisen. But, since wants are unlimited, we have to make a choice among them.

(c) Scarce Means: Another important element which gives rise to economic problem is that means or resources, which are capable of satisfying the wants, are limited. If the resources were unlimited then the necessity of choosing between the satisfaction of one want and that of another would have disappeared, and with it would disappear the science of economics.

(d) Alternative Uses: Although resources are scarce they are capable of alternative uses. This applies very much to financial resources, which can be used for several possible alternatives. For example, coal can be used for running a steam engine or for producing chemicals. A suitable cost-benefit analysis will guide the choice of an alternative.

Scarcity centered definitions may be criticized as follows:

- Economics cannot be regarded only as the abstract science. It should be regarded as a science of welfare also. Economics cannot be separated from human welfare.
- The assumption of Prof. Robbins is that "Economics is neutral towards the objects and it has no relation with human welfare". But, this is a faulty assumption, because economics is necessarily related with human welfare and hence it cannot be neutral towards the objects.
- Robbins has kept macroeconomics outside the scope of economics. He basically concentrates on microeconomics, i.e., on the theory of product and factor pricing.
- Robbins' definition does not cover the theory of economic growth and development.

4. Development Centered Definition:

The definition of economics has been undergoing changes with the development and expansion of its subject area. The modern definition of economics laid emphasis on economic development. The development-centered definition of economics by Smauelson, Benham and Smith are as follows:

According to Prof. Henry Smith, "Economics is the study of how, in civilized society, one attains a share in what other people have produced, and of how the total production of society changes, it determined."

This definition of economics is more comprehensive as it includes (i) the problem of distribution of income (ii) the determination of national income and employment and (iii) the theory of economic growth.

According to Paul A. 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 distribute them for consumption now and in the future amongst various people and groups of society".

According to Prof. Benham, "Economics is the study of factors affecting employments and standards of living".

The concept embodied in the above definition emphasizes growth over time and, therefore, it had been characterized as a more dynamic explanation which is at the same time very comprehensive because it does not restrict to material well-being or that matter the money measure.

In fact, the subject matter of economics has become so wide that it is now difficult to put it in a nutshell. It is because of this reason that modern economists have stopped arguing above the proper way of defining economics. In this context, Jacob Viner has rightly remarked that 'economics is concerned with what economists do'.

1.3 Positive and Normative Economics

When we are studying a problem and its related issues which are subject to verification, like the extent of poverty and unemployment, we are referring to positive economics. The positive approach deals with the description and analysis of economics problems. We may describe the mode of working of the steel industry as a whole or of a particular steel firm in India since Independence and then explain why the trends so described took place. This latter part may be described as positive economic theory. In positive economics, we explain how an economic unit or an economic system operates under given conditions.

On the other hand, when we are offering suggestions to solve the problems (Which are not subject to verification, like for example the suggestion of reservation in jobs to solve the problem of poverty) we are referring to normative economics.

In normative economics, we are concerned with two questions, viz.

1 What should be done by the firm, what should be its aims and policies?
2. How to achieve the set objective, that is, how to take business decisions for achieving its aims and policies?

Whether economics is a positive science or not? Prof. J. B. Say, Prof. Robbins recognizes economics as positive science. According to them economics only studies the actual situations and it does not have any relation with, why this situation is or what it should be? As a positive science, economics establishes relationship between the causes and the effects.

Is economics a normative science? Prof. Marshall, Prof. Pigou, Hearte and Barbara Bootan, the economists are of the opinion that economics is also a normative science, along with its being positive science, reason being that as normative science, various such policies are adopted in economics, through which the goal of maximum social welfare may be achieved.

Positive economics deals with description, whereas normative economics deals with prescription- What a firm should do and how it should achieve its objectives. Economics may be treated as pure and positive economics. But as a tool of practical application it must have certain normative goals in view, and therefore, its character cannot be undermined.

We should look business economics as normative economics dealing with decision-making problems- how to take business decisions in order to attain the given set of objectives. It advises: What ought to be done and how it should be done.

1.4 Different Economic System

'Economy' is a widely used concept in economics. It refers to the nature and level of economic activities in an area, which may be a village, a city, a district, a state or a country as a whole. As told earlier economic activities include production, consumption, Investment and exchange.

On the basis of nature economic activities, economics are classified as:

1. Market Economy
2. Centrally Planned Economy
3. Mixed Economy.

1. Market Economy: Market Economies are those economies in which economic activities are left to the free play of the market forces. Producers are free to produce those goods and services, which are high in demand, so that they are able to maximize their profits. Likewise, consumers are free to buy goods and services in accordance with their choice and preference, so that they are able to maximize their satisfaction. There is no interference by the government regarding what and how much to produce and what or how much to consume.

For the success of free economy there should be free markets with free demand and supply forces. Under monopolistic situations, which often grow under the cover of free market forces, firms artificially determine the prices to the disadvantage of some people. Mostly, under the circumstances, the weaker section suffers.

2. Centrally Planned Economy: Under this economy, the material mean of production are owned by the whole community represented by the state, all member being entitled to benefit from the fruits of such socialized planned production on the basis of equal rights.

A central authority decides how much of wheat and how much of rice are to be produced. Only a central authority decides the overall basket of goods and services that the people can consume. From the economics point of view, a centrally planned economy is not a free economy while market economy is a free economy. In a market economy, self-interest is the prime consideration but in a centrally planned economy, social welfare or collective welfare is the prime consideration behind allocation of resources to the production of different goods and services.

3. Mixed Economy: In a mixed economy the endeavour is to involve a system, which tries to include the best features of both the controlled economy and the market economy while excluding the demerits of both.

The first important feature of a mixed economy is the co-existence of both private and public enterprise and combination of both (PPPs). Secondly, a mixed economy is a planned economy, i.e. an economy in which the government has a clear and definite economic plan. Public sector enterprises have to work according to a plan and to achieve the objectives laid down. The government has also to create necessary atmosphere for the private sector to develop on its own. Thirdly, in a mixed economy balanced regional development is expected. Public sector enterprises may be located in the backward regions so as to ensure its development. Further by way of subsidies and other incentives private sector may be lured to establish and develop industries in backward regions.

In these economies, economic activities are generally left to the free play of the market forces, but simultaneously the government exercises its control with a view to regulating the overall course of production, consumption and investment. The government intervenes to ensure social justice along with a higher level of growth.

1.5 Subject Matter of Economics: Microeconomics

The subject matter of economics is divided into two parts:

1. Microeconomics and
2. Macroeconomics.

Ragnar Firsch originated terms 'microeconomics' and 'macroeconomics' in 1933. The prefixes 'micro' and 'macro' have been derived from the Greek words Mikros and Makros. Microeconomics, meaning 'small' deals with analysis of individual units of the economy and Macroeconomics meaning 'large' deals with the analysis of the economy as a whole and its aggregates. We would consider them in detail.

Microeconomics:

When economic problems or economic issues are studied considering small economic units like an individual consumer, or an individual producer, we are referring to microeconomics

Microeconomics has been defined by several scholars as follows:

According to Henderson and Quant, "Micro economics is the study of economic actions of individuals and well defined groups of individuals"

According to Ghrdener Ackley, "Micro economics deals with division of the total output among industries, product and firms and the allocation of the resources among competitive use. It considers problems of income distribution. Its interest is in relating prices of particular goods and services".

According to Prof. Boulding, "Micro economics is the study of particular firm, particular household, individual price, wages, income, industry and particular commodity".

According to Watson, "Micro economics is the theory of the behaviour of small units, like the consumers, producers and markets".

According to Prof. Leftwitch, "Micro economics is concerned with the economic activities of economic units as consumers, resource owners and business firms".

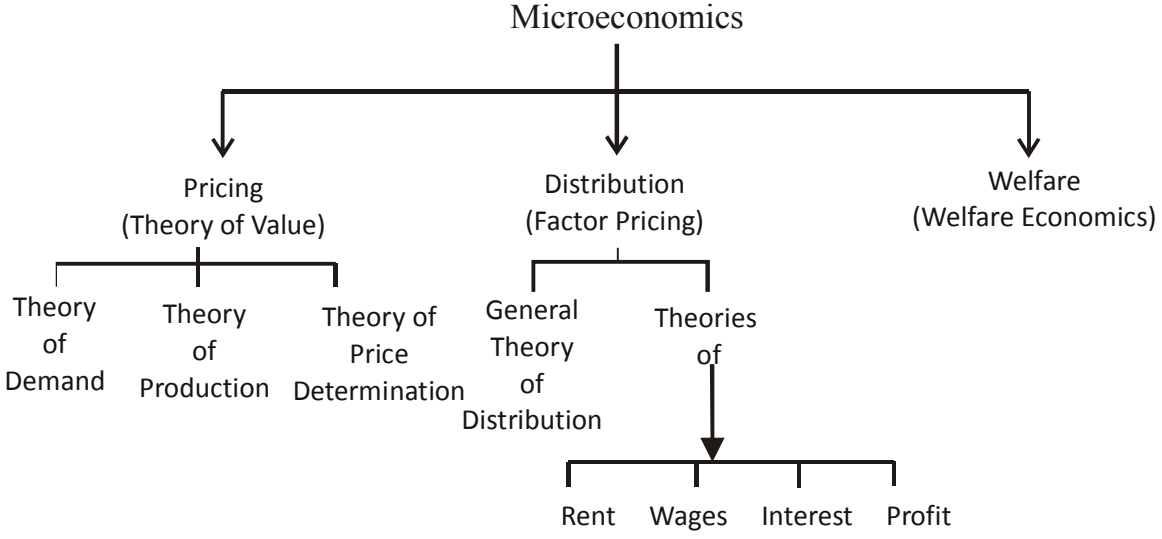


Figure 1.1 Sketch view of scope of microeconomics

Microeconomics, thus, is concerned with smaller parts of the economy; it is concerned with the behaviour and problems of individual consumers, firms or groups of firms. For example, microeconomic theory of prices deals with demand analysis and determination of prices of individual products and factors under market structures, such as perfect competition, monopoly, monopolistic competition, oligopoly, etc.

It is to be noted that in microeconomic analysis we concentrate on individuals and/or narrowly defined groups of individuals (like consumers and producers), here we do not focus on totality of behaviour of all units in the economy.

Broadly, these issues relate to allocation of resources to alternative uses so that human welfare (including both individual welfare as well as social welfare) is maximized. Following are the principle theories, which are vital components of microeconomics:

- Theory of demand and consumer behaviour,
- Theory of price determination, explaining how prices are determined of goods and services in different markets.
- Theory of factor pricing
- Theory of supply and producer behaviour,
- Production theories explaining how production responds to different combination of inputs.

1.6 Importance and Uses of Microeconomics

Micro-economics has great theoretical and practical significance. Prof. Learner has stated that, "it not only suggests the measures to remove inefficiencies, but also gives suggestions to achieve the conditions of efficiencies". Thus, study of micro-economics is of special importance. The importance and use of micro-economics are explained below:

1. Price Determination: Micro-economics plays an important role in price determination and volume of production, allocation of resources etc.

2. Helps in Aggregate Study of Economic Problems: The total economy is constituted of several small units. Hence, after study of small units, the study of the problem of the total economy becomes easier. Economics studies economics problems where as in micro-economics, small units are studied, which facilitates in understanding the economy and aggregate study of bigger problem.

3. It Explains Various Aspects of International Trade: Microeconomics theories explain many aspects of international trade such as the emergence, nature and gains of international trade, determination of exchange rate, impact of tariffs on prices etc.

4. Helps in Individual Decisions: Microeconomics studies the individual units. Hence, economic decisions in respect to individual units may be taken easily, with its help. A consumer may take decision in what quantity a commodity is to be purchased, at various prices. Similarly, a firm or an industry can take decisions decision regarding volume of production at various levels, taking production costs into consideration.

5. It Teaches the Art of Economizing: microeconomic principles deal with the economizing of scarce resources and show how to use them efficiently. Microeconomic law, like the law of substitution, shows how a consumer can maximize his satisfaction by equating the ratios of marginal utilities to the prices of different goods which he buys. Likewise, there is optimum utilization of the factors of production when their marginal products become unequal.

6. It Helps in Regional Policy Formulation: With the help of micro-economics the study of particular area or particular use is possible. With its help, suggestion may be given in the context of problems of any related industry, by the study of government policies. For example problem of textile industry may be studied, with reference to Government polices and necessary suggestion may be given.

7. It Provides a Base to Business Decision-making: For example the knowledge of price theory has its own significance in practical business decision-making and it is useful to a business in determining the

price policy. It guides in attainment of maximum productivity through optimum allocation of his given resources.

8. Helpful in Economic Policy Formulation: Microeconomics is useful in determination of economic policies. The justification of various economic policies of the government is decided, in the contest of their effects on individual units. In these policies, effects on prices, effects on price of any particular commodity, wages and personal, consumption may be tested.

1.7 Limitations of Microeconomics

Microeconomics is very important and useful for economics analysis. However, it suffers from following limitations also:

1. Unrealistic and Impractical Assumptions: Microeconomics is based on several unrealistic and impractical assumptions and hence the conclusions drawn are not correct and their desired use does not become possible. The entire microeconomics is based on the assumption of full employment even in a short-term analysis, which is unrealistic. Microeconomic theories assume laissez faire policy and pure capitalism in their behaviouristic models. Today there is no pure capitalism, so most of the microeconomic theories have no significant relevance to practice. Situation perceived by assumptions like perfect competition, full employment, full dynamism, etc. are not visible in real life.

2. Ignorance of Macro Economy: Microeconomics studies specific economic units separately from the rest of the whole economy. It explains only a part and not the whole of working of an economic system. Hence, complete knowledge of specific areas becomes possible but drawing of conclusions regarding the whole economy is not possible by it.

3. Unusable for Studies of Certain Economic Problems: Microeconomics is not useful for study of certain economic problems. For solution and study of modern problems, Government recognizes national level as the base, which is related to macroeconomics. Intervention of Government is consistently increasing in various economic activities. Employment policy, tariff policy, distribution of income and wealth, export-import policy, industrialization, economic planning and population are subjects of national importance. Their study is possible only in macroeconomics and not in microeconomics.

4. By assuming independence of wants and production in the system, microeconomics has **failed to consider their 'dependence effect' on economic welfare**.

5. Microeconomics misleads when one tries to generalize from the individual behaviour. It is improper to portray the character and behaviour of aggregate simply by generalizing from character and behaviour of the individual components

1.8 Subject Matter of Economics: Macroeconomics

As told earlier the term Macro in English has its origin in the Greek term 'macros' which means large. In the context of macroeconomics, 'large' means economy as a whole. Thus, macro-economics is defined as that branch of economics which studies economic activities (including economic issues or economic problems) at the level of an economy as a whole.

It is aggregative economics where in the over all conditions of the economy such as total production, total consumption, total saving and total investments are studied. It is the study of overall economic phenomena as a whole rather than its individual parts. It focuses on issues such as output level, employment level and price level in the context of economy as a whole. It considers macroeconomic variables such as

demand and aggregate supply. Aggregate demand refers to demand for all goods and services in the economy as a whole. Aggregate supply refers to output of all goods and services in the economy as a whole.

Following are the important definitions of macro-economics:

According to Prof. Chamberlin, "The macro model deals with aggregative relatives."

According to Gardna Ackley, "Macroeconomics concerns with such variables as the aggregate volume of the output of an economy with the extent to which its resources are employed, with the size of national income and with the general price level."

According to Prof. K. E. Boulding, "Macroeconomics deals not with individual quantities as such but with aggregates of their quantities, not with individual incomes, but with national income, not with individual prices, but with price level, not with individual output but with national output."

According to M.H. Spencer, "Macroeconomics is concerned with the economy as a whole or large segment of it. In macroeconomics, attention is focused on such problems as the level of unemployment, the rate of inflation, the nation's total output and other matters of economy-wide significance."

Macroeconomics largely deals with the following areas of study:

1. Theory of National Income: Macroeconomics studies the concept of national income, its different elements and the methods of measurement.

2. Theory of Employment: Macroeconomics studies problems relating to employment and unemployment. It studies different factors determining the level of employment, viz., aggregate supply, aggregate consumption, aggregate investment, aggregate saving, etc.

3. Theories of Money and Banking: Theories of money and banking like monetary system, credit system, central banking system, international finance and various principles of money and banking, etc. are also studied in macro-economics.

4. Theory of General Price Level: Determination of General Price level is also studied under macro-economics. Problems relating to inflation and deflation are an important component of macro-economics.

5. Theory of Economic Growth: Problems relating to economic growth are another important component of macroeconomics. Techniques of development and planning, strategies thereof and schemes for total growth of national income, production, employment etc. are studied in it. Monetary and fiscal policies of the government are also studied in it.

6. Theory of International Trade: Macroeconomics studies issues relating to international trade. Export, import, exchange rate and balance of payments are the principal issues in this context.

7. Theories of Public Finance: Public income, public expenditure and taxation are studied in theories of public finance. All these are studied in macroeconomics, from the view of maximum social welfare, principles of public finance and fiscal policy and its effects.

8. Theories of Trade Cycles: Ups and downs (depression and boom) in economic activities are known as trade cycles. In it, ups and downs of the economy causes and effects thereof, measures to control them and various principles of trade cycles are studied.

It is to be noted that micro and macro economics are not totally independent approaches. In fact, in most of the cases, macroeconomics aggregates have been derived from theories of individual behaviour.

For example, the theory of aggregate investment, which is a part of macroeconomic theory, is derived from the behaviour of individual entrepreneur with respect to his investment decision. Moreover, we cannot divide the two terms into watertight compartments. What is macro from the national angle is micro from the world angle. India's national income is a macro subject but the from World Bank point of view it is a micro subject.

1.9 Distinction between Micro and Macroeconomics

In essence, microeconomics deals with the part (individual) units while macroeconomics deals with the whole (all units taken together) of the economy. Since both approaches tend to provide an insight or understanding into the working of an economic system, both are interrelated. Hence, the differences between microeconomics and macroeconomics are bound to be more or less of a degree rather than of kind.

However, microeconomics and macroeconomics may be distinguished on the following bases:

Basis of Differences	Micro Economics	Macro Economics
Meaning	Microeconomics studies economic relationships or economic problems of a level of economic units like specific individual, specific firm, specification industry, etc.	Macroeconomics studies economic relationships or economic problems of the level of the economy as a whole like national income, national savings, total investments, employments etc.
Subject matter	Price determination of goods and services, their allocation for various functions and determination of the remuneration of the resources are its subject matter.	Whereas, its subject matter includes level of national income, its effective factors and results, income, employment, savings, investments, etc.
Basic Concern	Microeconomics is basically concerned with determination of output and price for an individual firm or industry.	Macroeconomics is basically concerned with determination of aggregate output and general price level in the economy as a whole.
Scope	Its scope is limited to the laws based on marginal analysis.	Whereas, its scope is wide up to the analysis related to the problems of the whole economy.
Assumptions	Study of microeconomics assumes that macro variables remain constant; e.g. it is assumed that aggregate output is given while we are studying determination of output and price of an individual firm or industry.	Study of macroeconomics assumes that micro variables remain constant, e.g. it is assumed that distribution of income remains constant when we are studying the level of output in the economy.
Helpful	Microeconomics is helpful for individual units, firms and industries to achieve the optimum level.	Macroeconomics is helpful for optimum situation of the whole economy and bringing economic stability.

Basis of Differences	Micro Economics	Macro Economics
Central Issue	Allocation of resources is the central issue in microeconomics.	Level of output (and employment) is the central issue in macroeconomics.
Simple / complicated	Microeconomics is simple, as compared to macroeconomics.	Whereas, macroeconomics is more complicated as compared to microeconomics.
Use	Microeconomics is used for determination of various policies of a firm or industry and talking decisions about them.	Whereas, macroeconomics is used for solution of national problems, taking of economic decisions at the level, determination of economic policies and policy decisions at international level.
Importance	The importance of this economics is getting reduced, due to increasing complex problems of the present age.	Whereas, macroeconomics is more useful in solution of these problems. Hence, importance of macroeconomics is going on increasing as compared to microeconomics.

1.10 Interdependence between Micro and Macroeconomics

Microeconomics and macroeconomics are not independent but interdependent areas of study. Check the following observation:

(i) Microeconomics depends upon Macroeconomics: Micro variables depend on the level and behaviour of macroeconomic variables. It may be explained by following points:

- Wage rate in a particular industry will be influenced by overall wage rate in the economy as a whole.
- Investment in one industry will depend upon the level of income and investment in economy as a whole.
- The price of the commodity of a firm does not depend only upon the demand and supply of the commodity of that firm. It also depends upon the prices of various other commodities in the economy.
- The volume of sale of goods of a firm will not depend only upon the demand of the commodity produced by this firm, but also upon the total purchasing power in the society.
- Determination of rate of profits is a microeconomics topic, but without the knowledge of the macroeconomic aggregates, we cannot understand it clearly. Profits, which are regarded as the reward for non-insurable risk bearing, generally depend upon the level of aggregate demand, national income and the general price level in the economy.
- While determining the volume of its production, the firm has to take the total demand, purchasing power, employment, income level and other such factors, of the whole society into consideration.

(ii) Macroeconomics depends upon Microeconomics: Macroeconomics also depends upon microeconomics and appropriate economic analysis may be done by combined study of both. It may be explained by following:

- Aggregate demand in the economy is simply the sum total of demand at the micro level, or it is the sum total of demand for all goods and services in the economy.

$$AD = \Sigma d_i$$

(AD = Aggregate demand; d = Demand; i = Different goods and services)

- National income is the sum total of income at the micro level, or it is the sum total of income of all the residents of a country.

$$NY = \Sigma y_n$$

(NY= national income; Y = income; n = residents of a country)

- The determination of general price level is a subject-matter of macroeconomics basically depends on the theory of relative prices of products and factors which is a part and parcel of microeconomics.
- If demand of any commodity is increasing in the country, it is not necessary that all firms will rapidly increase their production. For example, if some firms are making production under law of increasing costs, then increasing of the production will result into increase in costs also. Hence, they may not be much interested in increasing the production. Knowledge of such behaviour is possible only by microeconomics.
- For success of economic planning, it is essential that functioning of firms, industries, groups and areas may also be suitably planned, meaning thereby that the aggregate planning is required to be divided in parts which is possible by use of microeconomics.
- The correct knowledge of the general tendency of the economy may be gained, only on having knowledge about the facts and principles having effects on individuals, households and the firms.

Thus, we see that microeconomics and macroeconomics greatly depend upon each other. Microeconomics provides building blocks for the aggregate theories. Macroeconomics provides us with overall framework and economic environment within which the economic behaviour of individuals is studied.

Prof. Eklay has said that "Actually, no clear line may be drawn between micro and macro principles, but for getting useful results, we should have distance of micro economic problems from macro economic tools". We may understand the working system of economics by study of individual and group behaviours and may formulate better economic policies also.

1.11 Business Economics: Meaning and Introduction

Economics has two aspects- Theoretical & Practical. General economics deals with theoretical part whereas business economics deals with practical aspect of economics. When the economics is used in business and managerial decisions then economics becomes the business economies.

The businessman uses this economics in formulation of policies and for taking the decisions. Hence, business economies study that part of economic activities, which is related to the activities of the firm. A study of business economics helps managers in decision-making and strategic planning.

Business economics helps in analyzing alternatives and selecting the best one, which would achieve the optimal result. It assimilates concepts and methods from all disciplines viz., micro economic theory, macro-economic theory, the theory of decision-making, operations research and statistics, and thus trains a businessman to integrate all these concepts and methods to enable him to solve business problems.

Meaning and Definition:

In order to understand the meaning of business economics we have to go through some of the definitions given by economists. These definitions are given below:

According to Spencer and Siegelman, "Business economics may be defined as the integration of economic theory with business practice for the purpose of facilitating decision-making and forward planning by management".

According to Bates and Parkinson, "Business economics is a study of the behaviour of the firm in theory and practice".

According to Joel Dean, "Business economics is that subject which shows how economic analysis is used in managerial decision"

According to W.W. Haynes, "Business economics is the economics applied in decision making. It is a special branch of economics bridging the gap between abstract theory and actual practice. It's stress is on the use of the tools of economic analysis in clarifying problems, in organizing and evaluating information and in comparing alternative courses of action".

According to McNair and Meriam, "Business economics consists of use of those economic models of thought to analyze the changing business situation".

According to Norman F. Dufty, "Business economics is a body of theory which can be of considerable assistance to the businessman in his decision-making".

According to Peterson and Lewis, "Business economics is an application of that part of micro economics which focuses on those topics which are of greatest interest and importance to business enterprise. These topics include demand, production, cost, pricing, market structure and government regulation".

The following conclusions can be drawn from the above definition given by different economists:

- Business economics is closely related with economics.
- It bridges the gap between the economic theory and applied economics.
- Business economics integrates economic theory and business practice.
- Business economics facilitates decision-making and effective management.
- Business economics is applied in changing environment and situations.

To conclude, business economics is the special branch of economics itself, in which the general economics concepts are applied by business managers for solving the practical and real problems apply the general economic principles, so that they may formulate the plans by deciding future policies.

1.12 Characteristics of Business Economics

On the basis of above definitions following characteristics or nature of business economics may be observed:

1. Business Economics is Microeconomic in Nature. As the unit of study in business economics is a business firm so the various problems of business firm, are studied in it, so we can say that business economics is microeconomic in nature.

2. Applied Concept: Business economics is not descriptive economics, this is an applied concept. It bridges the gap between economic principles and practical aspects, various types of rules are propounded in it and various variables are determined, and decision is taken regarding relationship observed between various variables.

3. Business economics largely used that body of economic concepts and principles which is known as **theory of the firm**. In addition it also seeks to apply profit theory, which forms part of distribution theory in economics.

4. Macroeconomics is also useful to Business Economics: As business economics provides an understanding of the environment of economy. Business economist has to scientifically analyze various macro elements (like trade cycles, national income, accounting, foreign trade policy, price policy, labour policy, monetary policy, fiscal policy, etc.) and adjust the decisions of the firm with these elements.

5. Normative Science: As discussed in 1.3, economics is a positive as well as normative science. In business economics majorly normative aspect of theories are studied. What ought to be is the basis of

various business decisions. The law of demand studies the inverse relationship between the price of a commodity and its quantity demanded. Business economics studies the good or bad effects of the operation of the law of demand for a business firm.

6. Helpful in Future Planning: Business economics help business managers in decision-making & future planning with regard to demand, sales, cost and profit. Like various techniques of demand forecasting and scale of operations and resources to be employed are used for future perspective demand. It represents the quantitative picture before a business manager so that he can select best alternative among the various alternatives available.

7. Coordinating in Nature: Business economics establishes co-ordination between economic principles and their practical aspects and it also widens the way of success of the business, as it is dependent on theoretical as well as practical aspects. Hence, business economics is of coordinating in nature.

8. Science as well Art: Business economics is a science as well as an art. Cause effect relation and systematic knowledge of the subject make it a science while the practical use of various theories; principles and laws make it an art.

9. Business Economics is Multidisciplinary: Business economics is related to various subjects like statistics, psychology, sociology, mathematics, functional research, management, accounting and advance planning etc. In this regard, Prof. D.C. Hague has said that business economics is related to application of logic of mathematics and statistics, so that it may provide the effective way for thoughts relating to problems of business decisions.

10. Helpful in Managerial Decisions: Business economics helps corporate managers in various types of decision-making. Managers have to take decision regarding the combination and employment of various factors of production and the scale of production in order to maximize the output at the minimum cost. Thus, business economics helps the corporate managers in making correct and suitable decisions in order to attain the basic objectives of such corporate bodies.

11. More Amended and Refined Subject: It is more amended and refined in comparison to general economics, because (i) it is based on more scientific and practical assumptions, (ii) its principles help the managers in taking appropriate decisions during business uncertainties, (iii) modern mathematical and scientific tools are used in it for purpose of analysis, and (iv) business economics is concerned with what decisions ought to be made and hence involves value judgment.

1.13 Scope of Business Economics

We have studied that business economics is more amended and refined as compared to general economics. The scope of business economics is very wide because it consists of all economic theories, principles, concepts techniques and models, which are used by business managers of business firms for future planning and decision-making. In respect to the scope of business economics no uniform pattern has been followed. However, the following aspects may be said to generally fall under business economics:

- ✓ Demand Analysis and Forecasting.
- ✓ Theory of Firm.
- ✓ Study of Consumer's Behaviour.
- ✓ Cost and Production Analysis.
- ✓ Price Decision, Policies and Practices.
- ✓ Study of Competitions.
- ✓ Theory of Distribution.

- ✓ Profit Management.
- ✓ Business Forecasting.
- ✓ Sales Promotion and Market Strategy.
- ✓ Principles Related to Macroeconomics Like Economic Policies And Economic Environment.

Thus, we can say that in business economics we study all the problems of a business firm, which arises on account of uncertainties. Business economics helps business managers how to face these uncertainties and adjust accordingly.

1.14 Importance of Business Economics

In present time, the business manager faces several complications and difficulties in business. For that, the managers requires not only the knowledge of theories and principles of management but it is also essential to have the knowledge of business economics, because business economics is the practical use of all theories, principles, laws and concepts of economics. The significance or importance of business economics can be studied under the following heads:

1. Helpful in Reducing Uncertainties and Risks: Generally business managers work under the environment of uncertainties and risks. Future demand, price, cost, capital and profit are the variables about which future forecasting are made through business economics and on the basis of such conclusions business managers minimize their risk and uncertainties.

2. Helpful in Planning and Decision-Making: Business economics helps the business managers in making future plans and decision making in respect of increasing the production, reducing the cost, reducing or increasing the price of the commodities, raising funds from internal and external sources, etc.

3. Helpful in Organization: A business manager knows on the basis of the study of business economics what, how, how much, for whom, when and which type of objective is to be achieved. On the basis of such knowledge he prepares and frames an efficient business organization structure to attain the various objectives.

4. Helpful in Formulating Business Policies: The foremost objective of every business firm is to maximize the value. For doing that, various alternative policies are formulated in respect of planning and controlling, communication, wage determination and suitable returns to the investors, for the purpose of business management. For all these, business economics is of specific importance.

6. Helpful in Cost Control: Business economics helps business managers to control over the organizational processes like cost control, price control, quality control and inventory control etc. As we know there is difference between various concepts of cost in accountancy and economics. Business economics uses all these concepts for managerial decisions and future planning by reducing the difference in accountancy and economics.

7. Helpful in Establishing Proper Co-ordination: Business economics provides proper coordination for planning forecasting, decision-making, organizing, communication, control, formulation of business policies and their execution. As a result the organization goes on functioning smoothly, with minimum costs.

8. Helpful in Understanding External Forces: Business economist makes several important decisions regarding co-ordination between various situations of the firm and external conditions, which helps in smooth and systematic operation of the activities of the firm. External conditions mainly include national income, trade cycles, foreign trade, taxation, labour laws, insurance, banking, transportation and communication and those national and international policies, which affect the business in any way.

9. Helpful in Communication: Communication includes observing and sending of information and messages and taking etc. Proper communication is essential for the success of a business organization. Business economics helps in establishing and execution of efficient communication system.

By summarizing we can say that Business Economics: -

- Decrease the uncertainty & risk
- Helps in formulating business policies.
- Helps in demand and sales forecasting.
- Helps in planning and analyzing business activities.
- Helps in consumer's equilibrium.
- Helps in organization by division of work.
- Helps in producer equilibrium.
- Helps in factors pricing
- Helps in profit maximization.
- Helps in operation of firms helping in planning, organization, control & evaluation.

1.15 Business Economics and Other Subjects

An important method of pitting light upon the nature and scope of business economics is to assess its relationship with subject.

Its relationship with other disciples is studied under the following heads:

(1) Business Economics and Microeconomics: In modern economy microeconomics is main source of concepts and analytical tool for business economics. For example various microeconomic concepts such as elasticity of demand, marginal cost, the short and long runs various market forms, etc. are all of great useful to business economics.

The important contribution of microeconomics is in the area of forecasting. A modern business economist has found following microeconomic concepts useful:

- Demand theory
- Model of price discrimination and elasticity of demand
- Marginal costs
- Short and long run market structures
- Resources allocation
- Production function
- Liquidity preference.

(2) Business Economics and Macroeconomics: In long run period, various concepts of macroeconomics are often made use of in business economics. For example, forecasting of future demand is based on forces influencing overall economy like gross national product, theory of income and employment and saving pattern of the general population are some of the macro parameters which are taken into account in deciding and expanding or contracting production and distribution facilities for developing and marketing new product.

(3) Business Economics and Statistics: Statistics is useful for the study of business economics. There is hand in hand relationship between these two. Business economics uses various statistical tools and techniques for empirical testing of various economic generalizations. Functional relationship and systematic quantitative data are presented with the help of statistical techniques and tools. For example theory of probability, regression and correlation theories, index numbers and trend projection method are used in business decision-making.

(4) Business Economics and Mathematics: More accurate fact of the events of business economics is possible only with the help of mathematical tools so mathematics has close relationship with business economics. By nature, business economics is measurable. Hence, measurement and forecasting of various relationships is done in it. It is helpful in managerial decision and future planning. There are several tools of mathematics, like geometry, algebra, calculus and logarithms, etc. which are used for economic analysis.

(5) Business Economics and Accountancy: Accountancy relates to financial activities and accounts of the business firm. These accounts are in respect of past activities. While taking decisions the managers require several of information so the subject of accountancy has also close relation with business economics. The various data of accountancy are also used for management decisions and future planning. For example, by analyzing information about profitability aspect from the financial statements, it may be decided, whether activities may be enhanced further or not, to the desired extent. If it may be enhanced, what type of improvements is required?

(6) Business Economics and Management: Management works in a given environment for attaining the pre-determined objectives of business firm. Business economics helps business to maximize its value. Financial management, principles of general management, personal management, office management, marketing management and production management are some of the areas of management which helps business firms to take the decisions to attain the objectives.

Thus, various disciples are closely related with the business economics and they are useful in decision-making and future planning to attain given objectives of a business entity.

1.16 Difference between Business Economics and General Economics

Business economics is a branch of general economics. Still on the theoretical & practical basis both can be differentiated as under.

Basis of Difference	Economics	Business Economics
Nature of the Subject	The economics is both of micro and macro nature. Hence, it broadly, studies the economics activities of the firm, industry and the whole economy.	Whereas, business economics is of micro nature. Hence, it studies the economic activities of the particular firm.
Meaning	Economics means such a subject in which decision is taken regarding utilization of time, power and wealth and how wealth is to be spent.	In business economics that part economics is incorporated, which is known as principle of the firm and which may be helpful in taking of business decisions.
Base of Analysis	In economics, economic principles have been normally propounded on the basis of several assumption and exceptions.	Whereas in business economics assumption are analyzed after testing, these assumptions by giving practical shape to them.
Area of Scope	The scope of economics is wider and comprehensive, because it studies, not only the particular firm, but the consumption, production, exchange and distribution of all economic problems.	Whereas in business economics, has relatively limited scope because it studies the problems related to production and exchange of particular firms.
Approach	The approach of economics is descriptive.	Whereas its approach is perspective.

Basis of Difference	Economics	Business Economics
Use of Principles	In it, abstract economic principles are used to solve the problem of the firm.	Whereas in business economics traditional economic principles are used.
Analysis System	It analyses certain economic event and then propounds general policies.	Whereas business economics studies the practical aspects of economic events.
Theoretical /Practical Aspect	Economics studies the Theoretical aspects of economic events.	Whereas business economics studies the practical aspects of economic events.
Normative/Positive	The form of economics is normative as well as positive science.	Whereas the form of business economics is only normative science.
Phase of Development	Since it is from the beginning so duration of its development is long.	Whereas development of business economics has taken place after second world war. Hence, duration of its development is relatively short.
Type of Problem Analyzed	Economics analysis the economic problems of firm and the human beings both.	Whereas, In it only the problems of the particular firm are analyzed and not of human beings

1.17 Summary

Economics deals with the laws and principles, which govern the functioning of an economy and its various parts. An economy exists because of two basic facts. Firstly, human wants for goods and services are unlimited and secondly, productive resources with which to produce goods and services are scarce. Therefore an economy has to decide how to use its scarce resources to obtain the maximum possible satisfaction of the members of the society. It is this basic problem of scarcity which gives rise to many of the economic problems.

The problems scarcity and choice-making can be solved in many ways by an economy. If it gives the whole charge of the economy, to private ownership we get market economy, to public ownership we get centrally planned economy and jointly to private and public owner we get mixed economy.

The subject matter of economics has been divided into two parts: microeconomics and macroeconomics. Micro-economics deals with the analysis of small individual units of the economy such as individual consumers, firms, industries and, markets. On the other hand, macroeconomics concerns itself with the analysis of the economy as a whole and its large aggregate such as total national income, output, employment etc.

Economics has two aspects- theoretical & practical. General economics deals with theoretical part whereas business economics deals with practical aspect of economics. When the economics is used in business and managerial decisions then economics becomes the business economies.

Business economics decrease the uncertainty & risk, helps in formulating business policies, helps in demand and sales forecasting, helps in planning and analyzing business activities, helps in consumer's equilibrium, helps in organization by division of work, helps in producer equilibrium, helps in factors

pricing, helps in profit maximization, helps in operation of firms, helps in planning, organization, control & evaluation. Various disciples like microeconomics, macroeconomics, statistics, mathematics, accountancy, and management are closely related with the business economics and they are useful in decision-making and future planning to attain given objectives of a business entity.

Business economics helps in analyzing alternatives and selecting the best one, which would achieve the optimal result. It assimilates concepts and methods from all disciplines and thus trains a businessman to integrate all these concepts and methods to enable him to solve business problems.

1.18 Self Assessment Questions

1. "Economics is the science which treats wealth". Explain.
2. Write the wealth centered, material well-being centered, scarcity centered and development centered definitions of economics and discuss their criticism.
3. Write a note on following

   (i) Positive and normative economics

   (ii) Different economic systems
4. Differentiate in micro and macro economics and discuss there interdependence.
5. What is micro economics? Why it is needs in business sector? Write its limitations.
6. Distinguish between micro and macro economics. How do the micro and macro analysis help in formulation of business policies.
7. "The economist has to study micro as well as macro economics problems. The two studies are complementary to each other rather than being the alternative methods of study." Discuss this statement.
8. Give the definition of business economics. Describe the characteristics and nature of business economics.
9. "Business economics is the integration of economic theory with business practice for the purpose of facilitating decision making". Discuss.
10. Define business economics; examine the role of business economics in business decisions.
11. Write a note on the relationship of the following
    (i) Business Economics and Micro Economics
    (ii) Business Economics and Management
    (iii) Business Economics and Statistics:
12. Is business economics is different from general economics? If yes then how?

1.19 Reference Books

- Agarwal M.D. & Som Deo: Business Economics, Ramesh Book Depot, Jaipur
- Misra & Puri: Business Economics, Himalaya Publishing House, Mumbai
- Mathur N.D.: Business Economics, Kailash Book Depot, Jaipur
- Mithani D.M.: Mnagerial Economics, Himalaya Publishing House, Mumbai
- Dwivedi D.N.: Managerial Economics, Vikas Publishing House, New Delhi

Unit - 2 : Utility Analysis

Structure of Unit

2.0 Objectives

After completing this unit you will be able:

- To assess the meaning and characteristics of utility.
- To understand to measure the utility.
- To know the law of diminishing marginal utility.
- To know the law of equi-marginal utility.

2.1 Introduction

Concept of utility analysis was developed during the nineteenth century by such eminent economists as Jevons Walras and Menger. They regarded utility as basic concept and treated the law of diminishing marginal utility by as the fundamental law of consumption.

2.2 Meaning and Characteristics

Utility is defined as the want satisfying power of a commodity or service. When a commodity is consumed the want of a person is satisfied. Hence, the utility is concerned with the want satisfying power of a commodity or service. For example a glass of water satisfies the thirst of a person. We can say that a glass of water has a want satisfying capacity. Wine satisfies a want of a drunkard is another example of want satisfying power of a Commodity or service. The Utility from a commodity differs from one person to another.

Utility has been defined by different economists. Some of the definitions are as below :-

(1) Prof. Alfred Marshall has defined, "The utility of a thing to a person at a time is measured by the extent to which it satisfies his wants."

(2) According to Prof. S.E Thomas, "So long as an article satisfies man's some desire of body or mind, it possesses utility in the economic sense, although this may be pernicious in its effect on the consumers or on others or detrimental to the commodity generally."

(3) Prof. Lipsey and Prof. Sticner have defined, "The satisfaction that some one receives from consuming commodities is called his utility."

The above definitions of utility clearly show want satisfying power of a commodity or service is called utility. It is not concerned with the usefulness or harmfulness of a commodity. For example, wine is harmful but it has want satisfying power to drunkard. Hence, it has utility for a drunkard.

Characteristics of Utility

The following are characteristics of utility:

(1.) Utility is not related with usefulness or welfare : Utility is the name given to the power of satisfying human wants, whether want is good or bad, welfare or non-welfare, supply of commodity will be beneficial or harmful all immaterial issues. Excess use of wine may be harmful from the society point of view, but it has utility for consumer because its consumption provides mental satisfaction. Thus utility is not related with usefulness.

(2.) Utility is Measurable - Utility is measurable in terms of money. When a consumer is purchasing a commodity he is sacrificing in terms of money and this sacrifice is the measurement of utility. Keeping in view this, the relative measurement of utility of two goods is also possible. Utility is based on the cardinal approach and wherein utility is measured in terms of money. It can be added, subtracted and multiplied as well.

(3.) Utility is a Relative Term - The concept of utility is relative and not absolute. Utility of a commodity depends on the consumer's want and the want satisfying power of a commodity. A glass of water has more utility when a person is thirsty but when he is not thirsty, the glass of water has no utility. A book of general knowledge has utility for a student who is appearing in a competitive examination but for an illiterate it has no utility. Thus, the utility of a commodity changes with the change in the availability, quality, climate, country, economic and social environment. Hence, the concept of utility is a relative term and based on its relative importance affected by the want satisfying power.

(4.) Utility is Subjective - Utility of a commodity is determined by several factors such as mentality, nature, taste of a consumer, economic, social and religious environment etc. Those who are non-vegetarians will have more utility from eggs, fish, meat while vegetarians will not have utility.

(5.) Utility Depends on the Intensity of Want - Utility of a commodity depends on the intensity of a want. If a commodity satisfies a want of a consumer immediately, it will have more utility and if it satisfies the want slowly the utility is low. For example, when a person is hungry the utility from a chapati will be more.

(6.) Utility is Concerned with Consumer Goods Only - The direct satisfaction of a want involves the use of a commodity and it gives utility. Indirect satisfaction of a want does not deal with utility. Utility is concerned with consumer goods because they directly satisfy the human wants and it is not concerned with the consumption of productive goods. For example, cooking as is used for preparing meal in a hotel it is productive which does not give direct satisfaction to a consumer. Hence, productive goods are not studied under the consumption.

(7.) No Physical shape: Utility is mere mental situation of consumer. It can be realized; cannot be touched or seen. Use of fast food provides maximum satisfaction to Suresh, but it can be a point of hate for Mohan. Hence, utility is psychological view which has not any physical shape. It is intangible.

(8.) Utility does not depend on actual consumption: There is wide difference between utility and satisfaction. It is because measurement of utility by consumer starts when consumer start thinking to obtain it, but satisfaction is obtained after its use. For example, because of fashion, use of tight paint may provide more utility, but when fashion changes tight paint may not be of much use. Hence, by use of tight paint he derives less satisfaction. Utility is called expected satisfaction after the consumption of commodity, it is called satisfaction.

(9.) Rationality of the Consumer– The utility is based on the rationality of individual consumer. It is assumed that consumer will behave rationally in all situations and tries to maximize his utility with his given resources which have alternative uses (money income).

2.3 Measurement of Utility

Utility is the want satisfying power of a commodity. It is a psychological and subjective concept which is not concerned with the ethics or morality. On account of such, characteristics utility cannot be easily measured. It cannot be directly measured. Indirect measurement of utility is possible.

Economists have suggested two methods for the measurement of utility. They are also called two approaches to utility analysis. They are as given below:

(1) Cardinal approach to utility
(2) Ordinal approach to utility

Cardinal Approach to Utility - According to cardinal approach to utility while purchasing a commodity a consumer has to sacrifice in terms of money and this sacrifice is the measuring of utility. Marshall and other neo-classical economists have developed this approach to utility. Money is the measuring rod of utility. Higher is the utility higher will be the sacrifice from the consumer in terms of money. When a stock of commodity increases the additional units will give less and less utility to the consumer. Thus, the utility from a commodity derived by a consumer is measured in terms of money. For example, Mr. Mohan willing to pay Rs. 18 for commodity X, Rs.16 for commodity Y and Rs. 14 for commodity Z, then we can say that commodity X has more utility than commodity Y and commodity Y has more utility than commodity Z, which can be expressed as follows.

$$X>Y>Z$$

The method of measuring utility in terms of money is called cardinal approach. We can measure the utility in terms of money. Utility can be added, subtracted and multiplied with the help of this method in cardinal numbers like 1,2, 3, 4 and so on.

Ordinal Approach to Utility - According to ordinal economists like **J.R. Hicks, R.G.D. Allen, FY. Edgworth** and **Vilfredo Pareto** utility is not cardinally measurable and, it can be measured in ordinal numbers like I, II, III and so on. These economists put forward the following arguments against the cardinal measurement of utility:

(i) Utility is a psychological and subjective concept which cannot be measured in numerical numbers.

(ii) The mental state and attitude of each individual go under change according to time, country and circumstances. Utility also goes under change frequently. Hence, utility is not measureable as pointed by modern economists.

(iii) "The measuring rod of utility, as put forward by **Prof. Alfred Marshall**, " is money which is not a stable and exact measurement as we find in case of natural and physical sciences."

According to ordinal approach to utility we can put the utility derived from different commodities in order of preference and comparison can be made. The first preference to the commodity giving the highest utility and second and third preferences to those commodities giving less utility. On the basis of such scale of preference the new analysis for the measurement of utility namely ordinal utility approach has been propounded and it is based on indifference curve analysis.

The cardinal utility approach has been replaced by the ordinal utility approach. However, the cardinal utility, has its importance and several laws of economics are based on it.

2.4 Kinds of Utility

Utility Can be classified into three kinds as given below :

(1) Total utility (TU)

(2) Marginal Utility (MU)

(3) Average Utility (AU)

1. Total Utility

The total utility is the sum of utility derived from the consumption of all units of a commodity. In other words, it is the summation of all marginal utilities derived from the consumption of different units of a commodity. Hence, the total utility is the summation of all utilities derived from all the units of a commodity by a consumer. For example, Mr. suresh purchases five oranges and he gets utility from each unit as given below:

15+12+10+8+7

Thus, the total utility will 15+12+10+8+7=52

2. Marginal Utility

Marginal utility is the addition to total utility by consuming an additional unit of a commodity. It is the satisfaction derived from the additional unit of a commodity by the consumer. In other words if we deduct one unit of a commodity from the consumption and the change in total utility on account of it is called marginal utility. According to Prof. **K.E. Boulding,** "The marginal utility of any quantity of commodity is the increase in total utility which results from a unit increase in consumption." On the basis of the, definition we can say that marginal utility is nothing but the addition to total utility due to one unit change in consumption of a commodity by a consumer. For example, when a consumer increases the consumption of oranges from first unit to second the total utility increases from 20 to 28, the marginal utility would be 28-20 = 8 which is the utility derived from the additional unit of orange.

The marginal utility can be calculated on the basis of the following formula:

$$MU_x = \frac{\Delta TU_x}{\Delta Q_x}$$

Where MU_x is the marginal utility of X commodity, Δ TU is the change in total utility of commodity X and ΔQ_X is the change in consumption of commodity X.

Average Utility

Average utility is the utility derived by dividing the total utility derived by the consumer by number of units of the commodity, it can be calculated

on the basis of the following formula :

$$\text{AU}=\frac{\text{TU}}{\text{No.Of Units}}$$

Suppose by use of 4 Mangoes a consumer obtains total utility 40 then average utility will be :

$$AU=\frac{40}{8}=5 \text{ units}$$

Relationship Between Total Utility and Marginal Utility

There is close relationship between total utility and marginal utility because the summation of marginal utilities is the total utility derived from various units of a commodity. This relationship is shown from the following table :

Table 1
Total Utility and Marginal Utility

Units of Orange	Total Utility (TU)	Marginal Utility (MU)	
1	8	8	
2	14	6	Positive
3	18	4	
4	20	2	
5	20	0	→ Zero
6	18	-2	→ Negative

The table shows that:

(i) TU increases at decreasing rate from first unit to the fourth unit of orange.
(ii) TU reaches at its maximum at the fifth unit of orange.
(iii) TU remains constant with the fifth unit of orange.
(iv) TU decreases from the consumption of 6th unit of orange.

In case of marginal utility (MU) the table shows that:

(i) MU decreases in the beginning but it is positive upto the consumption of 4th unit of orange.
(ii) MU is zero with the consumption of 5th unit of orange. It is the saturation point.
(iii) MU is negative with the consumption of 6th unit of orange.

The relationship of TU and MU can also be shown in the form of a diagram as given below :

Total Utility and Marginal Utility

The diagram 1 on the next page shows that with the increase in TU the MU is decreasing but it is positive. When TU is at its maximum and constant MU is zero. This is the point of saturation and the consumer should stop the consumption of additional unit of orange. When TU is decreasing the MU is negative which is disutility situation.

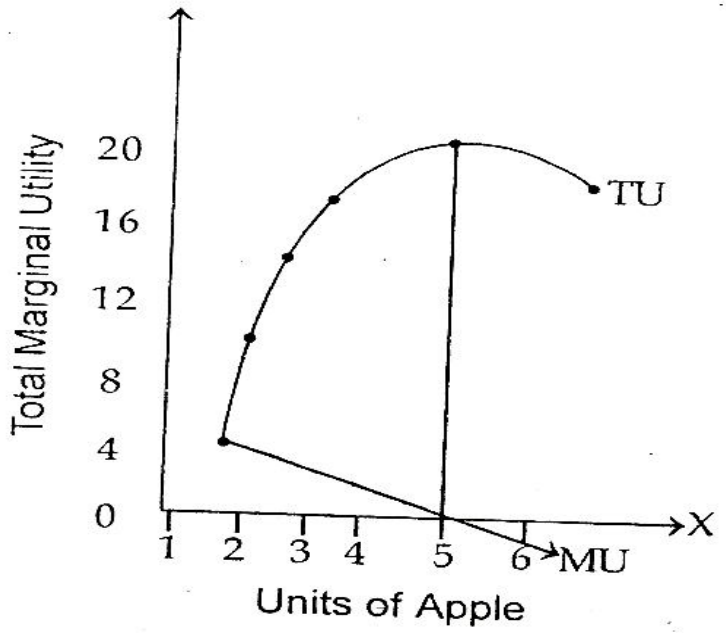


Diagram 1 : Total Utility and Marginal Utility

2.5 Law of Diminishing Marginal Utility

This law is an important and fundamental law of economics which was first scientifically explained by Gossen, later on it was developed by Marshall. This law is based on the assumption that as Consumer consumes more and more units of a commodity, its severity of want declines, due to this, the marginal utility derived from the commodity also declines. According to Marshall, "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. In short, when a consumer for the satisfaction of his want consumes continuously units of a commodity, the utility which he derives from the successive units goes on declining. This tendency in economics is known as law of diminishing marginal utility."

Explanation of the Law

The law can be explained with an example that Mr. Ram consumes additional units of orange and the utility he derives as given in the following table :

Table 2
Marginal Utility

Units of Apple	Marginal Utility (MU)
1	8
2	6
3	4
4	2
5	0
6	-2

Table 2 reveals that the utility derived by consumer from additional units of oranges decreases. The marginal utility from different units are 8, 6, 4 and so on. The marginal utility from the 5th unit of apple is zero and thereafter it is negative. On the basis of table 2 we can represent MU diagrammatically as given below:

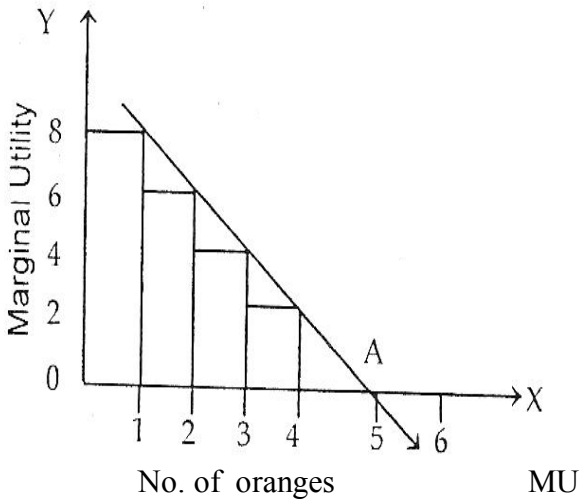


Diagram 2 : Marginal Utility

In the diagram number of oranges are shown on OX-axis and marginal utility on the OY-axis. MU shows the decreasing trends of all the units of oranges. The 5th unit of orange gives zero (0) MU while the 6th unit gives negative marginal utility. A is the point of satiety thereafter consumer should not consume additional units of oranges. There are three stages of marginal utility as given below;

(1) MU shows a decreasing trend upto 4th unit of orange but it is positive.
(ii) MU is zero from the 5th unit of oranges it is the satiety point.
Consumer should not consume after this point.
(iii) MU becomes negative with the consumption of 6th unit of oranges -.

Causes of Operation of the Law

(1) Satiety of a Want – As we know that human wants are unlimited and the resources are scarce with alternative uses. A particular want can be satisfied on a particular point of time. When a consumer consumes different units of a commodity on continuous basis, additional utility derived by him goes on declining and thereafter he gets zero and even negative utility. When he gets zero utility it means saturation point has reached and after that point he would not like to consume additional unit of that commodity. Hence, the law of diminishing utility will operate.

(2) Intensity of Want Declines - Utility of a commodity depends not only the want satisfying power but also on the intensity of the want. As a consumer goes on consuming additional units of a commodity the intensity of the want goes down and consequently the subsequent utility goes on declining.

(3) No Perfect Substitutes of Goods - As we know that there are substitute goods but they can be substituted to some extent only and there is no perfect substitute of goods. For example, bread and butter are consumed in a ratio and any imbalance in the ratio of the two will give diminishing marginal utility to the consumer.

(4) Nature of Human Behavior - It is the nature of human behavior that a consumer will consume more of those goods which he has not consumed and less of those goods he has already consumed. Therefore, nature of human behavior is also cause of operating the law.

(5) Variety of Uses - There are several commodities having a variety of uses or alternative uses in our daily life. The use of a commodity depends on the basis of priority for a particular use. For example, use of electricity depends upon the priority of a particular use. As we move from more important use of a commodity to less important use of it, the marginal utility of that commodity will decline.

Assumptions of the Law

The law of diminishing marginal utility operates only when other things remain same. Following assumptions are in operation of the law :

(1) **All Units of the Commodity should be Homogenous -** The law will operate only when all the units of the commodity consumed by the consumer are homogenous or identical in quality and quantity. For example, Mr. Ram is consuming various units of orange. All the units of orange should be identical in quality and quantity. If one unit is sour, another is small in size and sweet then the second unit will give more utility than the first unit of orange. Hence, the law will operate when all the units of the commodity are homogeneous.

(2) **Appropriate Quantity of Consumption** - The units of the commodity consumed by a consumer should be appropriate in quantity. In other words the units should neither be very small nor large in size. For example, a consumer is given drops of water instead of a glass of water when he is thirsty. The additional drops of water will give him more utility and the law will not operate.

(3) **Continuity in Consumption -** The law will operate when the consumption of various units of a commodity are being consumed continuously. If there is time gap between the consumption of unit of the commodity the additional utility derived by the consumer will increase. For example, a consumer consumes one bread in the morning and another piece of bread at noon the law will not operate because there is no continuous consumption of bread.

(4) **No Change in the Mental State of Consumer** - The law of diminishing marginal utility will operate when the mental state of consumer does not change. For example, a consumer has taken wine the utility he is deriving from additional units of chapati will increase because it will increase his hunger.

(5) **Income, Habit, Taste and Preference of the Consumer do not Change** - The law will operate when the income, habit, taste and preference of the consumer do not go under change while consuming the different units of a commodity. If these variables change the additional units of the commodity will give more utility.

(6) **Price of the Commodity and Its Related goods Remain Constant** - The law will operate when the price of the commodity under consumption and its related goods (substitutes and complementary goods) do not change. If there is any change in the price of either the commodity or its related goods the marginal utility of additional units will increase and the law will not operate.

(7) **Want should be a Single One** - The law will operate only when the consumption of various units of a commodity is done for satisfying a single want. If the consumption is carried on for the satisfaction of multiple want the law does not operate.

(8) **Applies to Pleasure Economy Only -** The law will apply in case of consumption which give pleasure to consumer. In a painful economy the law will not operate because the pains a consumer is realising on account of non-availability of a commodity. For example, during drought fodder for animals is extremely needed and in that case the utility will increase.

Exceptions of the Law

The law of diminishing marginal utility operates only when other things remaining the same as pointed by Prof. Alfred Marshall. However, there are some exceptions to the law as given below:

(1) **Consumption of Very Small Units of the Commodity -**The law of diminishing marginal utility does not hold good when the units of consumption of the commodity are very small in size and quantity. For example, if a thirsty person is given water in small drops in place of a glass water the law does not operate.

(2) **Rare Commodities, Monuments and Antiques** - The law is not applicable in those cases where people collect rare commodities monuments, antiques, old coins, documents, stamps etc. Those things which are collected as s hobby the marginal utility will increase instead of decline in it.

(3) **Classical Music, Rhymes Poems etc. -** The law does not apply in case of classical music, rhymes, poems etc. The audience will enjoy more by listening such music, rhymes and poems and the law will not operate.

(4) **Wine & harmful goods** - The law does not apply to alcoholic drinks. A drunkard takes additional pegs of wine and his satisfaction goes on increasing. Hence the marginal utility from additional pegs will increase.

(5) **Increase in the Number of Users or Consumers -** The law will not apply to those goods and services whose consumers, or users number is increasing. For example, the number of telephone connections are increasing day- by-day and the utility is increasing instead of decreasing practical life.

(6) **Personal Hobbies -** The law does not apply to personal hobbies. For example, people have hobbies collecting old coins, old photos, old stamps and sea-shells. In such cases additional collection of these things will give them more satisfaction and the law will pot operate.

The above exceptions to the law are imaginary. As we find that ultimately the law of diminishing marginal utility will operate as a consumer goes on consuming additional units of a commodity. The law is the fundamental law of consumer behaviour which is universally applicable. Several economic laws are based on it.

Criticism of the Law

Although the law of diminishing marginal utility is a universal law of consumer behaviour but the law has been criticised on the following grounds:

(1) **Utility is Not Measurable -** The law is based on the cardinal measurement of utility. As we know the concept of utility is a psychological concept which cannot be measured. At the same time the measuring rod of utility is money which is not an exact and stable measurement as we find in case of natural and physical sciences.

(2) **Marginal Utility of Money Does not Remain Constant -** In actual life we find that as the major part of income is spent and minor part of income remains with the consumer. He will spend the remaining part of income rationally and naturally the marginal utility of money will increase. The exchange value of money increases with the increase in its demand.

(3) **Based on Subjectivity -** The utility of a commodity is based on the nature of a consumer. It is related with the subjectivity of the consumer. The subjectivity of a consumer is also affected by several factors like time, country, taste, fashion and environment.

(4) **Ignores Macro Analysis -** The law is related with the micro analysis which deals with the individuals while in recent years the scope and importance of macro economic analysis is also gain ground and without it the study of economic analysis will not be correct and complete.

(5) **Ignores Other Effects -** The study of the law takes into consideration the increase in the consumption on of a commodity only while in real life we see that there are several factors affecting the utility of a commodity. For example, prices and quantum of related goods (substitutes and complementary) also affects the utility of a commodity, such effects have been ignored by the law.

2.6 Law of Equi - Marginal Utility

The law of equi-marginal utility is based on the law of diminishing marginal utility. This law operates when different units of different commodities are consumed and consumer tries to maximise his satisfaction with his given resources. The law is called the law of substitution. The consumer should allocate his resources on different units of different commodities in such a way that in the last the marginal utility of each commodity is equalised.

According to Prof. Alfred Marshall, "If a person has a thing which can be put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility in all. For, if it had a greater marginal utility in one use than another he would gain by taking some of it from second use and applying it to the first."

The above definition of the law reveal that a consumer will attain its maximum satisfaction when the marginal utility of all goods purchased are in the proportion of their prices. Marginal utilities are equalized while maximising the satisfaction by the consumer, which is called the law of equi-marginal utility.

Explanation of the Law

As we know each consumer aims at maximisation of his satisfaction while spending his given income which has alternative uses on various goods and services namely food, clothing, shelter, education, entertainment and health. He arranges his wants in order of intensity and the order of satisfaction is arranged on the basis of intensity of these wants and goes on. satisfying his wants till the marginal utility of all the goods is equalised in proportion to money spent on them. In this manner he can maximise his satisfaction. He will substitute that commodity which has more utility, in place of less marginal utility and he continues to that point where the marginal utility from all goods is equalised.

The operation of the law can be understood with the example. We assume that there are Rs. 9 with a consumer and he has to allocate the amount on two commodities in such a way that in the end the marginal utility of two goods are equalised. It can be seen from the following table:

Table 3
Total Utility and Marginal Utility

MU of Commodities	MU of Commodity A	MU of Commodity B
1	32 (1)	28 (2)
2	28 (3)	24 (4)
3	24 (5)	20 (6)
4	20 (7)	16 (8)
5	16 (9)	12
6	12	8
7	8	4
8	4	0

The table reveals that the consumer has Rs. 9 which he can spend on the different commodities namely A and B. We also assume that the each unit of a commodity has the price of Re. 1. The various units of two commodities have been shown which gives him different marginal utilities. The MU of A and B are decreasing. He can maximise his satisfaction when he spends Rs. 5 on commodity - A and Rs. 4 on commodity - B. His total utility is 32+28+24+20+16 of A and 28+24+20+16 of B which is 208 units. He can not attain more utility by spending his given income in different ways .The table can be shown in the form of diagram. As we have seen Rs. 5 are spent on commodity A and Rs. 4 on commodity B and the utilities he has been deriving are given:

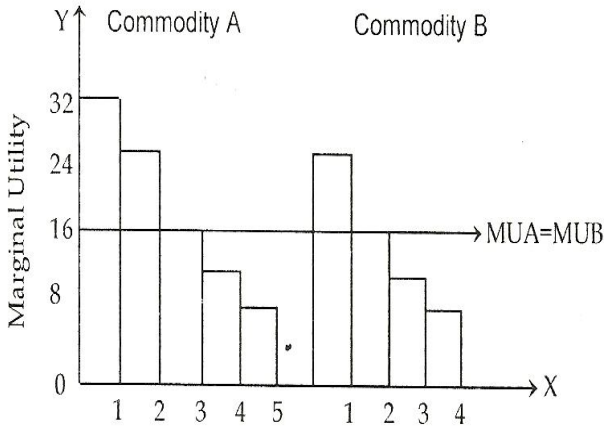


Diagram 3 : Marginal Utility

Units of Commodities

The diagram shows that Rs. 5 have been spent on commodity A and Rs. 4 on commodity B. The bars are showing the marginal utility from different units of the commodities which are declining showing the applicability of the law of diminishing marginal utility. The last utility from the 9th and the 8th unit of money equalise the utility which is shown equi-MU line where MUA is equal MUB (MUA= MUB) in the diagram. Thus, the consumer attains his objective.

Assumptions of the Law

Professor Alfred Marshall pointed out that the law of equi-marginal utility operates only when other things being equal. These other things are assumptions of the law. They are explained as below :

(1) **Rationality of the Consumer -** The law is based on the assumption that all the consumers are rational human beings and they spend their given income in such a way that maximisation of satisfaction goal is attained by them.

(2) **Utility is Measurable -** The law is based on the assumption that cardinal measurement of utility is possible and the measuring rod of utility is money which takes into consideration the sacrifice in terms of money and the satisfaction in terms of cardinal number of utility.

(3) **Constant Marginal Utility of Money** – The law assumes that the marginal utility of money remains constant or it does not change during the process of spending by the consumers.-

(4) **Operation of the Law of Diminishing Marginal Utility** - The law of equi-marginal utility is based on the law of diminishing marginal utility and it assumes that the law holds good when various units of different commodities are consumed by the consumer.

(5) **Taste, Preference, Fashion and Income of Consumer do not Change -** The law is based on the assumption that the income, taste, preference and fashion of the consumer do not change. During the course of consumption they are assumed as constant.

(6) **No Change in the Prices of Related Goods -** The law is based on the assumption that the prices of related goods like substitutes and complementary do not change during the process of consumption. If these variables change the law will not operate.

(7) **Divisibility of Goods -** The law operates on the assumption that the goods under consumption are divisible. They can be divided into small pieces and purchased by the small units of money.

(8) **The period of income and expenditure of the consumers is the same.**

Criticism

The law of equi-marginal utility has been criticised on various grounds. It has the following limitations:

(1) Indivisibility of Goods - The law is based on the assumption that the commodities under consumption are divisible into small size and pieces. But in actual practice we find that goods are indivisible. For example, television, car, radio and diamond cannot be divided into small pieces and if they are, they will lost their utility.

(2) Budget Period is not Definite - The law assumes that the period of expenditure and income of the consumer is definite and remains the same. But in practice we see that both items do not have the same period. In case of durable goods such definiteness is not possible and practical because they give Utility a long period because of their nature. Fan, watch, TV., Furniture are some of the examples.

(3) **Change in the Prices of Related Goods -** The law assumes that the prices of related goods namely substitute and complementary do not change but in real life we find that the prices of such commodities do not remain constant. The assumption will not help in the calculation of the marginal utilities derived by the consumer.

(4) **Non-availability of Goods -** The law assumes that on the basis of marginal utility we can maximise the satisfaction by equalising the ratios of utility and prices but in practice several useful goods are not easily available. In such a case the law does not apply. For example, if the Tata salt is not available then we have to use Sambhar salt. In such a situation satisfaction cannot be maximised.

(5) Imaginary and Unrealistic Assumptions - The law of equi-marginal utility is based on some imaginary and unrealistic assumptions like consumer's income, taste, preferences, habits, fashion, prices of related goods, measurability of utility in cardinal number and the marginal utility of money etc. assuming them constant. In real life we see that all these variables go under change.

(6) Psychological and Subjective Law - The law is a psychological and subjective and does not take into consideration the objectivity while studying the economics. Hence, it is not an economic law because it is a psychological and subjective based law.

2.7 Summary

Utility is the want satisfying power of a commodity or service it is a relative concept. There are two approaches of measurement of utility i.e. cardinal approach and ordinal approach.

Law of diminishing marginal utility explains 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.

Law of equi – marginal utility is also based on law of diminishing utility and it explains that each consumer aims at maximaisation of his satisfaction while spending his income which has alternative uses on various goods and services.

2.8 Key Words

Utility	:	Want satisfying power of a commodity or service is called utility.
Total utility	:	It is the sum of utility derived from the consumption of all units of a commodity.
Marginal utility	:	It is addition to total utility by consuming an additional unit of a commodity.
Average utility	:	It is derived by dividing total utility by number of units of a commodity consumed.

2.9 Self Assessment Questions

1. What is utility? Explain characteristics of utility.
2. Explain various types of utility using suitable schedule and diagram
3. Critically examine the law of diminishing marginal utility.
4. Explain the law of equi-marginal utility. Also explain its criticism.

2.10 Reference Books

- Mehta P.L., Managerial Economics
- Agarwal M.D.& Deo Som: Business Economics
- Mathur N.D., Business Economics
- Dwivedi D.N., Principles of Economics

Unit - 3 : Indifference Curve Analysis

Structure of Unit

3.0 Objectives

After completing this unit you will be able:

- To assess the meaning and characteristics of indifference curves.
- To know the equilibrium of a consumer by using indifference curves.
- To know the changes in consumer's equilibrium in certain conditions.

3.1 Introduction

Modern theory of consumer behaviour is based on the ordinal approach to utility which tells that utility is not measurable in numerical numbers but it can be put in order of preference like I, II and III based on ordinal numbers. It is also known as the indifference curve approach. It was propounded by F.Y. Edgeworth, Vilfredo Pareto, R.G.D. Allen and J.R. Hicks. The consumer behaviour is studied on the basis of indifference curve approach because it has removed the weaknesses of cardinal approach based on utility analysis.

Assumptions of Indifference Curve Approach

Modern utility theory of consumer behaviour is based on ordinal approach. The theory is based on the following assumptions:

(1) Maximisation of Satisfaction - The theory is based on the assumption of the maximisation of satisfaction by each individual consumer with in his given income and market prices. He has perfect knowledge of market conditions regarding the availability of goods and their prices.

(2) Ordinal Measurement of Satisfaction - The approach assumes that satisfaction is measured in ordinal numbers like I, II and III in place of cardinal numbers like 1, 2 and 3.

(3) Budget Constraint – The money income or budget of each consumer is given which is spent on purchasing various goods and services to satisfy his wants. He tries to maximize his satisfaction with his given income or budget constraint.

(4) Diminishing Marginal Rate of Substitution – The approach assumes that there is diminishing marginal rate of substitution (MRS_{xy}). It means when a consumer consumes X and Y commodities. The MRS_{XY} is the rate of change in one commodity (y) in relation to one unit change in the other commodity (x). On account of it the indifference curve shows a diminishing marginal rate of substitution of x for y (MRS_{xy}).

(5) Scale of Preferences - Consumer has scale of preferences under the indifference curve approach or analysis. He has order of preferences namely X, Y and Z goods. It means he prefers x first (I), y second (II), and z third (III). He ranks in order of preferences like X>Y>Z. It means there is consistency in preferences.

3.2 Meaning and Definitions of Indifference Curves

A curve showing different combinations of two commodities giving the same level of satisfaction to the consumer is called indifference curve. A consumer is indifferent to these various combinations because the level of satisfaction is the same. On account of indifferent or neutrality of an individual consumer these curves are also called indifference curves.

Different economists have defined indifference curves in different ways. Some of these definitions are given below:

(1) Prof. Henderson and Prof. Quandt have defined, "The locus of all commodity combinations from which a consumer derives the same level of satisfaction forms an indifference curve."

(2) Prof. A.L. Mayers has defined, "An indifference schedule may be defined as a schedule of various combinations of goods that will be equally satisfactory to .the individual concerned. If we depict this in the form of a curve, we get an indifference curve."

(3) According to Edgeworth, "Indifference curve is that path on which a substitution on a particular commodity by another in any manner or quantity gives the consumer the same satisfaction in any position."

(4) According to Prof. J.M. Joshi, "An indifference curve is a locus of points which are geometrical representations of combination of commodities (x and y) such that the consumer is indifferent among any of these combinations."

(5) Prof. J.K. Smith has defined, "It is locus of the points representing pairs of quantities between which the individual is indifferent, so it is termed as indifference curve."

All the definitions of indifference curves show that different combinations of two commodities (x and y) showing the same level of satisfaction and the consumer has alternatives or he is indifferent to these combinations because the level of satisfaction does not change with the changes in the combinations of these two goods.

Indifference Schedule

In order to understand indifference curve we should understand indifference schedules. An indifference schedule shows different combinations of two commodities (x and y) showing the same level of satisfaction.

Table 1

Indifference Schedule

Combination	Commodity X (Units)	Commodity Y (Units)
A	1	20
B	2	15
C	3	11
D	4	8
E	5	6

The above table shows various combinations of two commodities at which consumer gets same level of satisfaction it is known as indifference schedule. The combinations are A, B, C, D and E. The units of commodity X increases from 1 to 5 while units of commodity Y decreases from 20 to 6. When these combinations of two commodities are shown in the form of a diagram we will get a curve known as indifference curve as given below:

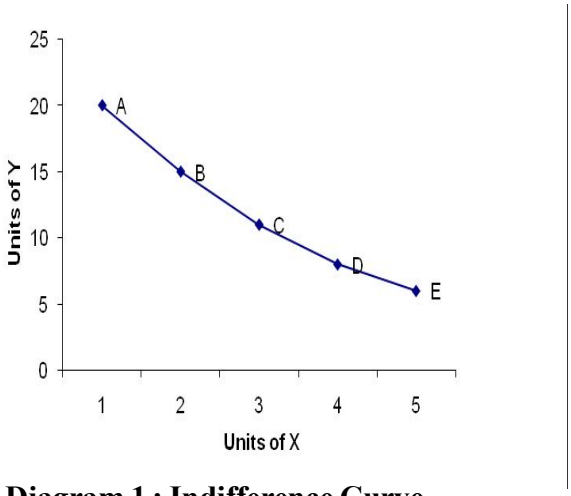


Diagram 1 : Indifference Curve

The above diagram shows that commodity X is shown on OX-axis while commodity Y on OY-axis. When all the combinations (ABCDE) of both the commodities are plotted we get a curve known as indifference curve (IC).

Indifference Map

An individual consumer has different levels of satisfaction with different combinations of two commodities. When all the curves of different levels of satisfaction are shown on a diagram, we will get indifference map. Thus, indifference map shows a set of various indifference curves available to an individual consumer. It is shown in the following diagram:

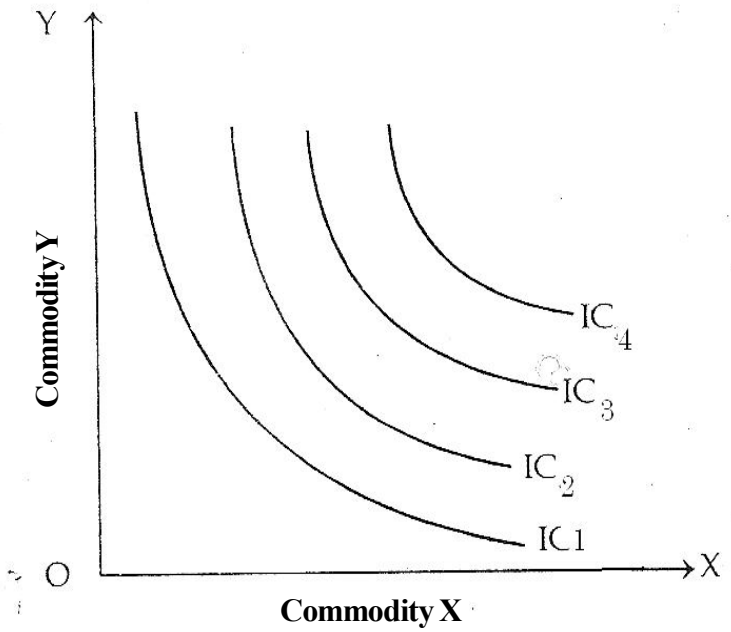


Diagram 2 : Indifference Map

Above diagram shows four indifference curves showing different combinations of two commodities (x and y) showing different levels of satisfaction. All the indifference curves to the right show higher levels of satisfaction. In other words higher the different indifference curve higher is the level of satisfaction.

In the diagram the scale of preference of the consumer goes like this $IC_4 > IC_3 > IC_2 > IC_1$. The consumer is not indifferent among the different indifference curves as a higher indifference curve gives him higher level of satisfaction.

Marginal Rate of Substitution (MRS)

Marginal rate at which change in one commodity in relation to one unit change in the other commodity takes place. MRS is an important tool of indifference curve analysis. It tells the exchange ratio between two commodities when a consumer selects different combinations. The rate at which one commodity is exchanged with other so that the level of satisfaction remains constant. The MRS can be understood from the following table:

Table 2 Indifference Schedule and MRS

Combination	Commodity X	Commodity Y	MRS
A	1	20	—
B	2	15	5
C	3	11	4
D	4	8	3
E	5	6	2

The table 2 shows that A combination of x and y commodities consists of 1 unit of x and 2 units of y which give a certain level of satisfaction. With the increase in the consumption of x commodity he has to sacrifice y commodity. In combination B he has 1 unit more of x and sacrifices 5 units of y and so on and so forth. It clearly reveals that marginal rate of substitution of commodity-x for commodity-y is decreasing. Thus, he possesses more unit of commodity-x and less of commodity-y but the level of satisfaction remains the same because all the combinations (A, B, C, D and E) are on the same indifference curve.

3.3 Characteristics of Indifference Curves

Indifference curves have the following characteristics

(1) All Combinations on an Indifference Curve gives Same Level of Satisfaction - As defined the indifference curve gives same level of satisfaction at different points or combinations of two commodities. A, B, C, D & E combinations, in diagram 1 clarifies this characteristic of an indifference curve.

(2) A Higher Indifference Curve Shows Higher Level of Satisfaction- The another characteristic of indifference curve is that higher the indifference curve higher will be the level of satisfaction. It has been shown in diagram 2 where IC_1, IC_2 lC_3 and IC_4 four indifference curves show different levels of satisfaction. From the point of level of satisfaction they can be put in this order of preference like $1C_4 > IC_3 > IC_2 > IC_1$ respectively.

(3) An Indifference Curve Slopes downward to the right - Indifference curves slope downward to the right because consumer has to reduce the consumption of one commodity (y) if he increases the consumption of commodity-x. In order to maintain the same level of satisfaction he has to increase the consumption of commodity x with the decrease in the consumption of commodity y. It can be seen from the following diagram.

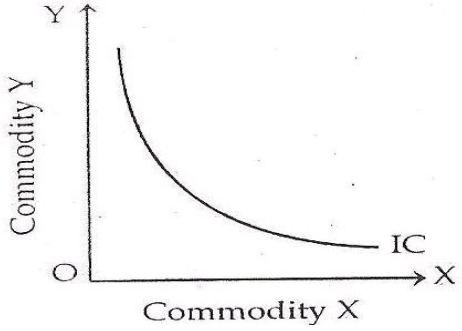


Diagram 3

(4) An Indifference Curve is Convex to the point of Origin-An indifference curve is convex to the origin because of the application of the principle of diminishing marginal rate of substitution. In order to get same level of satisfaction an individual consumer has to consume more of X commodity and he has to sacrifice more of y-commodity. MRS is the rate of change in one commodity-y in relation to one unit change in commodity-X. The rate of change is decreasing. The MRS_{xy} is decreasing due to operation of the principle of diminishing marginal rate of substitution as shown in diagram 4.

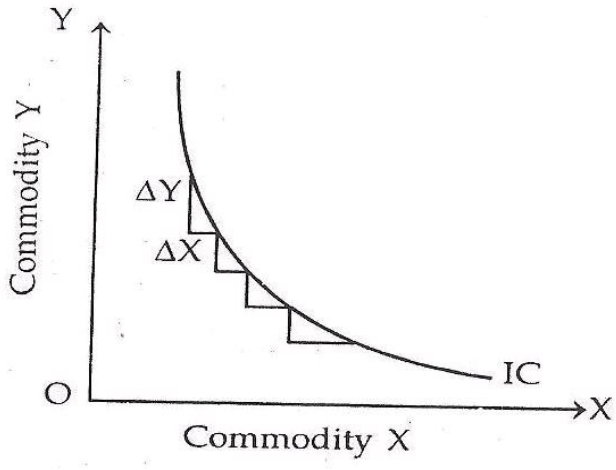


Diagram 4

(5) Two Indifference Curves do not intersect each Other - Another characteristic of indifference curves is that two indifference curves never intersect each other as they represent different levels of satisfaction. Following indifference curves show the situation.

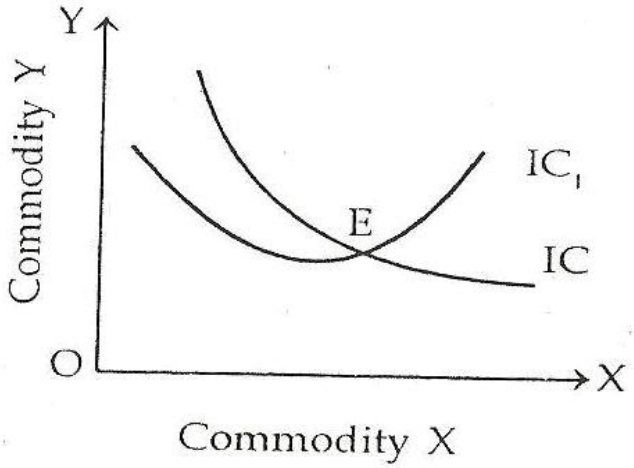


Diagram 5

In the diagram 5 two indifference curves IC and IC1 have been shown. Before E point IC shows higher level of satisfaction. While after E-point IC_1 shows higher level of satisfaction. It is not possible. Hence we can say that two indifference curves never intersect each other because they show different levels of satisfaction.

(6) **An Indifference Curve neither touches horizontal axis nor vertical axis -** Another characteristic of indifference curves is that an indifference curve does not touch ox-axis, if it does so it means consumer consumes very large amount of commodity - X and zero amount of commodity - Y. If the indifference curve touches vertical line (oy-axis) then he will consume a very large quantity of commodity Y while zero quantity of commodity - X. This situation has been shown in diagram 6 given below:

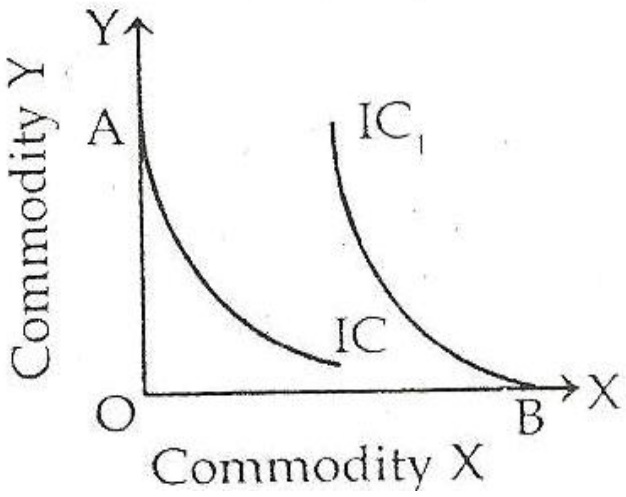


Diagram 6

The IC touches oy - axis while IC_1 touches ox- axis where he consumes very large amount of Y and zero of X while incase of IC_1, he has large amount of X commodity while zero amount of Y commodity. But such trends are against the definition of an indifference curve. i.e. combination of two commodities.

(7) Indifference Curves are not necessarily parallel to each other - As we know that all indifference curves slope downward to right or they have negative slopes. But the rate of slope may not necessarily be the same as shown in the following diagram:

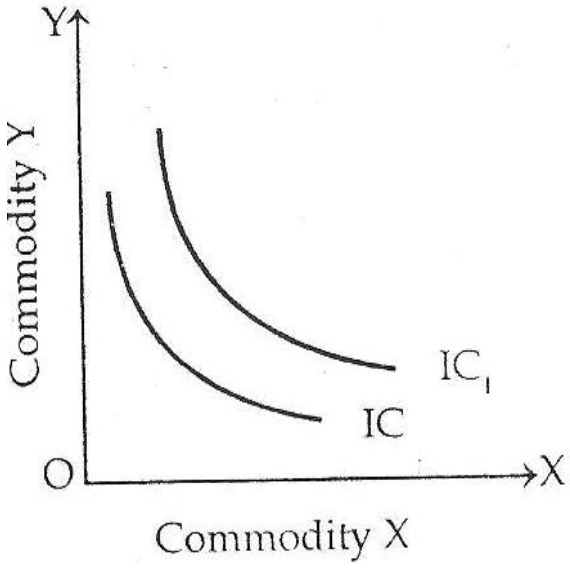


Diagram 7

Budget Line or Price Line

Budget line or price line is an important concept in the indifference curve analysis. It is also known as expenditure line. Budget line or price line is essential to know the equilibrium of an individual consumer. Price ratios of two goods and money income of a consumer are shown by a budget line or price line. Thus, budget line or price line shows the various combinations of two commodities that can be purchased by the consumer with his given income. Hence, it tells us the consumer's budget as well as the relative price ratio, It can be explained with the help of the following table:

Assuming Price of X (P_x)= Rs. 2 per unit and price of Y (P_x) =Re 1 per unit. Money income = Rs. 10

TABLE 3

Combination	Quantity of Commodity-X (Q_x)	Quantity of Commodity-X (Q_y)
A	0	10
B	1	8
C	2	6
D	3	4
E	4	2
F	5	0

The above table shows that different combinations namely A, B, C, D, E, F of two commodities (X and Y) can be purchased by the consumer with his given income (Rs. 10) as the price of X (P_x) is Rs. 2 per unit while price of Y (P_y) is Re: 1 per unit. Consumer is free to have any combination from A to F and the level of satisfaction will remain the same. It can be shown in the following diagram:

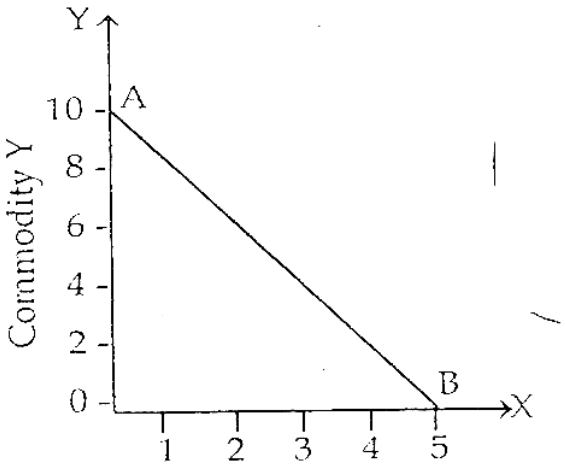
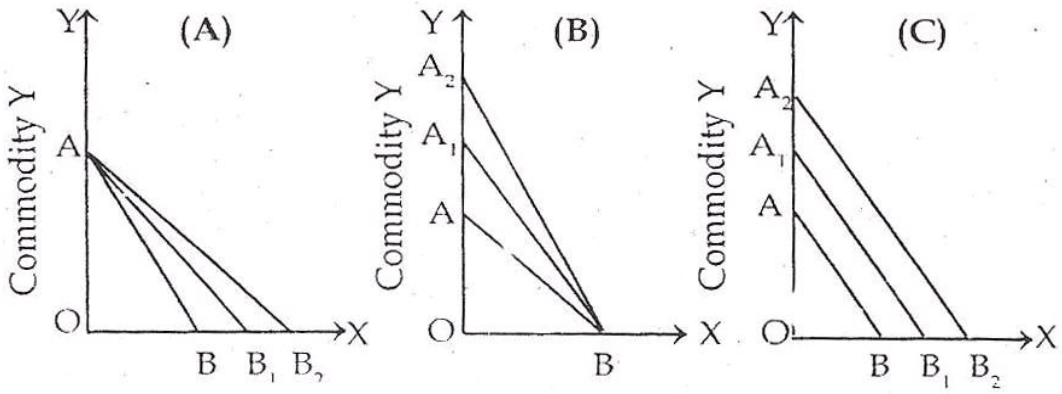


Diagram 8

In the diagram budget line is AB which shows the different combinations of two commodities which can be purchased by a consumer with his given income as the prices of the goods are known to him. The slope of the budget line (OA/OB) shows the price ratios of two goods ($-P_x/P_y$).

Change in Budget Line

Budget line or Price line changes when the price of either commodity X changes or price of commodity-Y changes and the level of money income of consumer changes as given in the following diagram:



Commodity X Commodity Y Commodity Z

Diagram 9

Diagram 9 (A) shows that the price of commodity Y does not change while price of commodity X changes. If we move from O to X we see that the price of X decreases and reverse is the case when we move towards O.

Diagram9 (B) shows that the price of commodity- X does not change while price of Y commodity changes. If we move from A to A_2 the price of Y commodity decreases while reverse is the case.

Diagram 9 (C) shows the change in the money income of the consumer. With the change in income the price or budget lines are drawn parallel to each other. All the lines right to AS price line show higher level of money income of the consumer. If we move reverse from A_2 B_2 to AB then the money income decrease which show the lower level of income.

3.4 Consumer's Equilibrium

Every individual consumer aims at maximisation of his satisfaction with his given income. Indifference curve analysis helps in attaining the objective as utility analysis does. The consumer's equilibrium under indifference curve analysis is based on the following assumptions:

(1) A consumer has his indifference map showing different combinations of two commodities with given scale of preferences.

(2) Consumer has money income which is given and it is spent on these two goods only.

(3) The prices of these two goods are given.

(4) All the units of each commodity are homogeneous and divisible.

(5) Taste, fashion and habit do not change during the period under study.

(6) Consumer is a rational human being and he spends his income rationally on the two commodities.

Conditions of Consumer's Equilibrium

On the basis of the assumptions of consumer's equilibrium we can say that a consumer will attain his equilibrium when the following conditions are met:

(1) At the point of equilibrium the budget line or price line should be tangent to indifference curve.

(2) At the point of equilibrium the slope of the indifference curve (MRS) must be equal to the slope of budget or price line ($-P_x/P_y$) as expressed:

$$MRS_{xy} = \frac{-P_x}{P_y}$$

(3) At the point of equilibrium either the indifference curve should be convex to the origin or the marginal rate of substitution should be diminishing.

(4) At the point of equilibrium the multiplication of quantities of X and Y commodities with their prices should be equal to total money income of the consumer as given below:

$$Q_x.P_x + Q_y.P_y = Y \text{ (Money Income)}$$

Consumer's equilibrium with the help of indifference curve can be shown by the following diagram:

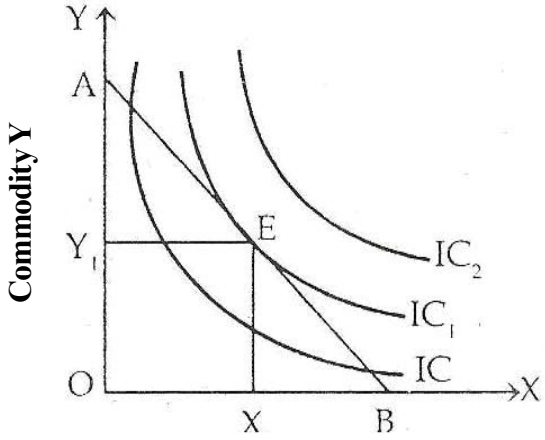


Diagram 10 Commodity X

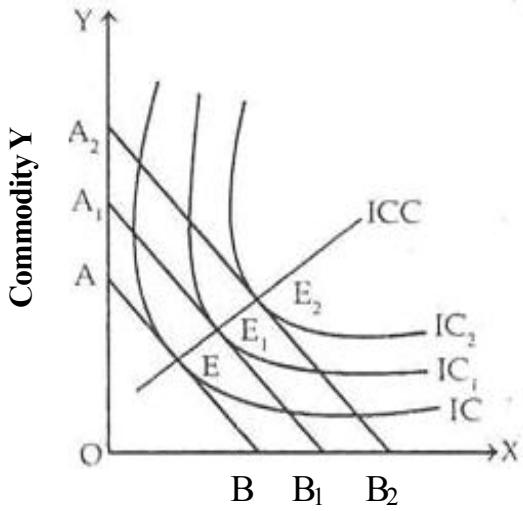
As seen from the diagram AB is the budget or price line. Commodity - X and commodity-Y are shown on ox-axis and oy-axis. At point E budget line is tangent to indifference curve (IC_1). IC2 is irrelevant as it is beyond the reach of the consumer while IC does not maximise the satisfaction as the resources of the consumer (income) are not utilised to the optimum level.

3.5 Change in Consumer's Equilibrium

The change in consumer's equilibrium is caused by the change in his level of income, market prices or relative price ratio of commodities. He will change the combination of two commodities when his level of income and prices of goods go under change and try to attain his level of satisfaction at the maximum level. Change in consumer's equilibrium is caused by income effect, price effect and substitution effect.

Income Effect and Changes

Income effect deals with the change in consumer's equilibrium caused by the change in the level of his income. Change in income means either income increases or income decreases. Due to change in the level of income what will be the change in consumer's equilibrium is called income effect. It can be shown with the help of the following diagram:



Commodity X

Diagram 11

The diagram shows that the money income of consumer changes and on account of such changes the budget-lines shift towards right sides of the AB line. Consumer attains equilibrium of each budget line where the indifference curve touches the price line. The various points of equilibrium of consumer are E, E1 and E2 and when they are connected by a line which is called Income Consumption Curve (ICC). The slope of ICC is positive as with the increase in the income of the consumer he will purchase more of commodity-X as well as commodity-Y.

Thus, the ICC shows the various equilibrium points of the consumer at various levels of money income keeping relative price ratio constant. The ICC is based on the assumptions that with the change in the income of consumer prices of commodity-X and commodity-Y do not change.

Price Effect and changes

When the money income of consumer remains constant and the quantity of two commodities are changed on account of change in their price ratio, the consumer's equilibrium also changes. It is studied under the price effect. When the price of of one commodity decreases or increases it will increase or decrease the real income of the consumer. He will adjust his demand with the change in the price ratio of two commodities. The point of equilibrium will at the point where the indifference curve is tanget to the price line. At each price line consumer will attain his equilibrium and when all such points of equilibrium at different price lines are connected by the line we get a curve known as price consumption curve (PCC).

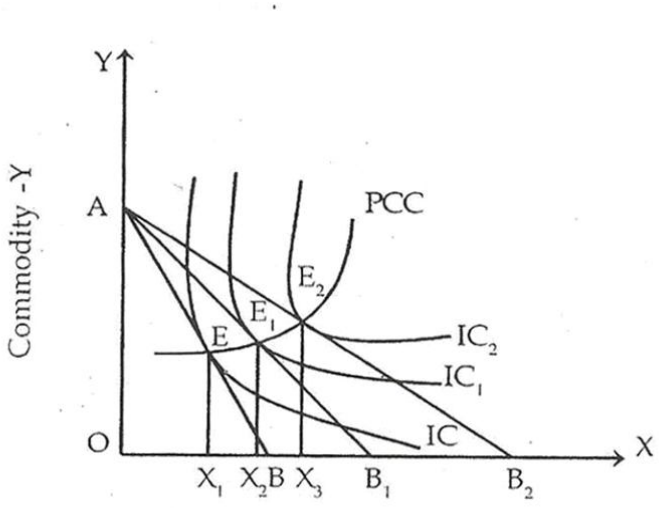


Diagram 12 : Price Effect (PCC)

PCC is locus of various equilibrium points of the consumer at various levels of relative price ratio assuming the money income constant.

The diagram shows that the consumer attains his equilibrium at different levels of prices at point E, E and E_2. He purchases OX_1, OX_2 and OX_3 of commodity-X and EX_1, E_1X_2 and E_2X_3 of commodity-Y.

The PCC is positive because of fall in the price of X commodity he purchases more of it and of Y because his real income has increased. The PCC has been drawn on the assumption that the price of commodity Y remains constant while price of X commodity decreases and the money income does not change.

The slope of PCC is not predictable because the reaction of a consumer not only depends upon the change in the price ratio of two commodities but also on other factors or determinants of demand. Hence, the slope of PCC may be positive, negative or zero.

Substitution Effect

It studies the change in the quantity demanded of one commodity due to change in the relative price ratio of two commodities under consumption.

For example, if the price of commodity-X falls it will result into two effects as given below:

(1) If the price of X falls the real income of the consumer will increase. He will purchase more of commodity-X and this effect is called income effect.

(2) When the price of X commodity changes or falls the relative price ratio will also change. (If earlier $P_x = 4$ and $P_y = 2$ then relative price ratio was 2:1, when price of X falls and now $P_x = 2$ and $P_y = 2$ then the relative price ratio is 1:1). Change in quantity demanded of commodity-X due to change in the relative price ratio is called substitution effect. Thus, price effect is the summation (total) of income effect and substitution effect.

Price Effect = Income Effect + Substitution Effect

Or

Substitution Effect = Price Effect - Income Effect

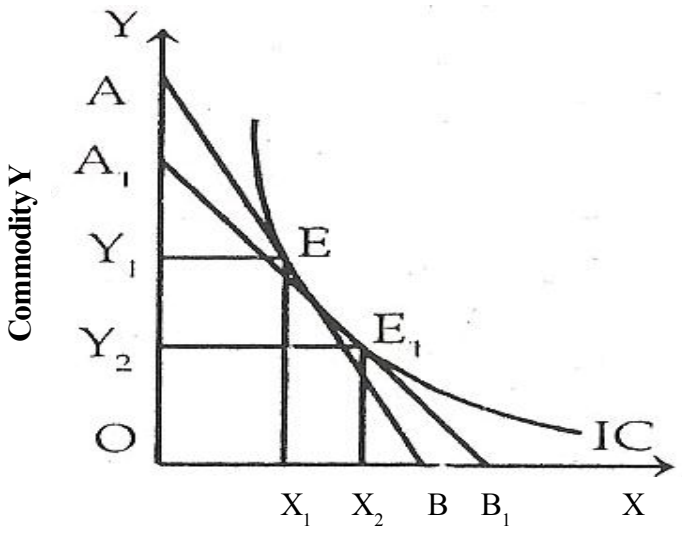


Diagram 13 Commodity X

The above diagram shows that in the beginning the consumer was at equilibrium on IC at point E with OY1 of Y and OX1 of X commodity. The price ratio of two commodities has changed. Price of Y has increased while price of X has decreased. it has shifted the price line from AB to A_1,B_1, and the consumer attains the -equilibrium at point E1 where he purchased 0Y2 of Y and 0X2 of X. He substitutes X in place of Y because X has become cheaper and Y has become dearer, it is called Substitution effect. Consumer's equilibrium shifts from E to El which is substitution effect. But the consumer is neither better off nor worse off because he remains on the same indifference curve. He has changed the combinations of two commodities only.

3.6 Summary

A curve which shows various combinations of two commodities giving the same level of satisfaction to the consumer is called indifference curve. Indifference curve is based on the assumption of ordinal measurement of satisfaction and diminishing marginal rate of substitution.

A consumer is in equilibrium at the point where budget line is tangent to indifference curve.

3.7 Key Words

Indifference curve	:	Indifference curve shows various combinations of two commodities which give same level of satisfaction to the consumer.
Marginal Rate of Substitution	:	It is a rate at which a consumer is willing to substitute a unit of a commodity in place of another commodity.
Budget Line	:	It shows various combinations of two commodities that can be purchased by a consumer with his given income.

3.8 Self Assessment Questions

1. Define indifference curve and explain its characteristics
2. Explain consumer's equilibrium with the help of an indifference curve.
3. Describe the price effect, income effect and substitution effect with the help of indifference curve analysis.

3.9 Reference Books

- Mehta P.L., Managerial Economics
- Agarwal M.D.& Deo Som: Business Economics
- Mathur N.D., Business Economics
- Dwivedi D.N., Principles of Economics

Unit - 4 : Consumer's Surplus

Structure of Unit

4.0 Objectives

After completing this unit you will be able:

- To understand the concept of consumer's surplus.
- To measure consumer's surplus.

4.1 Introduction

The concept of Consumer's surplus has important place in welfare oriented economic analysis of Prof. Marshall, who had explained in his book, "Consumer's Rent" in 1879. Later on, he explained consumer's surplus in his book 'Principles of Economics in 1890, by further developing the concept. Prof. Hicks has analyzed consumer's surplus with the help of "Indifference curve analysis". Indian economist Prof. A. K. Das Gupta has also presented important thoughts on consumer's surplus.

4.2 Meaning of Consumer's Surplus

In day to day consumption there are many such commodities from whose use the consumer obtains much more utility, as compared to its price, i.e. the sacrifice of utility made in the form of price. For example, we get a postcard for 50 paisa only, but we derive much more utility from it, say equal to 100 paisa. Then, we have a feeling of surplus of 100 - 50 = 50 paisa, which is the consumer surplus. In other words, the difference between the expected price which we may be ready to pay for a commodity and the actual price paid is known as consumer's surplus.

Definitions of consumer's surplus are as follows

1. According to Prof. Taussig, "Consumer's surplus is the difference between the sum which measures the total utility and that which measures total exchange value."
2. According to Prof. J. K. Mehta, "Consumer surplus obtained by a person from a commodity is the difference between the satisfaction which he derives from it and which he forgoes in order to procure that commodity:'
3. According to Prof. Marshall, "The excess of price which one is willing to pay rather than go without the thing over that which he actually does pays, is the economic measure of this surplus satisfaction. It may be called the consumer's surplus."

Thus, the difference between what we are willing to pay for a commodity and what we have to actually pay is known as consumer's surplus.

4.3 Explanation of the Concept of Consumer's Surplus

The concept of consumer surplus is based on the law of diminishing marginal utility. We know that utility obtained by the consumer from consumption of first unit of the commodity is high, but as he consumes subsequent units of the commodity, the utility derived from these units go on decreasing, gradually. But, the consumer pays the equal price for all the units. The consumer consumes various units of the commodity up to that level, at which the marginal utility of the unit of the commodity and the price of the commodity becomes equal.

In this process of consumption, the utility of starting units of the commodity is much more than the price. Hence, the consumer derives surplus from all units preceding to the last unit. This feeling of consumer is the consumer's surplus. Hence, it is evident that consumer's surplus is based on the tendency of the utility.

Illustration : Suppose a person purchases orange in the market. The normal price of orange in the market is 50 paisa. In the following table, the utility derived from various units of orange, i.e. the price which the consumer is willing to pay, actual market price and difference of both, i.e. consumer's surplus has been shown :

Utility Obtained from Oranges

Units of orange	Utility to be derived from the orange (In paisa)	Market Price (In paisa)	Consumer's surplus (in paisa)
1	250	50	250-50 =200
2	200	50	200-50 =150
3	150	50	150-50 =100
4	120	50	120-50 =70
5	100	50	100-50 =50
6	70	50	70-50 =20
7	50	50	50-50 =00
Total	**940**	**350**	**940-350 =590**

It is evident from the table that when the consumer is willing to purchase the first unit of orange, then he is ready to pay up to Rs. 2.50 , but he has to pay only 50 paisa for that. Hence, he has the saving equal to 200 paisa. Similarly, he also gets different savings from second to sixth units. For the seventh unit, the utility derived is the same as is the market price. Hence, for this unit, consumer's surplus is zero.

Now, we may say that the consumer gets utility equal to 940 paisa from seven units of orange and he is ready to pay this much of price for these. But, the market value of these seven units of orange is equal to 350 paisa. Hence, he has the saving equal to difference between the two, i.e. of 590 paisa. This illustration may be explained by diagram 1 in the next page.

In the diagram, Units of orange has been shown on OX axis and the utility obtained from the commodity and price paid has been shown on OY axis. OP (50 paisa) is the market price of orange. The rectangles drawn above OP show consumer's surplus.

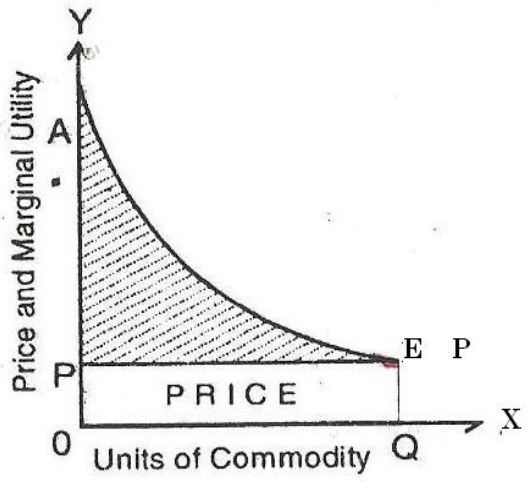


Diagram 1 : Consumer Surplus

In the above diagram, the total utility obtained from various units of commodity has been shown by O.Q.E.A. For obtaining this commodity, price actually paid by consumer is equal to O.Q.E.P., consumer surplus, the difference between these two is equal to A.P.E.

Assumptions of Consumer's Surplus

The concept of Consumer surplus has following assumptions

1. **Utility Is Measurable:** Prof. Marshall has regarded money as the basis to measure the utility, because the price of any commodity is paid due to power in the commodity to provide utility.
2. **Application of Law of Diminishing Marginal Utility :** Prof. Marshall has regarded law of diminishing marginal utility as the basis of consumer's surplus.
3. **Independent Utility of Commodity :** This concept is based on the assumption that each commodity is independent from each other, meaning thereby that the consumption of a commodity is not affected by the consumption of other commodity.
4. **The Marginal Utility of Money remains constant** : The concept of consumer's surplus assumes that the marginal utility of the money is constant, irrespective of the quantity of money possessed by him.
5. **Lack of Substitute goods :** No commodity is having the substitute commodity. If it is at all the substitute commodity, it should also be assumed as the main commodity.
6. **Other things remaining the same :** Changes in incomes, tastes, nature and fashion of the consumers offset the effects of each other, for measuring the consumer's surplus. Hence, it is assumed that these differences and variations have no effect on consumer's surplus.

   Measurement of Consumer's Surplus :

   Consumer's Surplus = Price willing to pay-Actual price.

   Or Marginal utility (MU)- Market price (MP)

Measurement of Consumer's Surplus with Indifference Curve Technique

The assumptions on whose basis, Prof. Marshall has analysed consumer's surplus have not been given any importance by Elen and Hicks. Hicks has measured consumer's surplus with the help of indifference curves. They mentioned following three points in this regard :

1. Quantity wise utility is immeasurable.
2. The marginal utility of money does not remain constant.
3. The re-explanation of consumer's surplus is possible through indifference curve analysis, by keeping the effect of substitute and complementary commodities in view.

According to **Hicks,** consumer surplus is that quantity of money which is created by change in his economic condition. According to him, the best way to explain consumer's surplus is to understand reduction in price of any commodity for the consumer as gain in the income of consumer. The reduction in the price of any commodity has following true effects.

1. The consumer may purchase that commodity in more quantity, for which the price has reduced.
2. On reduction in price of the commodity, the expenditure on purchase of the commodity may reduce.

Thus, comparative improvement takes place in the status of the consumer, in, both aforesaid situations. Consumer's surplus may be analyzed and measured, this way with help of indifference curve analysis.

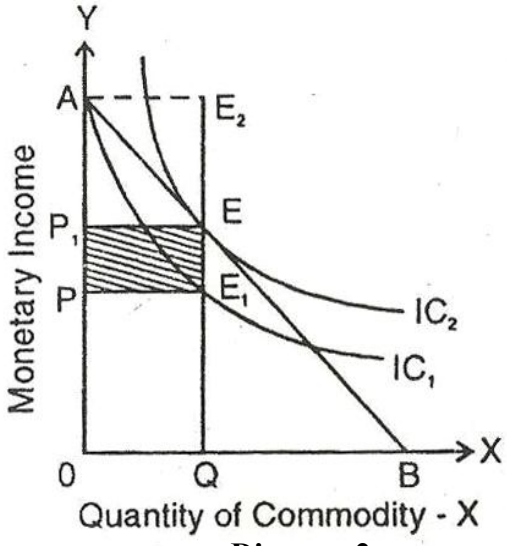


Diagram 2

In this diagram, the quantity of the commodity has been shown on OX axis and monetary income of the consumer has been given on OY axis. Suppose, monetary income of consumer is OA.

He chooses the combination E_1 on IC_1 i.e. OQ of X commodity and OP amount of money. In other words he is prepared to pay for OQ commodity the AP of money. Now suppose he knows the price which is indicated by AB budget line. The consumer finds that he can get on to a higher in difference curve with the same income. The consumer's new equilibrium is shown by E, the tangent between IC_2 and AB. At this point consumer's combination is OQ amount of commodity + P_1O amount of money. In other words, the consumer has to spend only AP_1 amount of money as compared to AP. Thus consumer's surplus is equal to P_1PE_1E.

4.4 Difficulties in Measurement of Consumer's Surplus

Above analysis, shows that the measurement of consumer surplus is easy. But it is not so, in practice, this principle has been bitterly criticized by the various economists.

Following difficulties arise in the measurement of consumer's surplus :

1. **Utility is not Measurable :** Utility is a subjective and psychological concept. Hence, it cannot be measured in terms of money. Consumer's surplus is the difference between the utility of any commodity and the utility sacrificed. When we can not correctly measure the utility, we cannot measure the consumer's surplus also.
2. **Marginal Utility of Money does not remain constant :** The correct measurement of consumer's surplus depends upon the fact that the marginal utility of money should remain constant. But in reality, it does not happen so, because as the consumer goes on purchasing more and more units of the commodity, the quantity of money with him goes on decreasing, due to which the marginal utility of money starts increasing. In such conditions, it becomes difficult to measure consumer's surplus.

3. **Consumer's Surplus from necessities is infinite :** The intensity of necessities is very high. A consumer gets ready to pay, whatsoever demanded for the necessities, rather than being deprived of them. In such conditions, consumer's surplus will be quite uncertain and infinite.

4. **Consumer's surplus for prestigious goods is infinite:** Consumer's surplus is not assessable in respect of prestigious goods, like diamonds, ancient sculptures, artistic goods etc. People feel their utility only on their prices being high. If these things become cheap, they do not remain prestigious and their utility goes down. Hence, consumer's surplus for such goods is also uncertain and infinite, which can not be measured easily.

4.5 Criticisms of Consumer's Surplus

Although the concept of consumer's surplus has acquired significant place in welfare economics, but the economists, have criticized it, on following grounds :

1. **This law is imaginary and impractical:** This law is imaginary and misleading, Prof. Nickelson has said What is the benefit saying that income of 100 pounds in London is equal to 1000 pounds of Africa. Truely, consumer's surplus states like that.

2. **Unrealistic assumption :** The assumption of consumer's surplus are unrealistic and unscientific. So, the critics have observed that, (i) Utility is a psychological concept, and hence it cannot be measured, (ii) The marginal utility of money does not remain constant. As the consumer goes on purchasing more and more units of some commodity, quantity of money with him goes on decreasing and as a result the marginal utility of money goes on increasing, (iii) The utility of the commodities is not completely independent from each other and is mutually dependent, because the consumer does not consume only one commodity and rather consumes several commodities, (iv) the tastes of the consumers and fashion etc. are prone to change according to the time and circumstances.

3. **Consumer's surplus does not remain constant :** The critics feel that the consumer's surplus is prone to change. Hence, with increase in price of the commodity the consumer, his tastes, fashion and habits etc. also, change fast in this changing age. The assumption of consumer's surplus being constant is not proper.

4. **Consumer's surplus from necessities and prestigious goods unrealistic :** The critics feel that the consumer's surplus in respect of necessities and prestigious goods is uncertain and infinite. The consumer may be ready to sacrifice quite high for any life saving commodity. He may sacrifice everything for that. In such condition, the consumer's surplus obtained from such commodities is not measurable.

5. **Correct measurement of consumer's surplus is difficult** : Consumer's surplus can not be measured correctly. Because (i) utility is a psychological and personal concept, (ii) marginal utility of money does not remain constant, (iii) consumers differ in tastes and sensitiveness, (iv) consumers are not of equal economic status. Besides, due to the presence of substitutes also, consumer's surplus cannot be measured. Hence it is not possible to correctly measure the consumer's surplus, the practical importance of this principle remain quite limited.

4.6 Summary

Consumer's surplus is the excess of price which a consumer is willing to pay rather than to go without it over that which he actually does pay or it is the difference between marginal utility of the commodity and price.

4.7 Key Words

Consumer's Surplus	:	Excess of price which one is willing to pay rather than go without the thing over that which he actually does pays, is the economic measure of this surplus satisfaction. It may be called the consumer's surplus.
Utility	:	Want satisfying power of a commodity or service is called utility.

4.8 Self Assessment Questions

1. Define consumer's surplus. How is it measured?
2. What is consumer's surplus? How can you measure it by using indifference curve?

4.9 Reference Books

- Mehta P.L., Managerial Economics
- Agarwal M.D.& Deo Som: Business Economics
- Mathur N.D., Business Economics
- Dwivedi D.N., Principles of Economics

Unit - 5 : Demand

Structure of Unit

5.0 Objectives

After completing this unit you will be able:

- To understand the meaning and definition of demand.
- To understand the relationship between price and demand
- To know the effect of change in various factors affecting demand.
- To measure elasticity of demand for decision making.

5.1 Meaning and Definition of Demand

The concept 'demand' refers to the quantity of a good or service that consumers are willing and able to purchase at various prices during a period of time. In economics, demand is something more than desire to purchase. For instance, a beggar may desire food, but due to lack of means to purchase it, his demand is not effective. Thus effective demand for a thing depends on (i) desire (ii) means to purchase, and (iii) on willingness to use those means for that purchase. Unless demand is backed by purchasing power or ability to pay, it does not constitute demand.

We can divide the definitions of demand given by various economists into three Categories:

(1) **To consider demand as an effective desire -** According to Person – "Demand implies three things - (i) desire to possess a thing; (ii) means for purchasing it; and (iii) willingness to use those means for purchasing."According to this definition there is no difference between demand and want, demand is considered as a synonym of want.

(2) **Definition of demand in relation to price: -** Some learned economists have expressed their views by co-relating demand with price. Prof. Mill has expressed - "We must mean by the word demand the quantity demanded and remember that this is not a fixed quantity but in general varies according to value."

In the, words of Waugh, "The demand for any commodity is the relationship between the price and the quantity that will be purchased at that price."

In the words of Cairnes, "Demand for coal does not mean the amount of coal which people need or would like to have but the effective demand, the amount which people are willing to buy at some specified price."

In these definitions only price affects demand; but over and above price time also affects demand. Therefore, these definitions are incomplete. -

(3) **Definition of Demand in relation to Price as well as Time: -** Mayers and Benham are the worth mentioning economists who are of the view that demand is related, with both, price as well as time.

In the words of Mayers - "The demand for a goods is a schedule of the amount that buyers would be willing to purchase at all possible prices at one instant of time."

According to Benham— "The demand for anything at a given price, is the amount of it which will be bought per unit of time at that price."

Essentials of Demand :

(i) To have an effective desire and ability to fulfil the desire and willingness to use those resources for fulfilment of the desire. It means consumer has a need and money to buy it.
(ii) Demand for a particular commodity is related with a particular price for it; and
(iii) Demand for a particular commodity is related with per unit of time (daily, weekly, monthly, yearly etc.)

5.2 Importance of Demand

Demand is considered the basis of the entire process of economic development, hence demand plays an important role in the economic, social and political fields. The importance of demand may be studied under the following heads :

(1) Importance in Consumption: - Demand implies the schedule of quantities to be purchased over a specific period of time at various prices. A consumer determines the quantity of various commodities to be consumed on the basis of his demand.

(2) Advantageous to producers: - Producers maximize the profit by determining the nature, variety, quantity and cost of production on the basis of demand of various commodities and controlling the supply at appropriate time. A monopolist also keeps in mind the nature of demand while maximization of his profit.

(3) Importance in Exchange:- Quantity demanded is the purchase of a commodity in certain quantity at a certain price, therefore it is exchange. This means that production, purchase and sale of a particular commodity of a particular quality and quantity takes place in demand and it is the process of exchange. The means of exchange viz. money, banking, insurance, transportation, communication etc. are also affected by demand. Continuous growth in demand proves helpful in the progress of exchange as well as economic development of the country. The basis for determination of market price, normal price, long- term price, monopolistic price or price discrimination is demand.

(4) Importance in distribution: - Aggregate social production is determined on the basis of social demand. Production scale is increased with an increase in demand. Resources from various sources are procured to fulfil this increased demand. The share in the national product of a factor of production depends upon its demand. The interest rates remain high in a capitalistic economic system due to the high demand for capital in production process and on the other hand in a labour-intensive economic system it is quite natural that wage rates of labour are high due to high demand of labour.

(5) Importance in Public Finance:- Maximization of social welfare is the prime objective of the process of public finance. Sources of public revenue (inflows) and items of public expenditure (outflows) are determined to achieve this objective. Government collects revenue through direct and indirect taxes. The effect of tax on demand is kept in mind while levying taxes. Income tax is not levied on general public because higher rates of direct taxes tend to reduce the income and the demand of commodities in the society. Similarly, indirect taxes like excise duty, sales tax, octroi, import - export duty etc. are determined by keeping in view their impact on the overall demand.

Items of public expenditure are also determined on the basis of demand. Poor class of the society does not have the potential to spend much on social services e.g. education, health, transportation, medical services, library etc. Hence to increase the demand for those services a substantial part of public expenditure on those heads is advised for increasing social welfare.

(6) Importance of the Law of demand and Elasticity of Demand:- The Law of demand and Elasticity of demand are the most important concepts in economics.

(7) Importance in Religion, Culture and Politics:- Demand of various commodities in the society at various points of time is also very important from the religious, cultural and political point of view. Efforts are made to fulfil the demand of various commodities which arises at the time of various social or religious festivals. Political activities such as election of government creates the demand for banners, posters, etc. which provide employment to a large section of society. Even destructive commodities such as fighting equipments and weapons are required to be produced to fulfil their demand at war - time.

On basis of above we can say that demand is the beginning as well as the end of the entire economic activities.

Demand Schedule

Tabulation of the quantities of a commodity demanded at a particular point of time at various prices is known as a demand schedule. In the words of Benham - "A full account of the demand, or perhaps we can say, the state of demand for any goods in a given market at a given time should state what the volume (weekly) of sales would be at each of a series of prices. Such an account, taking the form of a tabular statement, is known as a demand schedule."

A demand schedule establishes a working relation between price and quantity demanded. Demand schedules are of two kinds:-

(i) Individual Demand Schedule and
(ii) Market Demand Schedule.

(i) Individual Demand Schedule:- This demand schedule indicates the quantities of a particular commodity demanded by an individual at a given time at each of a series of prices. But this does not mean that the prices given in the table are actually prevalent and the commodities are purchased in the given quantities at the given prices. This table is formulated on the basis of past experience of a particular individual. But in reality the present demand schedule of an individual may vary with that of his past demand schedule due to changes in his income, tastes, fashion etc.

The individual demand schedule of a person 'A' may be explained with the help of the following table:-

Table 1 Individual Demand Schedule

Price per kg. (Rs.)	Quantity Demanded per week (kgs.)
2.50	5
2.00	7
1.50	10
1.00	15

(ii) Market Demand Schedule: - Market demand schedule is nothing but the total of the individual demand schedules of a commodity in the market. Market demand schedule may be explained with the help of an example-

Let us suppose that there are three buyers, viz. A, B, C in the market for oranges.

The individual demand schedules for them are as follows:-

Price of oranges per dozen (Rs.)	Demand for oranges by buyers (in Dozens)			Total market demand of the three consumers in dozens
	A	B	C	
10.00	5	4	6	15
8.00	6	5	7	18
6.00	7	6	8	21
4.00	8	7	9	24
3.00	9	8	10	27

In the table no. 2 first column showing the prices of oranges Rs. per dozen together with the last column showing total of all the three consumers form the market demand schedule. The market demand of oranges at price Rs. 10 per dozen is 15 dozen.

Demand Curve

A demand curve is a diagrammatic representation of the demand schedule. A demand curve for a commodity shows the relationship between quantity demanded and price. A demand curve like the demand schedule is also of two types- (i) Individual demand curve, and (ii) Market demand curve.

Demand curve derived from the demand schedule shown in table 2 given in the diagram1.

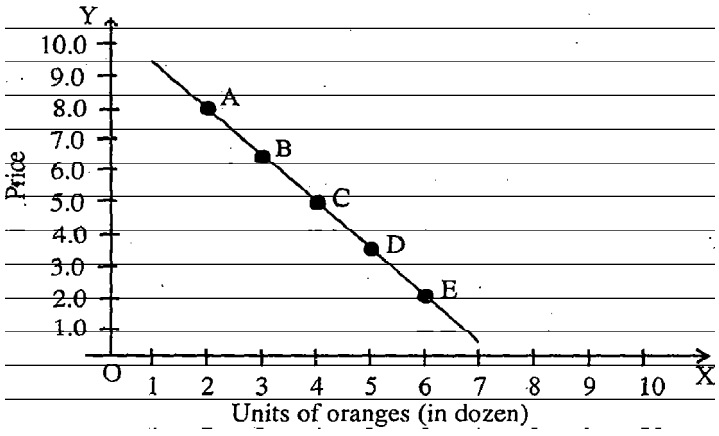


Diagram 1

In the above diagram1 the line joining the points A, B, C, D & E is the demand curve. A, B, C, D & E are different demand points which show various combinations of prices and quantities and indicate that the quantity demanded for a commodity increases with a fall in its price.

5.3 The Law of Demand

The law of demand establishes relationship between the quantity demanded and the price of a commodity. According to this law other things remaining same the quantity demanded of a commodity increases with a fall in its price and the quantity demanded decreases with a rise in its price.

According to **Marshall**: "…… the amount demanded increases with a fall in price and diminishes with a rise in price." In this way the law of demand shows an inverse relationship between the quantity demanded and the price of the commodity.

In the words of **Prof. Samuelson ,** "If a greater quantity of goods is put on the market, then other things being equal it can be sold only at a lower price."

St. Thomas, "At any given time the demand for a commodity or service at the prevailing price is greater than it would be at a higher price and less than it would be at a lower price."

All these economists have a common view that demand and price are inversely correlated with each other. The demand, increases with a fall in price and diminishes with a rise in price.

Assumptions of the Law of Demand:

The law of demand will hold good only if 'ceteris paribus' (other things remaining the same) conditions are applied. 'Other things remaining the same' is called the assumptions of the law of demand. The following are the important assumptions of the law of demand-

(1) Psychological factors like habit, tastes and preferences of the consumers must remain unchanged.
(2) Consumer's money income must be constant.
(3) The particular commodity in consideration must not be prestigious goods to the consumer.
(4) There must not be any substitutes for the commodity.
(5) Prices of other goods remain the same.
(6) Expectations about future price changes should not be there.
(7) Quality of the commodity must remain the same.

Diagram 2 shows the demand curve based on the above mentioned assumptions:-

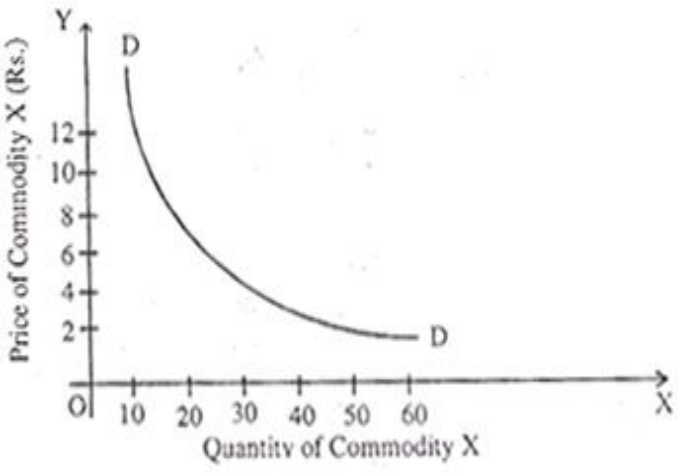


Diagram 2

In the above diagram the demand curve DD is sloping downward from left to right which shows that the quantity demanded increases with a fall in price and the quantity demanded diminishes with a rise in price.

Main Characteristics of the Law of Demand

The following are the main characteristics of the law of demand:

(1) Inverse Relationship- According to this law there is an inverse relationship between the quantity demanded and the price of a commodity. If the price of a commodity increases the quantity demanded decreases and if the price decreases the quantity demanded increases.

(2) Price independent and Demand dependent variable - Price of a commodity is an independent variable. The law of demand explains the change in demand of a commodity due to change in its price. In mathematical terms price is an independent variable and demand is a dependent variable.

(3) Other things being equal- This law holds good only when the other things remain the same. This 'other things remaining the same' is called the assumptions of the law of demand.

(4) Qualitative statement- The law of demand is a qualitative statement which tells us that a fall in the price of a commodity will lead to an increase in the quantity demanded and a rise in price will lead to a fall in the quantity demanded. But it does not tell us how much change in price will bring how much change in quantity demanded:

(5) It is concerned with certain period of time-The law of demand is related with a particular period of time, for example weekly, monthly, annually etc.

Reasons of application of Law of Demand:

The law of demand applies on account of a number of factors which have been described here. These factors are also responsible for demand curve sloping downward from left to right.

1. Income effect- When price of a commodity falls it increases the real income of the consumer, because it enables him to spend less to buy the same amount of quantity, whereas if the price rises then his real income falls, because he has to spend more of his income to buy the same amount of quantity. This is known as the income effect. As a result of this effect if the price of a commodity falls, consumer buys more units of it on account of increase in his real income. Similarly when the price of a commodity increases the quantity demanded decreases due to fall in real income of the consumer.

2. Substitution effect- When the price of a commodity (x) falls and the price of its substitute (y) remain constant then this would curtail the consumption of other commodity (y) and would increase the consumption of this commodity (x) because this commodity becomes cheaper than the other commodity (y). On the other hand if the price of the commodity (x) rises and price of other commodity (y) remains constant then the consumer would curtail his consumption of commodity (x) and will consume more units of commodity (y). This tendency of consumer is a result of substitution effect. According to this effect a consumer would like to substitute a costlier commodity with a cheaper commodity. Therefore according to this effect when the price of a commodity rises the quantity demanded diminishes and when the price falls the quantity demanded increases.

3. **Law of Diminishing Marginal Utility-** The law of demand is based on the law of the Diminishing Marginal Utility. According to the law of Diminishing Marginal Utility, the marginal utility of a commodity diminishes with increase in its consumption of a subsequent unit. A consumer always wants to attain equilibrium; hence he will increase his consumption of a commodity only when the price of the commodity falls. On the other hand, the reason for decrease in quantity demanded with a rise in price is that the marginal utility of the commodity will increase only when it will be consumed less and the consumer will be in equilibrium when the price is equal to its marginal utility.

4. **Changes in the number of buyers-** Every commodity has its own buyers, but the number of buyers increases with a fall in price, because some buyers who were unable to buy the commodity at higher prices are now able to buy the same. Similarly when the price increases the number of buyers diminishes, because some buyers who were buying the commodity earlier at lower prices are now unable to buy the same at higher prices. Therefore demand increases with an increase in the number of buyers due to fall in price and it decreases with the fall in number of buyers due to rise in its price.

5. **New Uses-** Most of the commodities have more than one use. When price increases, consumer will use the commodity for essential or important purpose only and if price falls it will be consumed for less important purposes too, therefore, the demand rises due to increase in number of uses with a fall in price and the demand decreases due to use only in important areas with a rise in price.

Exceptions of the Law of Demand

The Law of Demand is applicable if the assumptions underlying the law of demand hold good. But there are a few exceptions to the law of demand. Exceptions to the law of demand implies a situation when the quantity demanded increases with a rise in price or the quantity remains either the same or decreases with a fall in price. In these exceptional cases the demand curve is positively sloped, rising upward from left to right. Positively sloped demand curve is shown in the diagram 3.

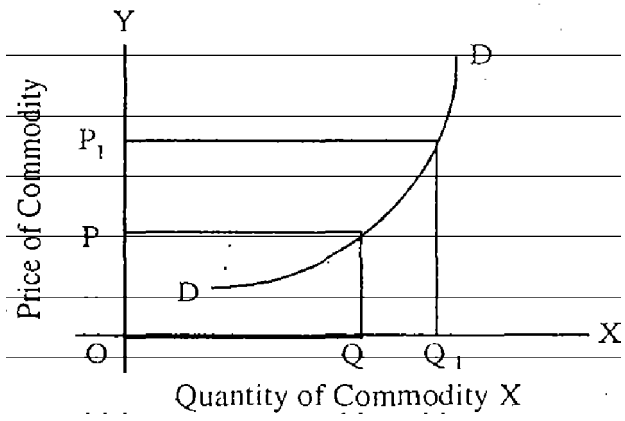


Diagram 3

The following are the exceptions to the law of demand:

1. **The Giffen Goods**—A study of the poor farmers of Ireland by Sir Giffen in the 19th century revealed that the major portion of their income was spent on potatoes and only a small amount was spent on meat. Potatoes were cheap but meat was costly. When the prices of potatoes tend to increase consumption of meat was curtailed to economise their expenditure and as a result of this they saved money and spent more on potato to meet their food deficiency. In this way quantity of purchase rises even when prices of potatoes rise. Sir Giffen attracted the attention of economists towards this tendency; hence it is known as the Giffen's Paradox or the Giffen Effect. As a result of

this effect quantity of inferior goods purchased falls due to a fall in their prices because the real income of the consumer rises and he is able to spend more for purchasing superior goods. This results in the fall of demand of inferior goods. Hence the law of demand is not applicable in case of Giffen goods.

2. **Prestigious Goods or Goods of Snob Value or Articles of Distinction-**Many rich people use some goods not because of their real worth but only for their prestige or the snob value of those goods. For example, jewellery, precious stones, or old paintings etc. are some of the commodities which the rich people buy more when their price increases. These commodities become more prestigious with an increase in their prices hence rich people buy more of these and when their prices fall they no longer remain prestigious and hence they are purchased in less quantity. But a substantial fall in the price of these commodities may enable other people in the society to increase their consumption. Therefore these commodities are not real exception to the law of demand.

3. **Highly Priced commodity (Ignorance and illusion on the part of the buyer) -** Many a times due to ignorance a consumer purchases the costlier things more treating them to be more useful. This results in increased demand when the price increases. Sometimes the price is increased more by effecting some variation in the packing, label, etc. of the commodity and the consumer purchases more of it due to his ignorance.

4. **Speculation -** In a speculative market a commodity is purchased in greater quantity after price hikes and less quantity at lower prices. When the price of some shares rises people start purchasing more of them in expectation of further rise in their prices. When the prices fall people stop buying them expecting further fall in prices. In this way the law of demand does not hold good. But they satisfy the law of demand from another point of view. Consumers purchase more at rising prices, so that they have to purchase less at yet higher prices.

5. **Necessaries of Life -** Demand for the commodities which form the necessities of life does not experience significant fall in their demand with a rise in prices. Similarly the demand for them does not rise with a fall in prices.

6. **War or Emergency -** Many a time's people purchase greater amount of goods even at rising prices to store them, at times of war or emergency with an expectation of their acute shortage in near future. This happens because there is a chance that the goods will be costlier in future and even may not be available so people purchase more of them even at higher prices. This is not a real exception to the law of demand.

7. **Specific Brand or Trade Mark Commodity -** A consumer who becomes habitual of consuming the goods of a particular brand or trade mark will remain unaffected and will purchase the same quantity of goods even at higher prices. But the demand gets affected at higher and higher prices.

8. **Small Expenditure -** If a commodity happens to be such that only a small part of the total income of the consumer is spent on it, then its demand will not be affected by any increase in its price. Match box is an example.

Conclusion - In spite of the above exceptions the law of demand holds good in practical life and is true.

Difference between Extension and Contraction of Demand and Increase and Decrease in Demand

1. **Extension and Contraction of Demand -** When other-things remaining the same, the quantity demanded of a commodity vary with variation in price only, these variations are known as extension

and contraction of demand. When the quantity demanded rises due to fall in the price of a commodity it is called extension of demand. On the contrary when the quantity demanded falls due to rise in price it is known as contraction of demand. The quantity demanded varies with the change in price in case of extension and contraction of demand but demand does not change. The demand curve does not change in case of contraction or extension of demand. A consumer moves up and down along the same demand curve.

The diagrammatic representation of extension and contraction of demand can be made clear with the help of diagram 4.

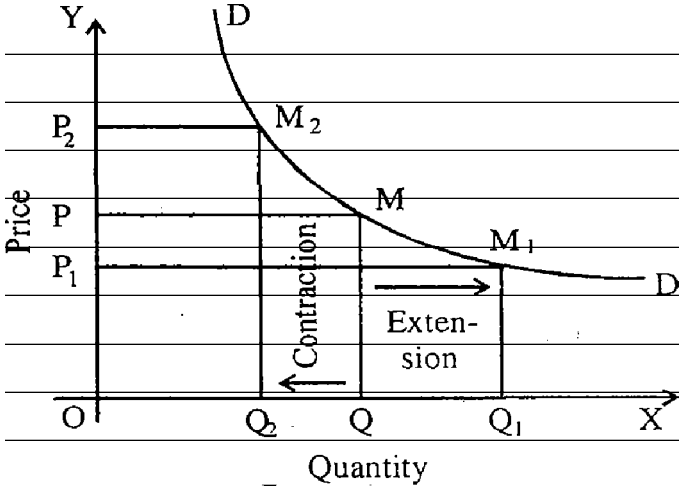


Diagram 4

In diagram 4 the consumer is located at the point M on the demand curve DD demanding OQ amount of quantity at the initial price OP. Now the price falls to OP_1 then the consumer moves to the point M_1 from the point M on the same demand curve and demands OQ_1 amount of goods. Hence the movement from the point M to M_1 or increase in amount of quantity demanded from OQ to OQ_1 is known as extension of demand. If the price rises to OP_2 from OP then the consumer will move to the point M_2 from the point M on the demand curve and will demand OQ_2 amount of goods. This will be a contraction of demand.

Increase and Decrease in Demand - When the demand for a commodity changes with changes in other elements and price remaining constant, it is known as increase and decrease in demand. When the demand for a commodity rises

Increase in Demand

While price remaining constant or the quantity demanded remains unchanged even when the price rises, it is called as increase in demand. Demand curve varies with an increase in demand and it shifts rightward from the initial demand curve. Increase in demand can be explained with the help of diagram 5.

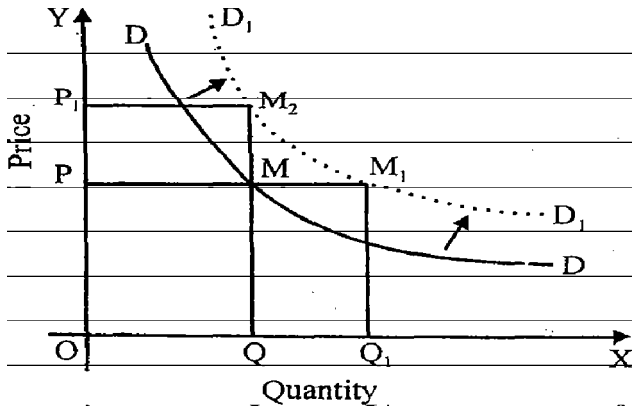


Diagram 5

Decrease in Demand

Decrease in demand may be explained with the help of diagram 6 . In the diagram DD is the initial demand curve of the consumer and he is located at the point M demanding OQ amount of goods at OP price. Now if the price remains OP and the consumer demands OQ_1 amount of goods at this OP price, then the demand curve will change to D_1D_1 and consumer will be located at the point M_1 of this new demand curve. Therefore the movement of the consumer from the point M on the initial demand curve to the point M_1 on the new demand curve D_1D_1 is known as decrease in demand. Similarly if the price of goods reduces from OP to OP_1 and consumer demands OQ amount of goods even at this reduced price then it is also known as decrease in demand and in this case the consumer moves from the point M on the initial demand curve DD to the point M_2 on the new demand curve D_1D_1.

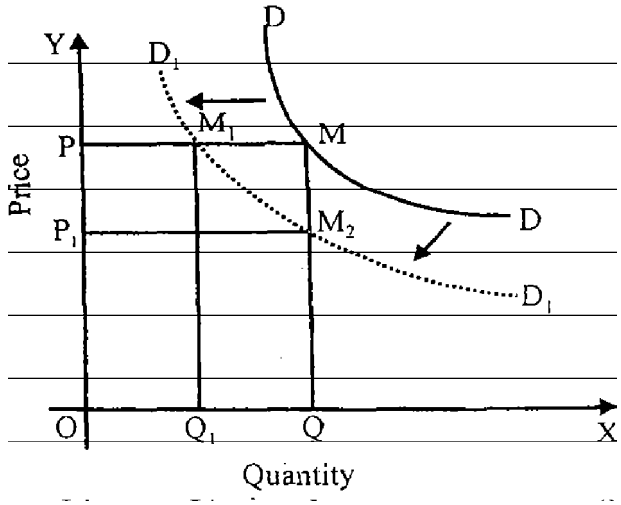


Diagram 6

In short

(i) Demand extends due to fall in prices.

(ii) Demand contracts due to rise in prices.

(iii) Demand increases or decreases due to change in other elements rather than change in price.

(iv) Demanding increased amount of goods at constant price or demanding same amount of goods even when the price rises is called as increase in demand.

(v) Demanding reduced amount of goods at constant price or demanding same amount of goods even when price decreases is known as decrease in demand.

(vi) Other factors affecting demand like income, fashion, customs, taste, habits varies only in the long run, hence increase or decrease in demand is significant only in the long run. But price varies even in the short run, hence extension and contraction of demand is more significant in the short run.

5.4 Types of Demand

Economists generally divide demand into three types :

(I) Price Demand,

(2) Income Demand, and

(3) Cross Demand.

1. **Price Demand -** Price demand implies the different quantities of the commodity demanded by the consumers at various prices for a particular period of time. In the study of price demand it is assumed that other things remain unchanged i.e. the income, habits, tastes, fashion, etc., do not

change. In fact what we have studied in the earlier pages is related to price demand only. Price demand is shown in the diagram 7.

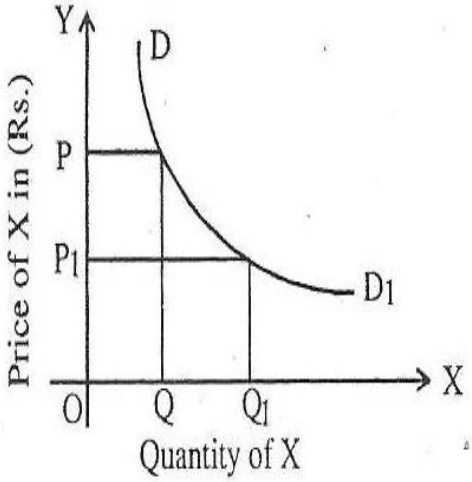


Diagram 7

In the above figure DD_1 is the demand curve of the commodity X which shows the inverse relation between price and quantity demanded of the commodity.

2. **Income Demand -** It shows the relation between the quantity demanded of a commodity and the income of the consumer. Income demand implies the quantity of a commodity purchased by the consumer at various levels of income, other things remaining same. Other thing remaining same implies that the price of the commodity taste, fashion, etc. do not change.

   Generally there is direct or positive relation between the quantity of a commodity demanded and the income of the consumer. Therefore, the consumer demands more quantity of a commodity when his income rises and he demands lesser amount of the commodity when his income decreases. This fact may be seen with the help of diagram 8A. When OM is the income of the consumer he demands OQ amount of commodity and when his income rises to OM_1 his demand also rises to OQ_1. The demand for inferior goods decreases after a certain level of rise in income and their demand raises when income decreases. The demand for inferior goods is shown in diagram 8 B when the income raises beyond OM_1 level the demand for inferior goods decreases.

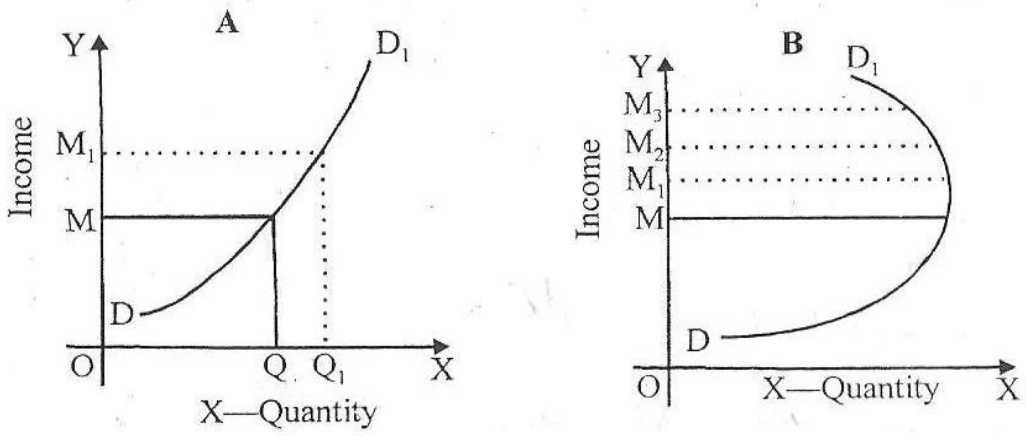


Diagram 8

3. **Cross Demand** - The study of demand of a commodity X with changes in the price of related commodity Y (Assuming other things remaining same) is known as cross demand. Related goods are of two types—substitutes and complementary goods. In case of substitutes when the price of the other commodity Y rises, price of first commodity X remaining constant, the demand for the first

commodity X will rise. On the reverse side, the price of X remaining constant and when the price of Y decreases demand for commodity X will fall and demand for commodity Y will rise. This can be seen in diagram 9(A).In diagram 9(A) when the price of Y is OP, quantity of X demanded is OQ. Now if the price of Y rises to OP_1 then the quantity of X will rise from OQ to OQ_1.

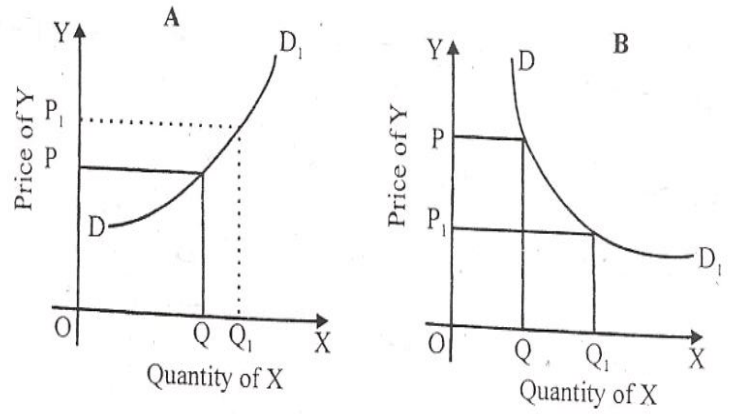


Diagram 9 (A & B)

In case of complementary goods if the price of X remains constant and price of Y increases demand for both X and Y will fall and demand for both will rise if price falls of any one commodity. In diagram 9 (B) when the price of Y decreases from OP to OP_1 demand for X rises from OQ to OQ_1.

5.5 Demand Function

Demand function establishes a functional relationship between quantity demanded of a commodity and various factors affecting demand. It is shown as below:

$DQ_x = f(P_x, P_r, y, N, D, TPF, Pf, C, B, Ad, CC, GC, I, M, CP)$

Here, DQ_x is the demanded quantity of x commodity, f denotes the function P_x, P_r, y, N, D, TPF, Pf, C, B, Ad, CC, GC, I, M, CP are determinates of demand.

Determinants of Demand or Factors Influencing Demand

Demand for a commodity depends upon many factors like the price of the commodity itself, price of its substitutes or complements, income of the purchaser, and the nature of the commodity. Factor affecting demand for durable consumer goods e.g. car, washing machine, refrigerator, etc. are different from those affecting non-durable consumer products like food stuff, soap, etc. Generally demand is affected by the following factors:

1. **Price of the commodity (P_x):** Demand of a commodity depends on price of the commodity. When price increases, demand will decrease and when price decreases, demand will increase. It means there is an inverse relationship between price and demanded quantity.
2. **Availability of substitutes and compliments and their prices (P_r)**—When the substitutes for a commodity are available demand is less. Similarly demand rises with rise in the prices of substitutes and it falls with fall in prices. For example, when tea and coffee both are available demand for tea is less. If the price of coffee falls demand for tea also falls and it rises with increase in price of coffee. Demand rises with the availability of complementary goods and falls with rise in price. For example, the demand for cars increases if petrol price falls and the demand for cars fall with rise in the price of petrol.
3. **Income Level (y):-** Demand for a commodity depends upon the income of the consumer. Demand for normal goods rises if the income of consumer rises, but the demand for inferior or Giffen goods decreases because the consumer starts purchasing superior commodities in place of inferior goods. If the income of the consumer decreases demand for normal goods falls but the demand of inferior goods rises.

4. **Number of Consumers (N):-** The most important factor affecting demand is number of consumers in the market. If the number of consumers is large demand is more and if the number of consumers is small demand for the commodity will be less.

5. **Distribution of wealth (D)**:- Luxurious goods are demanded more by rich people but a vast majority of people demand necessities of life only. When the government tries to reduce inequalities in the distribution of income in the society then the demand for luxurious goods declines and demand for essential and comforts rises.

6. **Consumers, tastes, preferences and fashion (TPF):-** Demand for a commodity is affected by the consumer's taste, preference and fashion. Demand for goods suitable to consumer's tastes, preferences and fashion is more and will rise constantly. Similarly demand for goods disliked by the consumers will be less.

7. **Possibilities of price changes in near future (Pf):-** Possibilities of price changes in near future for a commodity also affects its demand. If the possibility is that the prices will rise in near future the demand will rise and if the possibility is that the prices will fall in near future the demand for the commodity will fall.

8. **Climate and Seasons (C): -** Different commodities are demanded in different seasons, for example demand for electric fans, ice, cold-drinks etc. rises in summer, whereas their demand is very low in winters. Similarly woollen clothes, tea etc. are demanded more in winter than in summer season. .

9. **Business conditions (B)-** The Demand for many commodities rises in boom and demand for most of the commodities decreases in depression. Consumers purchase more even at rising prices to save them off at higher prices in boom periods whereas they purchase less expecting further fall in price in depression.

10. **Advertisement and sales promotion (Ad):-** Consumers are tempted to purchase the commodity when the usefulness of the commodities is communicated to them through effective advertisements. Therefore effective advertisements and sales promotion are useful for increasing the demand.

11. **Availability of consumer credit (CC):-** Demand for consumer goods, rises with increase in consumer credit facilities and demand for goods decreases with a fall in consumer credit.

12. **Government control (GC)**:- Demand decreases if the government imposes restrictions on the use of the commodity and it rises with the release of restrictions.

13. **Improvement in the quality (I):-**Either producer improves the quality of goods their demand increases and the demand falls if the quality of goods deteriorates. .

14. **Changes in money supply (M)**:- Demand rises if the money supply in the country increases and if the money supply decreases demand falls.

15. **Changes in population (CP) :-** Demand for every commodity will rise if the population in the country is rising continuously. But the demand varies with variations in age groups in the country where population is stable.

5.6 Meaning and Definition of Elasticity of Demand

The relationship between demand for a commodity and its various determinants is summarised in the form of its demand function. Thus, whether the quantity demanded of a commodity will rise or fall in response to a change in any of the factors affecting its demand can be directly judged from the demand function concerned. Apart from ascertaining the mere direction of change, however, one is generally

interested in knowing the exact magnitude by which the quantity demanded of a commodity will change in the face of a change in any of its determinants. The law of demand thus, indicates only the direction of change in quantity demanded in response to change in its determinant(s). The concept of elasticity of demand indicates quantitative relationship between the quantity demanded and its determinants. The quantity demanded of a commodity depends upon its price, price of related goods, income of the consumer, tastes and preferences, availability of substitutes etc. etc.

Definition: The term 'Elasticity of Demand' refers to the degree of change in the demand for a commodity in response to change in any of its determinants. Alfred Marshall has defined, "elasticity of demand in a market is great or small according as the amount demanded increases much or little for a given fall in the price and diminishes much or little for a given rise in price."

According to Stonier and Hague, "elasticity of demand is, therefore, a technical term used by economists to describe the degree of responsiveness of the demand for a commodity to a fall in its price".

According to Joan Robinson , "the elasticity of demand, at any price or at any output is the proportional change of amount purchased in response to a small change in price, divided by the proportional change in price." In fact any elasticity is simply a ratio between cause and its effect in percentage terms. The cause remains as a denominator and the effect as a numerator. In the context of basic concept of elasticity of demand (i.e. price elasticity of demand) the price change is the cause and the change in quantity is the effect of it. Therefore, we will describe in detail the price elasticity of demand and then other types of elasticity's. Elasticity of demand can be put as follows :

$$\text{Elasticity of demand (ED)} = \frac{\%\ \text{Change in quantity demanded}}{\%\ \text{Change in any one of the determinats of demand}}$$

5.7 Price Elasticity of Demand

Price elasticity of demand expresses the response of quantity demanded of a commodity to changes in its price, given the consumer's income, his tastes and preferences and prices of other goods. Thus, it is a relative change in quantity demanded to a relative change in price.

$$(ep) = \frac{\text{Proportionate change in quantity demanded of a commodity}}{\text{Proportionate change in price}}$$

Or

$$ep = \frac{\text{Change in quantity demanded}}{\text{Quantity demanded}} \div \frac{\text{Change in Price}}{\text{Price}}$$

Symbolically,

$$ep = \frac{\frac{\Delta q}{q}}{\frac{\Delta p}{p}} = \frac{\Delta q}{q} \times \frac{p}{\Delta p} = \frac{\Delta q}{\Delta p} \times \frac{p}{q}$$

Where Δq = Change in Quantity Demanded
Δp = Change in Price
q = Quantity of Commodity
p = Price of Commodity

The mathematical value of ep is also called as coefficient of elasticity of demand. Mathematically, price elasticity of demand (ep) is negative, since the change in quantity demanded is in opposite direction to the change in price. Because when price falls the quantity demanded of a commodity rises and when the price rises the quantity demanded of a commodity falls.

Degrees of Price Elasticity of Demand: whatever is the value of the coefficient of elasticity of demand another step is to interpret it. The value may be greater than one or zero or infinite. These may be explained as follows.

1. **Perfectly Elastic Demand (ep = ∞):** It is the situation where a very small change in price brings about a substantial change in quantity demanded of a commodity. If the slightest fall in price causes an infinitely large quantity to be demanded of a commodity or conversely if a very small (may be even insignificant) rise in price is responded by sudden and substantial fall in quantity demanded of a commodity, would be called as the perfectly elastic demand. Symbolically it will be written as ep = ∞ . In such a case the demand curve will be a straight horizontal line as shown in diagram 10.

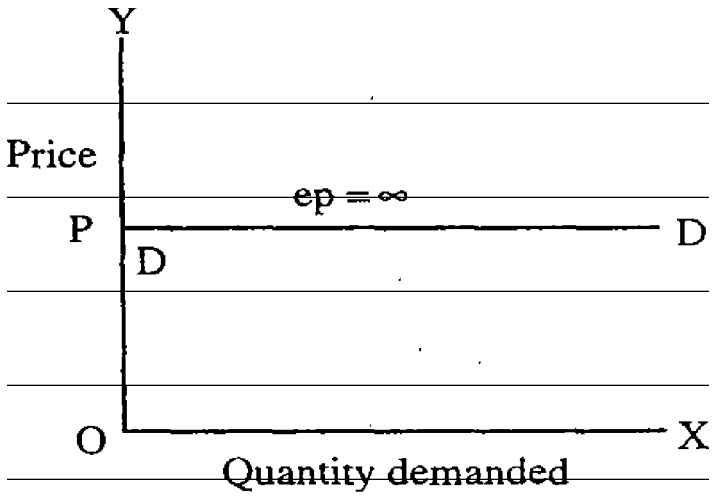


Diagram 10 Perfectly Elastic Demand

2. **Perfectly Inelastic Demand (ep = 0):** This situation is just the opposite of the perfectly elastic demand. In this case when price changes substantially and still the demand does not respond (rise or fall) the demand is said to be perfectly inelastic. Symbolically it is written as ep = 0. This situation will have the demand curve in the form of a vertical line as shown in diagram 11.

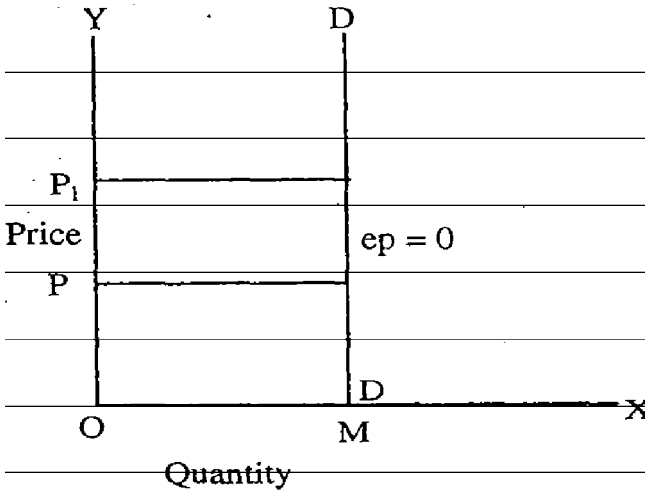


Diagram 10 Perfectly Inelastic Demand

3. **Highly Elastic Demand (ep > 1):** When the numerical value of elasticity of demand is greater than 1 or in other words, when proportionate change in quantity demanded is greater than proportionate change in price, the demand is said to be relatively elastic. In this the demand is more responsive to the change in price. It is shown as below:

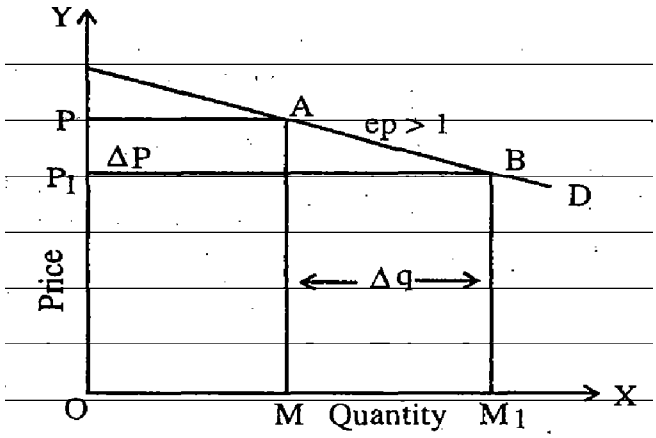


Diagram 12 : Highly Elastic Demand

4. **Inelastic Demand (ep < 1) :** When the price changes the quantity demanded proportionally less than the change in price. In other words, when a proportionate change in price causes less than proportionate change in quantity demanded, the demand is said to be relatively inelastic. Mathematically it can be expressed as:

$$1 < ep > 0.$$

The coefficient of elasticity of demand is somewhere between one and zero. Or, the elasticity of demand is relatively inelastic. This can be seen from diagram13.

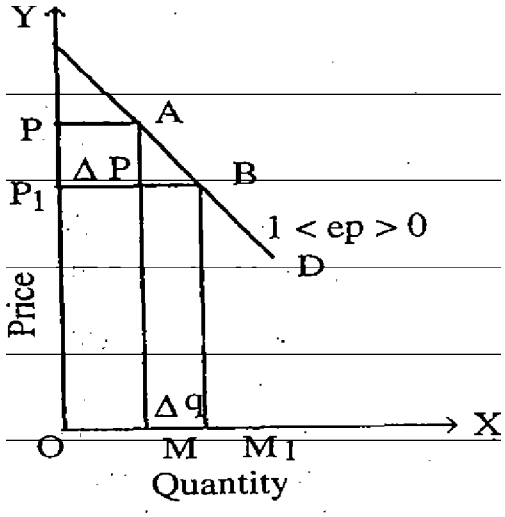


Diagram 13 : Inelastic Demand

The value of Δ q is less than p or Δ q < Δ p and, therefore, the value of elasticity is less than one.

5. **Unitary Elastic Demand (ep = 1)**: When the proportionate change in quantity demanded is the same as that of proportionate change in price, the demand is said to be unitary elastic. The demand curve in such a case will be a rectangular hyperbola. Diagram 14 explains this situation.

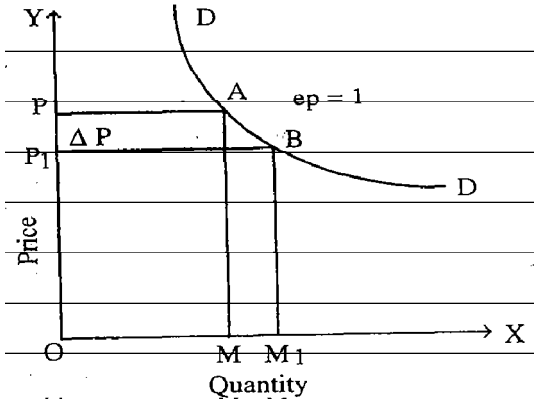


Diagram 14 : Unitary Elastic Demand

The whole discussion relating to the degrees if elasticity of demand can be summarised in following table:

Table: 2

Value of Elasticity	Degree of Elasticity	Explanation
1. $E_p = \infty$	Perfectly elastic	Buyers are prepared to buy entire quantity at the prevailing price but none at slightly higher price. Conversely, they can buy infinitely at lower price.
2. $E_p = 0$	Perfectly inelastic	Quantity demanded does not respond to any change in price.
3. $E_p > 1$	Elastic demand	Proportionate change in quantity demanded is greater than proportionate change in price whether the price falls or rises.
4. $E_p < 1$	Inelastic demand	Response of quantity demanded is proportionately less than change in price.
5. $E_p = 1$	Unitary elastic	Proportionate change in demand is the same as that of proportionate change in price.

5.8 Measurement of Price Elasticity of Demand

We have defined price elasticity of demand as a quantitative relationship between the change in quantity demanded and change in price. There are three methods by which the price elasticity of demand can be measured. These are :

1. Total Outlay method or Expenditure method.
2. Point method or Geometrical method.
3. Arc method.

1. **Total Outlay Method:** When price of a commodity rises or falls the expenditure incurred on this commodity also changes. This method is also called Total Expenditure or Total Revenue Method. It was given by Alfred Marshall. In this method we compare the total expenditure of a consumer on the commodity in question, before and after the change in its price. When price falls, if total outlay on that commodity remains the same the price elasticity of demand is said to be unitary elastic; if total outlay rises the elasticity of demand is greater than one (or elastic) and when total outlay falls the elasticity of demand is said to be less than one (or inelastic). When price rises it happens to be just opposite. This can be seen from the following table 3.

Table: 3

Price (P) (Rs.)	Quantity (Q)	Total Outlay (P × Q)	Q	P × Q	Q	P × Q
10	1000	10,000	1000	10,000	1000	10,000
8	2000	16,000	1250	10,000	1200	9,600
5	4000	20,000	2000	10,000	1500	7,500

From table it can be seen the total outlay changes with the fall in price (in this example we have taken fall in price but a rise in price can also be taken in the same way). With the fall in price, if total outlay increases ep> 1, if total outlay falls ep < 1 and when total outlay remains constant ep = 1

This relationship can further be amplified in Table 4.

Table 4

Outlay and Elasticity

Elasticity of Demand	> 1	1	< 1 > 0
	Elastic	unitary elastic	Inelastic
Fall in Price	Total outlay	Total outlay	Total outlay
	increases	remains constant	decreases
Rise in Price	Total outlay	Total outlay	Total outlay
	falls	remains constant	increases

Total outlay method can be explained diagrammatically also in diagram 15.The change in total outlay is on the X-axis and price is shown on Y-axis when price falls from OP to OP_1 the total outlay increases from PA to P_1B; when price falls from OP_1 to OP_2 the total

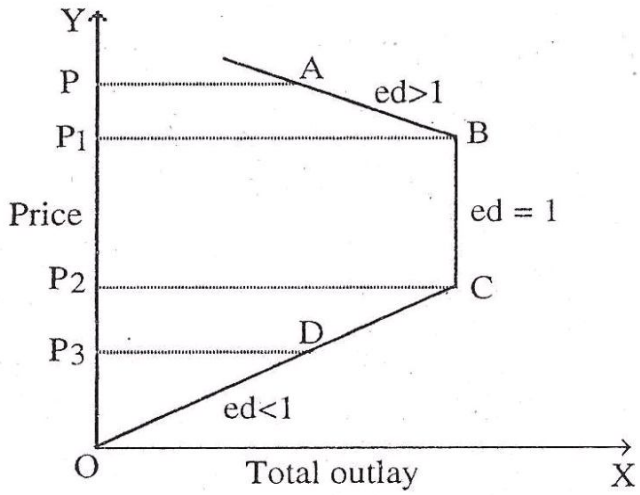


Diagram 15

Outlay remains the same P_1B and P_2C and if price falls from OP_2 to OP_3 and the total outlay also falls from P_2C to P_3D.

All these three different elasticities are explained by the diagram 15 With the fall in price A to B the price elasticity of demand is greater than one (ep > 1) BC segment is where elasticity of demand is unitary (ep =I) and in CD segment the elasticity of demand is less than unity (ep < I).

The total outlay method is a crude method. It does not explain the price elasticity value in precise terms (it says only less than or greater than or equal to one). The numerical values are not given. Also minute changes in price and their impact on elasticity are not explained by this method.

Point Method or Geometrical Method:

This method was also suggested by Alfred Marshall. It explains the elasticity of demand at a particular point of the demand curve if the demand function is linear one (or when demands curve is straight line sloping down from left to right). The point method not applicable on curvilinear demand curves. This method is based on the proposition that each point of the straight line demand curve has different elasticity of demand. This has been explained by point method, also known as Geometrical Method. However, the basic formula for its measurement i.e.

$\frac{\Delta q}{\Delta p} \times \frac{p}{q}$ remains same.

In point elasticity, we measure elasticity at a given point on a demand curve. Point elasticity makes use of derivative rather than finite changes in price and quantity. It may be defined as $\frac{-\Delta q}{\Delta p} \times \frac{p}{q}$.

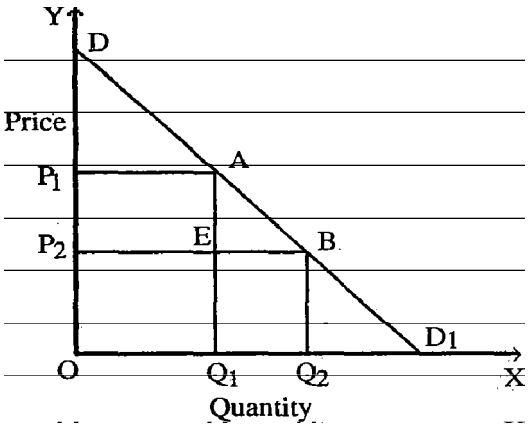


Diagram 16

In diagram 16 we will determine elasticity of demand at point A on demand curve DD_1. If the price falls from OP1 to OP2, the quantity demanded increases from OQ_1 to OQ_2.

Now the price elasticity of demand at point A will be, according to formula,

$$e_p = \frac{\Delta q}{\Delta p} \times \frac{P}{Q} \quad \ldots (1)$$

In figure $\Delta q = Q_1Q_2$

$\Delta p = P_1P_2$

$P = OP_1$

$Q = OQ_1$

Substituting these values in (1) we get

$$e_p = \frac{Q_1Q_2}{P_1P_2} \times \frac{OP_1}{OQ_1} \quad \ldots (2)$$

We can see that $Q_1Q_2 = EB$, $P_1P_2 = AE$, $OP_1 = Q_1A$ and $OP2 = Q_2B$ replacing these values in (2) we get

$$e_p = \frac{EB}{AE} \times \frac{AQ_1}{OQ_1} \quad \ldots (3)$$

Now consider $\angle AQ_1D_1$ and $\angle AEB$

$\angle AQ_1D_1 = \angle AEB$

$\angle EAB = \angle Q_1AD_1$

Now we have got two triangles $< AQ_1D_1$ and DP_1A which are similar to each other. Therefore, the ratio of their sides are also the same. As Such $\frac{Q1\,D1}{OQ\,1}$ will the same as that of $\frac{AD1}{DP1}$ and $\frac{AQ1}{DP1}$ (since OQ_1 in the same as P_1A).

Hence $$e_p = \frac{Q_1D_1}{OQ1} or \frac{AQ_1}{DP_1} \left[= \frac{OP_1}{DP_1} \right] or \frac{AD_1}{DA}$$

Assuming that the distance between A and B is reduced indefinitely, the two points will coincide and as such, the elasticity of demand at point A will be equal to AD_1/DA, In other words, when the demand curve is a straight line the elasticity at a point will be

$$e_p = \frac{Lower\ Segment\ of\ Demand\ Curve}{Upper\ Segment\ of\ Demand\ Curve}$$

It should be remembered that the point elasticity of demand on a straight line is different at every point. Elasticity at one point is the ratio of lower part of the demand curve to the upper part of the demand curve. Therefore, we can see that slope of the demand curve is constant throughout its length but the elasticity is different at different points. This can be explained with the help of a diagram.

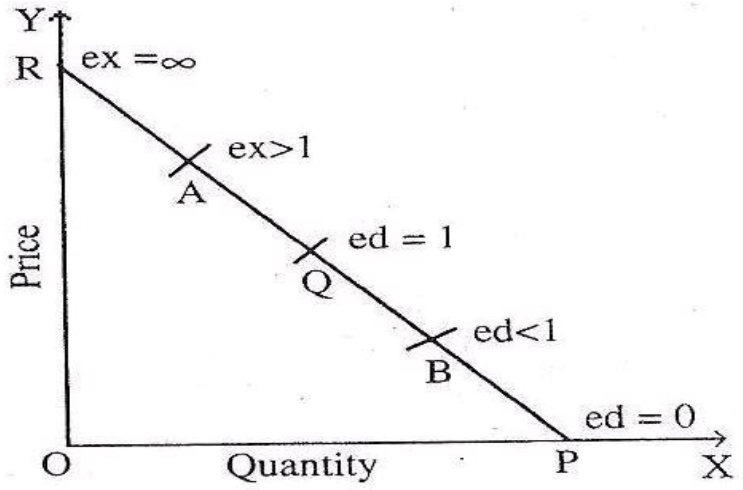


Diagram 17

Now we can calculate elasticity of demand at different points R,A,Q,B and P, As per the ratio of the lower part to upper part.

$$e_p \text{ at } Q = \frac{QP}{RQ} = 1$$

$$e_p \text{ at } A = \frac{AP}{RA} = >1$$

$$e_p \text{ at } B = \frac{RP}{RB} < 1$$

$$e_p \text{ at } R = \frac{RP}{O} = ¥$$

$$e_p \text{ at } P = \frac{O}{RP} = 0$$

Therefore, we can say that at the mid-point on a straight line demand curve, elasticity will be unitary, at higher points (such as A and R) elasticity will be greater than one; at lower points (B and P) the elasticity will be less than one. At points R and P the elasticities will be infinite and zero respectively. Point method is very useful in economics. It helps us measuring elasticity with very small changes in price and quantity demanded. It also tells us that slope and elasticity are two different things.

3. **Arc Method :** As we have seen that point elasticity method can be used to determine the elasticity of demand at different points when infinitesimal changes in price are taking place. If the price change is somewhat large or we have to measure elasticity between two different points rather than at a specific point we use Arc Method. When we have to measure the price elasticity over an arc of the demand curve, such as between points Q and Q_1 on the demand curve in diagram 18. the point elasticity method cannot yield true picture. In measuring arc elasticity we use the average of the two prices and average of two quantities at these prices in the following manner.

$$e_p = \frac{\Delta q}{q_1 + q_2/2} \div \frac{\Delta p}{p_1 + p_2/2}$$

$$= \frac{\Delta q}{q_1 + q_2/2} \times \frac{p_1 + p_2/2}{\Delta p}$$

$$= \frac{\Delta q}{q_1 + q_2} \times \frac{p_1 + p_2}{\Delta p}$$

$$= \frac{\Delta q}{\Delta p} \times \frac{p_1 + p_2}{q_1 + q_2}$$

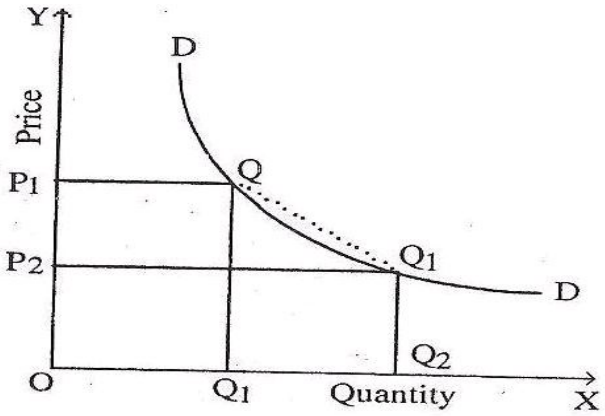


Diagram 18

Suppose commodity X's position is like this - At price of Rs. 10 (P_1) its quantity demanded is 100 (Q_1) and at price of Rs. 5 (P_2) its quantity demanded is 300 (Q_2). The elasticity of demand as per Arc Method will be -

$$ed = \frac{\Delta q}{\Delta p} \times \frac{p_1 + p_2}{q_1 + q_2}$$

$$= \frac{200}{5} \times \frac{10 + 5}{100 + 300}$$

$$= \frac{200}{5} \times \frac{15}{400} = 1.5$$

Since the elasticity of demand has been calculated between QQ_1 points and therefore, average has to be taken over the arc (dotted line joining Q and Q_1).

5.9 Types of Elasticity of Demand

There are three different types of elasticity of demand. Basic among them is the price elasticity of demand. However, we will narrate other types of elasticity of demand also.

1. **Price Elasticity of Demand (ep) :** This type of elasticity has already been explained in detail because this forms the basic concept of elasticity of demand. However, for the sake of text this can be simply repeated as

$$e_p = \frac{\text{Proportionate change in quantity demanded of a commodity}}{\text{Proportionate change in Price}}$$

2. **Income Elasticity of Demand (ei):** Income elasticity of demand shows the degree of responsiveness of demand to the change in income, of the consumer. Thus

$$e_p = \frac{\text{Proportionate change in quantity demanded of a commodity}}{\text{Proportionate change in Income}}$$

$$ei = \frac{\frac{\Delta q}{q}}{\frac{\Delta M}{M}}$$

For instance, consumer's income (M) rises from Rs. 100 to Rs. 200, the quantity purchased rises from 25 units to 60 units of his income elasticity of demand (ei) will be

$$= \frac{\frac{35}{25}}{\frac{100}{100}} = \frac{35}{25} \times \frac{100}{100} = \frac{35}{25} = 1.40$$

3. **Cross Elasticity of Demand (e_c)** : Sometimes, demand for two goods are related in such a manner that when the price of one commodity changes the quantity demanded of another commodity also changes, when its own price remains unchanged. It should be noted that in the concept of cross elasticity of demand, in response to the change in price of one, the quantity demanded for another changes. Therefore,

$$e_p = \frac{\text{Proportionate change in quantity demanded of X}}{\text{Proportionate change in In Price of of Y}}$$

$$= \frac{\frac{\Delta qx}{qx}}{\frac{\Delta py}{py}} = \frac{\Delta q_x}{q_x} \times \frac{p_y}{\Delta p_y}$$

In cases of substitute goods (say tea and coffee) the coefficient of cross elasticity of demand will be positive. Substitute goods are also known as competing goods. In case of complementary goods (such as bread and butter, tea and milk) will be negative because the rise in price of one will cause fall in quantity demanded of another. Therefore, according to the cross elasticity of demand whether good X and Y are substitute or complementary will depend upon the positive and negative cross elasticity respectively. However, one should not base the classification of goods on the basis of such values of cross elasticity while the goods between which dross elasticity is positive can be called substitute but the goods between which the cross elasticity of demand is negative is not always complementary. This is because negative cross elasticity is also found when the income effect on the price change is very strong.

Factors Affecting Elasticity of Demand:

Elasticity of demand is influenced by so many factors. In fact these are the factors influencing price elasticity of demand in particular and elasticity of demand in general, because price elasticity of demand is a basic concept of elasticity and other concepts derived from it. Some of the factors are:

1. **Nature of the Commodity:** The demand for necessities is generally inelastic or less elastic because the consumer will buy such commodities even at higher prices. For example salt, food items etc. On the other hand demand for luxurious goods is elastic. When the price of such goods fall then demand increases substantially. Same is the case with life saving drugs. Whatever the price of life saving drugs they will continue to be demanded even at a higher price.
2. **Availability of Substitutes:** If more and more substitutes of a commodity are available its elasticity will be more and more elastic. In case no substitute is available the demand for that commodity will be less elastic.
3. **Multiple Uses of Commodity:** A commodity which can be put to variety of uses will have more elasticity in comparison to a commodity having limited Habits of Consumer use. For example,

electricity, when price of electricity rises its use will be made for important uses and the demand will contract. On the other hand if its price falls it will be put to even less important uses. Commodity having no alternative uses will face inelastic demand.

4. **Share of Income Spent on a Commodity:** If the proportion of income spent on a particular commodity is very small the demand for such a commodity will be inelastic. We can include in such commodities, salt, match-box, candle stick etc. On the other hand, the larger the proportion of income spent on a commodity more elastic will be the demand.
5. **Time Element :** Period of time is a very important factor in influencing elasticity of demand. Shorter the time less elastic will be the demand and longer the time more elastic will be the demand. This can be applied to single use durable goods and non-durable goods. At the same time if the consumption of a good can be postponed its demand will be elastic and vice versa.
6. **Future Price Expectation:** Future price expectation is also an important factor that influences elasticity of demand. If consumers feel that price of a commodity is likely to fall in future the demand will be elastic. At the same time if price is likely to rise in future, it will increase the quantity demanded considerably.
7. **Habits of Consumer:** When the consumers are habitual of consuming certain commodities the demand for such commodities is inelastic. Buyers' preferences rule over the price. Therefore, such things like cigarettes etc. are less elastic in their demand.
8. **Range of Prices:** Price elasticity of demand is also influenced by the range of price. At both levels, at very high price and at a very low price the demand is generally inelastic. This includes the price of diamond, jewellery, because at high prices only rich persons can buy. Any change in price of such commodities is not going to change the buyers and the demand will remain higher. The same is true for low price of commodities where the demand is inelastic.

5.10 Summary

Law of demand states that, if other things remains constant, at an increase in price demand decreases and at a decrease in price demand increases or there is an inverse relationship between price and demanded quantity. Law of demand is a qualitative statement. Elasticity of demand is a responsive change in demanded quantity in response to change in price of commodity. It is a quantitative statement. Generally elasticity of demand is used in decision making.

5.11 Key Words

Demand	:	The demand for anything at a given price is the amount of it which will be bought per unit of time at that price.
Demand schedule	:	Tabulation of the quantities of a commodity demanded at a particular point of time at various prices is known as a demand schedule.
Demand Curve	:	It is a diagrammatic representation of the demand schedule. It shows the relationship between quantity demanded and price.
Elasticity of demand	:	Elasticity of demand is a responsive change in demanded quantity in response to change in price.

5.12 Self Assessment Questions

1. What is demand? Explain its importance.
2. What is law of demand? Why does it operate?
3. What is demand function? Explain.
4. Define elasticity of demand. Explain various degrees of price elasticity.
5. What is elasticity of demand? How will you measure the elasticity of demand?
6. Describe various factors affecting elasticity of demand.

5.13 Reference Books

- Mehta P.L., Managerial Economics
- Agarwal M.D.& Deo Som: Business Economics
- Mathur N.D., Business Economics
- Dwivedi D.N., Principles of Economics

Unit - 6 : Supply

Structure of Unit

6.0 Objectives

After completing this unit you will be able :

- To assess the meaning and definition of supply.
- To understand law of supply.
- To understand elasticity of supply and degrees of elasticity of supply.

6.1 Meaning and Definition of Supply

Supply is the total quantity of a commodity which a seller would be willing to produce and sell at a given price, during a given period of time. However, we should understand the difference between 'stock' and 'supply'. Stock is the quantity of a particular commodity in possession of a specific supplier at a point of time. It is not necessary that the quantity possessed by the producer will be available to be supplied at a price. The stock, of course serves as a basis for supply. For example, a producer has 100 quintals of sugar in stock but he offers only 50 quintals of sugar at a time say for Rs. 15 per kg. He can increase the quantity to be offered in the market at a higher price. The quantitative difference between 'stock' and 'supply' depends upon the price of the commodity, time period and also on the nature of the commodity.

Lipsey defines, "Supply is a flow; it is so much per day, month or year."**According to Benham** "Supply is the amount offered for sale per unit of time."

Supply schedule and Supply curve

Supply schedule means the relationship between the market price of a commodity and the amount of that commodity that producers are willing to supply. Table 1 shows the supply schedule for rice and the curve made on the basis of it is known as supply curve.

Table 1

Price (Rs. Per kg.)	Quantity of rice the sellers will supply (in 00 Quintals)
5	20
4	16
3	12
2	10
1	0

On the basis of supply schedule as shown in table 1, supply curve can be drawn as follows :

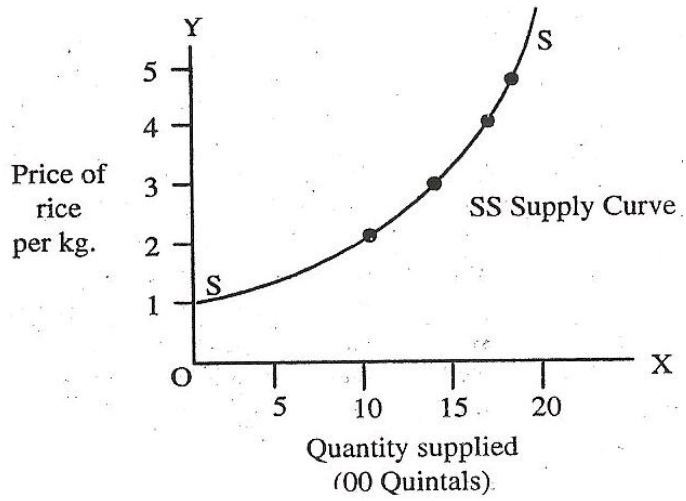


Diagram 1

The SS supply curve for rice normally rises upward to the right as the price increases. This suggests that the firms (or producer) supply more rice when prices rise because it is more profitable to do so. On the contrary, when the price of rice falls so low, or in our example at Re. 1 per kg, which is below production cost, they simply do not produce rice at all.

6.2 Law of Supply

Law of supply explains the relationship between price of a commodity and its quantity supplied. Other things remaining the same, when price of a commodity falls the quantity supplied decreases and vice versa. Thus there is a positive relationship between price of a commodity and its supply. One thing should be understood here is that law of supply is only an indicative statement, not a quantitative statement. It means that when the price will change the quantity supplied will also change in the direction of price change but will not explain 'how much'. For example, if the price of a commodity increases by 10% the quantity supplied, as per the law of supply, will also increase but will not explain how much the quantity supplied will increase.

Assumptions of Law of Supply : The law of supply applies on the assumption of other things being the same, therefore, following are the assumptions of the law:

1. There is no change in the income of buyer.
2. The price of factors of production remains unchanged.
3. There is no technological change.
4. Production is subject to law of constant returns.
5. No change in the price of related commodities.
6. Supply of factors of production is elastic.

Why does the supply curve slope upward, or why does the law of supply operate ?

There are two reasons of it as follows.

1. As the seller wishes to earn larger profits with the increase in prices, he increases the quantity supplied with every increase in price and does reverse when price falls.

2. Operation of the law of diminishing returns is another important factor for the supply curve to go upwards. As the production increases the cost also rises and thus the supply of goods will be increased only when prices also rise. In the study of marginalism we have studied that as marginal cost of production rises, the quantity supplied cannot be increased if prices are simultaneously not increased.

Exception to the Law of supply - There are, however, certain exceptions where the law of supply does not apply. We know that the quantity supplied is not affected by the price alone but by the some other factors also.

Following are the exceptions to the law of supply :

1. Price expectation of unusual nature does not allow the law of supply to operate. For example, expectation of fall in price will suddenly increase the quantity supplied because the producer wants to take the frill advantage of the present level of price. Similarly, expectation of rise in price will reduce the quantity supplied for the present.
2. Such goods which are subjected to regulated price mechanism, any rise or fall in price, will, not affect the quantity supplied of that commodity. For example, when the price of some commodity rises the welfare government may resort to the release of buffer stock for the stabilisation process.
3. Supply of artistic creations cannot be increased with the increase in price because their supply is highly inelastic. Nor their supply can be reduced with the fall in price.
4. Law of supply does not apply after a point to the supply of labour. We all know that labour as a 'factor of production does not increase after a particular level of wages. After a certain level of wages the labour would enjoy leisure than to work. Thus it happens that rise in wages does not increase the supply of labour.

6.3 Change in Quantity Supplied and Change in Supply

When the quantity supplied of a commodity changes due to change in its price is called change in quantity supplied. It is also known as expansion and contraction of supply. In this case the supply curve remains the same but price changes. Or we move along the same supply curve as shown in diagram 2.

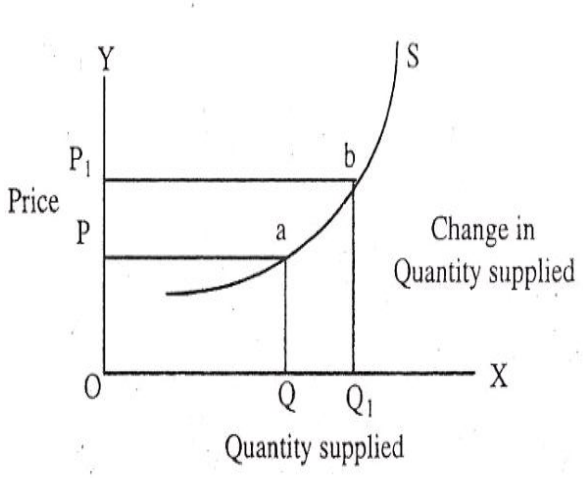
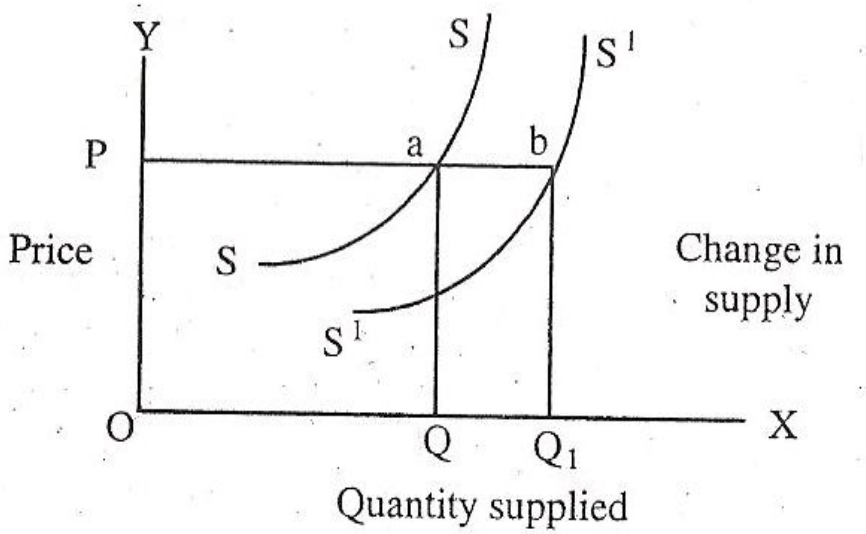


Diagram 2

As explained in diagram 2 when price was OP the quantity supplied was OQ a when the price goes up to OP_1 the quantity supplied changes to OQ_1. Thus the movement from a to b is known as change in quantity supplied or expansion of supply. Conversely when price falls from OP_1 to OP the quantity supplied is reduced to OQ is known contraction in supply.

On the other hand when change in quantity supplied is affected by any other factor than price it is known as change in supply or increase or decrease in supply. In this the price does not change but supply changes. This shifts the supply curve from one supply curve to another. This is explained in diagram 3.



When price remains OP but the supply curve shifts from SS to S^1S^1 and from S^1S^1 to SS, this is known as increase in supply and decrease in supply respectively. Movement from point a to point b or vice versa is shifting of supply curve.

Supply Function: - Supply function establishes a functional relationship between supplied quantity of a commodity and various factors affecting supply. It is shown as below:

$$SQ_x = f(P_x, P_f, P_r, ST, GP, OR, T)$$

Here, SQ_x is the supplied quantity of x commodity. f denotes the function and P_x, P_f, P_r, ST, GP, OR, T are factors affecting supply.

Factors affecting Supply : Following are the determinants of supply of a commodity:

1. **Price of the commodity -** Supply of a commodity is directly related with the change in the price of that commodity. As the price increases the producer, in the expectation of earning larger profits will enhance the supply of the commodity and vice versa. In fact, the quantity supplied of a commodity is increasing function of its price $Q_s^x = f(p_x) > 0$

   where Q_s^x = Quantity supplied of commodity x

   P_x = Price of commodity x

2. **Prices of factors of production -** The firm producing the commodity takes into account the prices of factors of production, or the cost of production. Any rise in the price of any factor would increase the cost of production. Thus the firm would increase the supply of a commodity only when the price of that commodity rises.

3. **Price of related commodities -** Price of related commodity also affects the supply. Suppose a producer is dealing in two commodities X and Y. If price of X rises then the producer would direct its resources for the production of X than Y. If the commodities are substitute commodities the producer, will take care more of the commodity whose demand has risen.

4. **State of Technology -** Any improvement in technology reduces the overall cost of production and thus opens avenues for increasing profitability for the producer. Due to this supply tends to be increased in the market even at the same level of prices. Whether the same quantity can be produced at a lower cost or greater quantity can be produced at the same cost this is enough incentive to enhance supply to earn more profits.

5. **Government Policy - G**overnment's policy regarding taxes, subsidies etc., greatly effects the supply of goods and services. Any imposition of tax and provision of subsidies will make the goods costlier and cheaper respectively. This will also affect the profitability of the firm. Not only taxes and subsidies but other non-monetary measures also help determining the supply of goods. These may be price preferences, tax moratoria, captive marketing etc.

6. **Operation of Returns -** The operation of laws of Returns and Returns to scale affect the supply to which an industry or firm is subjected to. Any new industry which is subject to increasing returns and internal and external economies will have better chances to increase the supply. Opposite will happen when the industry is subject to diseconomies and laws of diminishing returns.

7. **Time Period -** Time element has a great importance in determining the demand and supply both. Over a long period of time the supply does not behave as it does in short-term. In short term there are certain constraints in increasing the supply but such constraints can be taken care of in the long run. In case of perishable commodities' time factor plays a big role.

6.4 Elasticity of Supply

Elasticity of supply expresses the degree of responsiveness of the supply for a commodity to a change in its price. It is the ratio of percentage change in quantity supplied to the percentage change in price. Elasticity of supply is a quantitative expression of law of Supply.

$$Es = \frac{\text{Percentage Change in Quantity supplied}}{\text{Percentage change in Price}}$$

Or

$$Es = \frac{\text{Change in Quantity supplied}}{\text{Quantity supplied}} \Big/ \frac{\text{Change in Price}}{\text{Price}}$$

$$= \frac{\Delta Qs}{Qs} \div \frac{\Delta P}{P}$$

Therefore

$$= \frac{\Delta Qs}{Qs} \times \frac{P}{\Delta P}$$

$$= \frac{\Delta Qs}{\Delta s} \times \frac{P}{Qs}$$

Where

Es	=	Elasticity of supply
Qs	=	Quantity supplied
Qs	=	Change in Quantity supplied
P	=	Price
P	=	Change in Price

There is a direct and positive relationship between quantity supplied and price. Supply curve slopes positively from left to right.

6.5 Degrees of Elasticity of Supply

1. **Unitary Elasticity of Supply ($E_s = 1$):** When a proportionate change in price causes an equal and proportionate change in quantity supplied, supply is said to be unitary elastic. In such a case the supply curve shall pass through the origin. When the price for good X, rises from OP_1 to OP_2, as shown in diagram 4, the quantity supplied extends proportionately from OX_1 to OX_2. A rise in price leads to a proportionate extension in supply.

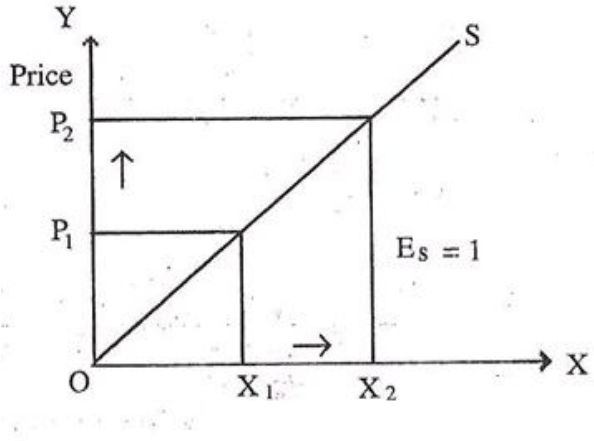


Diagram 4

2. **Relatively Elastic Supply (Es> 1):** When a proportionate change in price causes a more than proportionate change in supply, supply is said to be relatively elastic. As the price rises from OP_1 to OP_2, the supply extends, more than proportionately from OX_1 to OX_2, as shown in diagram 5.

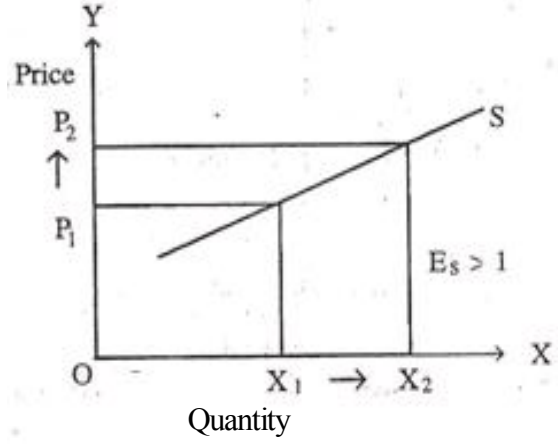


Diagram 5

3. **Relatively Inelastic Supply (Es <1) :** When a proportionate change in Price causes a less than proportionate change in supply, supply is said to be relatively inelastic. When the price increases from OP_1 to OP_2, supply extends less than proportionately from OX_1 to OX_2. This is shown in diagram 6.

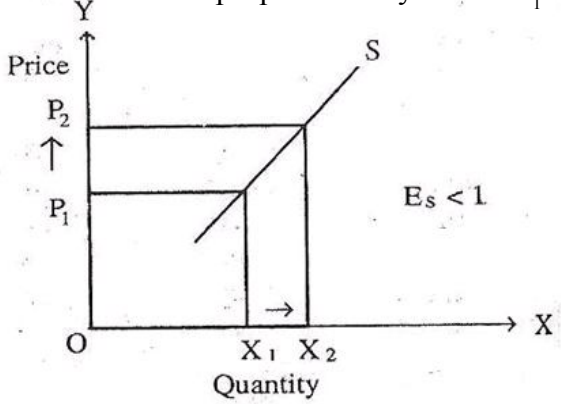


Diagram 6

4. **Perfectly Elastic Supply:** When an infinite rise in prices leads to an infinitely large extension in quantity supplied, elasticity of supply is perfectly elastic. The perfectly elastic supply curve is a horizontal straight line, parallel to the X-axis, showing quantity supplied at a height of the price. This is shown in diagram 7.

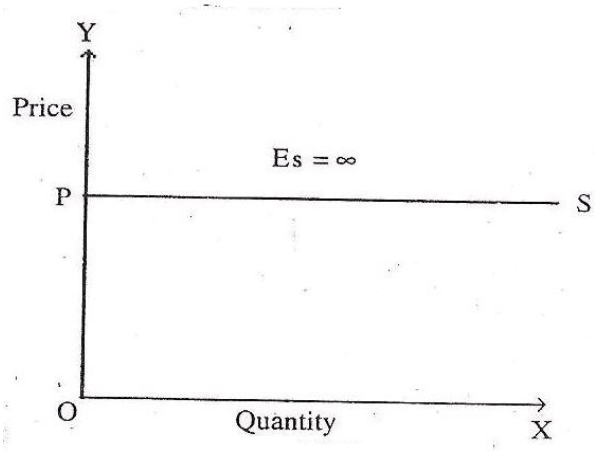


Diagram 7

5. **Perfectly Inelastic Supply:** Supply is said to be perfectly inelastic when, howsoever, much price may rise or fall, the quantity supplied remains the same. The perfectly inelastic supply curve, as shown in diagram 8, is a straight vertical line perpendicular to the X axis and parallel to the Y-axis.

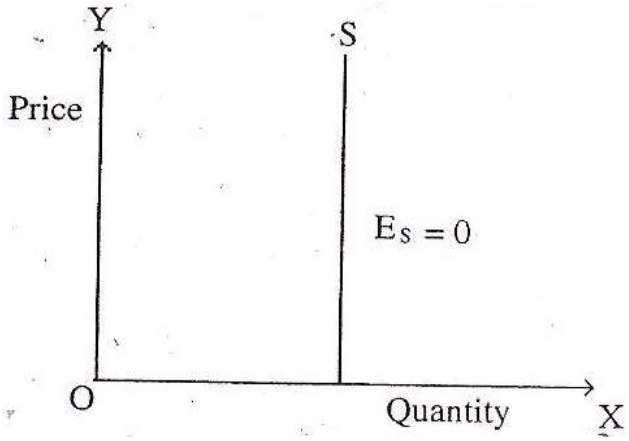


Diagram 8

6.6 Determinant of Elasticity of Supply

The elasticity of supply is determined by the following factors

1. **Time Period :** Elasticity of supply depends upon the time which the seller requires to bring about adjustment in supply. In the very short period where the supply of commodity is limited to the existing stocks, the supply is perfectly inelastic. In the short period, the supply of the commodity can be changed by altering the variable factors of production by having additional shifts or by using the existing plant and machinery more intensively. In the long period the supply has enough time to adjust itself to changes in demand. It is a time period in which all factors become variable. The elasticity of supply in the long period will be highly elastic.

2. **State of Factors of Production:** Supply of a commodity depends upon production factors. To increase production the seller will have to employ more units of the factors of production. If factors of production are scarce, they will have to be paid a higher price for the production of that particular

commodity. The supply curve in such a case shall be less elastic. If the factors of production are available abundantly, cost of employing such factors will be less and, therefore, the supply will be more elastic.

3. **Behaviour of Costs as Output Varies:** If the cost of production rise rapidly as the output rises, then the incentive to expand production in response to price rise will be limited due to increase in costs. In this case the supply will be inelastic. On the other hand, if the cost of production rises slowly as output increases, a rise in price that raises profits will bring forth a large increase in quantity supplied. In this case the supply will be more elastic.

6.7 Summary

Supply of a commodity is the amount of it, that a seller would be willing to produce and sell at a given price at a time. Supply differs from stock. Law of supply explains a positive relationship between price and supplied quantity. It is a qualitative concept because it denotes the direction of change in supplied quantity with a change in price. On the other hand elasticity of supply expresses the degree of responsiveness of the supply for a commodity to a change in its price. It is a quantitative concept.

6.8 Key Words

Supply	:	Supply is the quantity of a particular commodity which a producer is willing to produce and sell in the market at a price at a time.
Stock	:	Stock is the quantity of a particular commodity in possession of a specific supplier at a point of time.
Elasticity of supply	:	Elasticity of supply is the degree of responsiveness of the supply for a commodity to the percentage change in price.

6.9 Self Assessment Questions

1. What is supply? Explain the law of supply with the help of a suitable example.
2. Explain change in quantity supplied and change in supply.
3. What is elasticity of supply?
4. Explain various factors affecting supply.

6.10 Reference Books

- Mehta P.L., Managerial Economics
- Agarwal M.D.& Deo Som: Business Economics
- Mathur N.D., Business Economics
- Dwivedi D.N., Principles of Economics

Unit - 7 : Production Function

Structure of Unit

7.0 Objectives

After completing this unit you will be able:

- To assess the meaning and features of production function.
- To understand short run production function i.e. laws of returns.
- To understand meaning of ISO product curves and its characteristics.
- To understand long run production function i.e. returns to scale.

7.1 Introduction

Creation of want satisfying power is called production. A business firm completes its production process with the employment of various factors of production like: Land, labour, capital, entrepreneur and, Organization. The various combinations of these inputs result into production. The theory of production deals with the various combinations of inputs and the resultant output with given technology. The input output relationship is called production function.

7.2 Meaning and Definition of Production Function

The functional relationship between input and output is called production function. The production function tells us with given technology what will be the resultant output with different combination of inputs. In a mathematical formula production function can be expressed as given below:

$$O = f (L, Lb, C, E \text{ and } O)$$

O stands for output, f is function while L, Lb, C, E and O are various factors of production namely land, labour, capital, entrepreneur and organization Production function has been defined by various economists. Some of these definitions are given as follows:

(1) According to Professor Samuelson, "The production function is the technical relationship telling the amount of output capable of being produced by each and every set of specified inputs (or factors of production). It is defined for a given technical state of knowledge."

(2) According to Prof. J.M. Joshi, "The term production function refers to the physical relationship between a firm's inputs of resources and its output of goods and services per unit of time, leaving prices aside."

(3) According to Professor Lawrance R. Klein, "The production function is a technical or engineering relation between inputs and outputs."

It is evident from the above definitions that production function is the different combinations of inputs and the resultant output in physical terms with a given state of technology.

Assumptions of Production Function

The production function is based on certain assumptions as follows:

(1) It is related with a given period of time
(2) During short period production function is based. on one fixed factor of production while other factors of production are variable.
(3) During long period production function, all the factors of production are variable and even the scale of production can be changed.
(4) Different factors of production are divisible into small units.
(5) State of technology is given.
(6) Individual firm adopts the best possible techniques of production.

Salient Features of Production Function

Production function is the input output relationship with given state of technology and it is concerned with short run as well as long run. It has the following salient features:

(1) Production function studies the physical quantities of inputs and physical quantities of output. It is not concerned with the monetary calculations.

(2) Production function is totally independent of the prices of inputs and output. In actual practice the production decisions of an individual firm are based on the prices of inputs and output.

(3) The study of production function is based on the assumption that the technical know how is given. If the technology goes under change the production function will also change.

(4) The production function is concerned with a given period of time. Different periods of time have different types of production function.

(5) Under production function one input can be substituted by another input and the more or less units of these inputs can be employed.

(6) When an Individual firm employs one factor of production as fixed (land) and other inputs are kept variable during short period the production function is called short run production function.

(7) During long run all the factors of production are variable. When an individual operates its production in such a situation it is called long run production function.

(8) Production function studies the given techniques of production during short run as well as long run.

7.3 Short Run Production Function: Laws of Returns

When a firm changes its production keeping a factor of production fixed and other factors of production variable during short period, it is called short run production function. Laws of returns are of three types as given below:

(1) Law of Increasing Returns
(2) Law of Constant Returns
(3) Law of Diminishing Returns

Modern economists consider that there is one law of production in place of these three laws of production. It is called law of variable proportions. Now all these three law of returns are explained as below :-

(1) Law of Increasing Returns -

According to this law of production when few inputs are kept fixed and other variable factors of production are changed, with the increase in the units of variable factors, the total production increases at increasing rate i.e Marginal product increase.

The law of increasing returns will only apply when there is increase in the factors of production leading to improvement in the efficiency of the firm or inputs. The operation of the law can be explained with the help of a table as given below:

Table 1

Law of Increasing Returns (Production in Quintals)

Units of Variable Inputs (Labour & Capital)	Total Production (TP)	Average Production (AP)	Marginal Production (MP)
1	30	30	30
2	80	40	50
3	150	50	70
4	240	60	90
5	350	70	110

The table shows that with the increase in the units of variable inputs the total physical product increases with increasing rate because marginal and average products are also increasing. The table can be shown in the form of a diagram as given below: Diagram shows that with the increase in variable inputs the AP and MP are increasing.

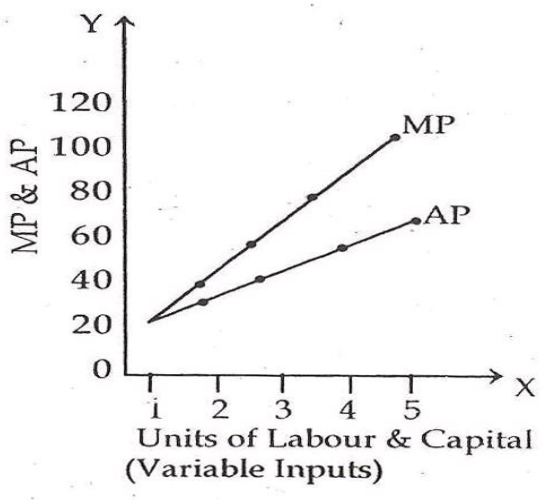


Diagram 1

Causes of application of Law of Increasing Returns

The law of increasing returns operates due to following reasons :

(1) Indivisibility of Inputs - Some factors of production are indivisible. These inputs are used in complete units and not in pieces. For example, a machine cannot be divided into pieces. As the variable inputs are increased the maximum utilisation of such indivisible input is made possible and consequently the resultant output will be more than in proportion to the change in variable inputs. The law of increasing returns will operate.

(2) Economies of Large Scale Production - As the scale of production increases the firms will enjoy internal and external economies of large scale production. Internal economies are concerned with the size and operation of the individual firm in the form of managerial, technical, marketing and specialisation economies. External economies in the form of availability of cheap labour, power, water, market, means of communication and transportation, banking and financial institutions, raw material etc. will be available in an area where industrial units are set up. These internal and external economies of large scale production will lead to the operation of the law of increasing returns.

(3) **Optimum Use of Resources** - The law of increasing returns applies on account of optimum use of fixed and variable inputs. The supply of inputs is adequate and optimum combination of inputs is attained by the producer and the law of increasing returns will operate in such a situation.

(4) **Maximum Utilisation of Installed Capacity -** When a firm utilises its maximum installed capacity then the production will increase more than in proportion to the change in variable factors of production during short period.

(2) Law of Constant Returns -

When the Average and Marginal production of a firm remains constant when the units of variable inputs are changed keeping the units of a fixed input constant, the operating law is called the law of constant returns during short period. This law is the mid-point between the law of increasing returns and the law of diminishing returns.

According to Professor Alfred Marshall, "If the actions of the laws of increasing and diminishing returns are balanced, we have the law of constant returns."

According to Professor Stigler, "When all the productive services are increased in a given proportion, the product is increased in the same proportion

Thus, we can say that the law of constant returns applies when the law of increasing returns stop and the law of diminishing returns does not operate. The law can be explained with the help of a table showing total product (TP), Average Product (AP) and marginal product (MP) ,when the units of variable inputs (labour and capital) are changed keeping other fixed inputs constant as given below:

Table 2

Law of Constant Returns (Output in Quintals)

Units of Variable inputs (Labour & Capital)	Total Production (TP)	Average Production (AP)	Marginal Production (MP)
1	20	20	20
2	40	20	20
3	60	20	20
4	80	20	20
5	100	20	20

The table reveals that change in variable inputs by one unit change the TP by 20 quintals and AP and MP are also 20 quintals. It is the operation of the law of constant returns. The law of constant returns can be shown in the diagram as given below:

Law of Constant Returns

Output (AP and MP) is shown on OY-axis while units of variable inputs are shown on OX-axis in the diagram. 2 Both are constant and equal with the change in the units of variable inputs.

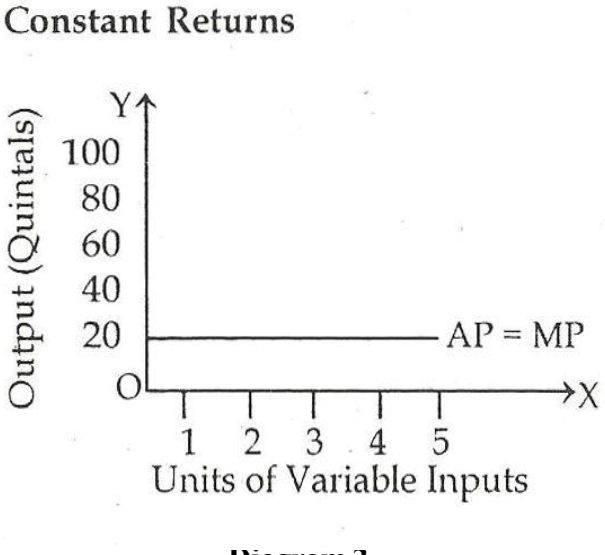


Diagram 2

(3) Law of Diminishing Returns

When the total output of a business firm increases in a lesser rate with every increase in the units of variable inputs keeping other fixed inputs constant, the law is called the law of diminishing returns.

According to Professor Alfred Marshall, "An increase in capital and labour applied in the cultivation of land causes in general a less than proportionate increase in the amount of produce raised, unless it happens to coincide with an improvement in the art of agriculture."

According to Mrs. Joan Robinson, "The law of diminishing returns, as it is usually formulated, states that with a fixed amount of any one factor of production, successive increases in the amount of other factors will after, yield a diminishing increment of the product."

Thus, the above definitions clearly reveal that the change in the units of variable inputs lead to change in the output less than in proportion and consequently the marginal product declines. The law of diminishing returns can be explained with the help of the following table:

Table 3

Law of Diminishing Returns (Output in Quintals)

Units of Variable inputs (Labour & Capital)	Total Production (TP)	Average Production (AP)	Marginal Production (MP)
1	10	10	10
2	18	9	8
3	24	8	6
4	28	7	4
5	30	6	2

The table shows that AP and MP are decreasing with the rising trends in TP. MP is falling more than the AP (AP>MP). It can also be shown in the diagram given below:

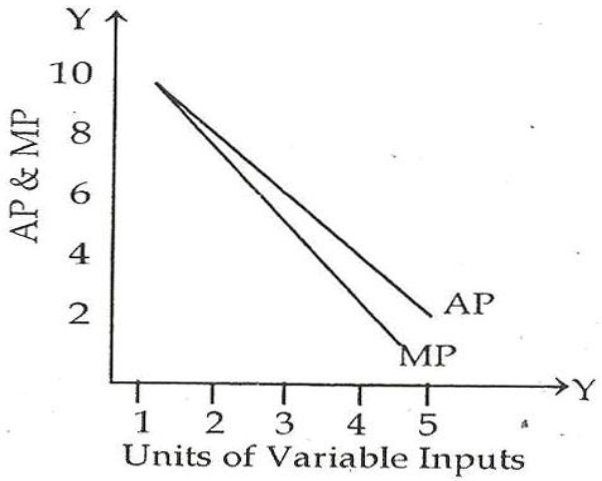


Diagram 3 - Law of Diminishing Returns

AP and MP are shown on OY-axis while units of variable inputs are shown on OX-axis. Both AP and MP are falling with the change in the units a variable inputs.

Modern Version of the Law: Law of Variable Proportions

Prof. Alfred Marshall explained the law of diminishing returns with special reference to agriculture when the land as input is kept fixed and units of variable Inputs (labour and capital) are changed, the law of diminishing returns will be operated. In other words the law applies to agriculture only. But the modern economists like Behnam, Mrs. Joan Robinson, K.E. Boulding have explained the law and pointed out that the law is a universal law. The law is also known as the law of variable proportions because with every increase in variable inputs the proportion of fixed and variable inputs goes under change.

According to **Professor Benham, "**As the proportion of one factor in a combination of factors is increased, after a point the marginal and average product of the factor will diminish."

According to Mrs. Joan Robinson has "The law of diminishing returns, as it is usually formulated, states that with a fixed amount of any one factor of production successive increases in the amount of other factors will after a point, yield a diminishing increment of the product."

Thus, we can say that the modern version of the law of diminishing returns is applicable to all areas of production and it is considered universally applicable law. It applies as soon as marginal product declines with the change in the units of variable inputs keeping fixed input constant. The law of variable proportions can be explained with the help of the following table:

Table 4

Law of Variable Proportions (Output in Quintals)

Units of Variable inputs (Labour & Capital)	Total Production (TP)	Average Production (AP)	Marginal Production (MP)	Stages of Producation
1	10	10	10	
2	18	9	8	
3	24	8	6	Stage 1
4	28	7	4	
5	30	6	2	
6	30	5	0	Stage II
7	28	4	-2	Stage III

The table shows that the total output (TP) increases at increasing rate first, afterwards it increases at decreasing rate and reaches at its maximum, remains constant and thereafter declines. AP is decreasing

but it is positive. MP decreases upto 5th unit of variable inputs, with the 6th unit it becomes zero (0) and with the 7th unit it is negative.

The table also reveals that there are three stages of production shown in the last column. The first stage is of law of increasing returns, the second is the stage of law of diminishing returns and the third stage is of the law of negative returns. A rational producer should avoid the third stage. The table can be presented in the shape of diagram as given below:

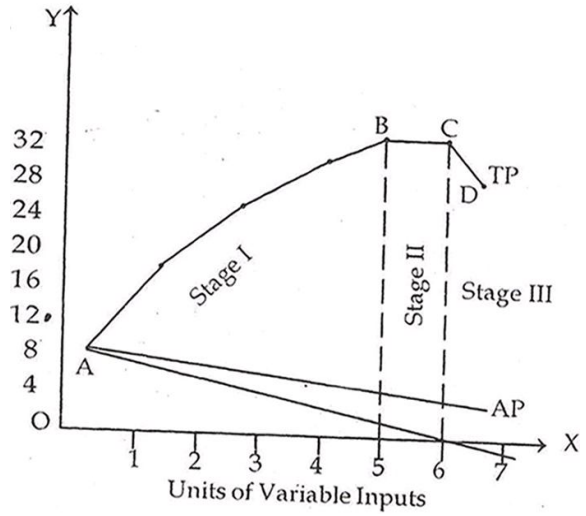


Diagram 4 – Law of Variable Proportion

Causes of Applicability of the Law of Diminishing Returns

The following are the causes of the operation of the law of diminishing returns:

(1) **Diseconomies of Scale -** After a point the internal diseconomies in the form of managerial diseconomies, marketing diseconomies, technological diseconomies and financial diseconomies creep in a business firm leading to increase in production less than in proportion to the change in variable factors of production

(2) **One or More Inputs are Fixed -** Under short period production function, variable inputs are changed keeping one or more inputs fixed, Limited units of fixed factors and increasing units of variable inputs create imbalance between the two and consequently the output increases less than in proportion to change in variable inputs. It leads to operation of the law of diminishing returns.

(3) **Imperfect Substitutes -** Factors of production are not perfect substitutes. Substitution is possible to a limited extent only. After this point the change in variable inputs lead to increase in production less in proportion and the law of diminishing returns operates.

(4) **Beyond Optimum Combination of Inputs -** When the units of variable inputs are changed with the units of fixed inputs keeping constant, But after this optimum point, if more of variable inputs are employed the resultant output will be less than in proportion to the changed inputs. It will lead to the operation of law of diminishing returns.

Importance of the Law

According to Professor Alfred Marshall the scope of the law of diminishing returns was limited to agriculture only but the modern economists have presented the modern version of the law and it is called the law of variable proportions. According to this law the scope is very wide. It applies to all frontiers of production and it is universally applicable to all activities of production when variable inputs are changed by keeping fixed factors constant after the point of optimum combination of these inputs. It is the fundamental law of economics. Various economic laws are based on it. The importance of the law can be studied under the following heads:

(1) **Fundamental Law of Economics -** The law of diminishing returns is a fundamental law of economics. It is applicable to all frontiers of production Like: agriculture, mining, manufacturing, fishing, construction of building etc.

(2) **Basis of Malthusian Theory of Population -** The Malthusian theory of population is based on the law of diminishing returns. According to theory, the growth of population is higher than the increase in the production of food grains. The output of food grains increases at slow rate because the law of diminishing returns applies in agriculture.

(3) **Basis of Ricardian Theory of Rent -** Professor David Ricardo has also explained his theory of rent and pointed out that rent arises on account of the application of the law of diminishing returns in agriculture. It applies in intensive cultivation where the size of landholdings remain constant and variable inputs (labour and capital) are changed and after a point the marginal product declines. In extensive cultivation labour and capital are kept fixed and the size of landholding is changed and after a point the marginal product declines because the law of diminishing returns operates.

(4) **Basis of Marginal Productivity Theory of Distribution –** The theory of distribution in which share of each factor is determined on the basis of marginal productivity of a factor of production. The marginal productivity theory of distribution is also based on the law of diminishing returns. On account of it the marginal productivity of a variable input declines.

(5) **Encourages Inventions and Discoveries –** The operation of the law of diminishing returns has encouraged various inventions and discoveries in all economic activities so that the law can be postponed for some time. New techniques of production, uses of pesticides and fertilizers, high yielding varieties of seeds are some of the measures which are the result of the operation of the law which has been postponed for sometimes in agriculture.

(6) **Basis of Standard of Living of People -** When the growth of population is higher than the growth of various types of resources then less goods and services are available to the people and consequently the standard of living of the people will be low because of the operation of the law of diminishing returns.

7.4 Long Run Production Function

Long run production function studies the input output relationship during long period. It is a period of time during which all the factors of production are variable and even the scale of production can be changed according to the demand for various goods and services by a business firm. When all the factors of production are changed in the same proportion then the change caused in the production is called returns to scale. The long run production function is analysed by a new technique known as the ISO-quant or ISO-product or equal product curve.

7.5 ISO Product Curve or Equal Product Curve

An iso-product curve is a locus of various combinations of two factors of production giving the same level of output and a producer is indifferent to each of such combination. All the combinations of two inputs give the same quantum of output to a producer and the producer is indifferent to such each combination. He does not has any preference. These iso-product curves are also called production indifference curves. The concept of iso-product curve is also called production indifference curves. The concept of isoproduct curve can be explained with the help of iso-quant schedule and diagram.

Iso-quant Schedule

An iso-quant schedule shows different combinations of two factors of production at which a producer gets equal level of output is called iso-quant schedule. The schedule is given below:

Table 5

Iso-quant Schedule

Combination	Factor A (Labour)	Factor-B (Capital)	Output (Q)
A	1	20	100 units
B	2	15	100 units
C	3	11	100 units
D	4	8	100 units
E	5	6	100 units

The above schedule shows the different combinations of two inputs namely labour and capital and the resultant output 100 units from each combination. The units of labour are increasing and units of capital are decreasing but the quantity of output remains the same. The schedule can be shown in the form of a diagram given below:

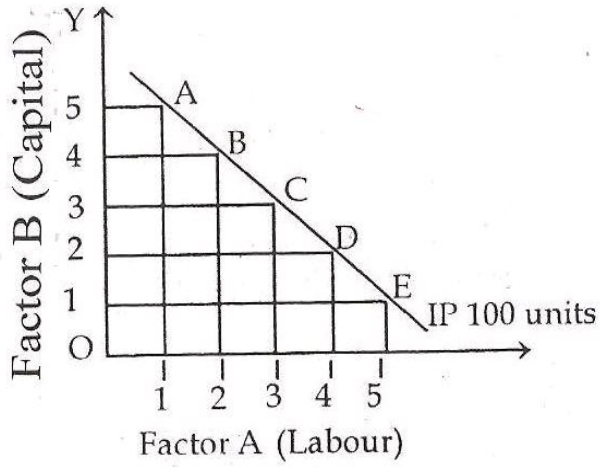


Diagram 5

The lP curve slopes downward to the right, It explains with the increase in the units of factor-A and reducing the units of factor-B.

Characteristics of Iso-Product Curves

The following are the characteristics of iso-product curves:

(1) ISO-product curves slope downward to the right: Iso-product curves slope downward to the right because producer has limited resources with alternative uses and he is faced with the problem of choice. He cannot increase the amount of labour and capital both. If he employs more of labour he has to employ less of capital in order to get the same level of output as given in the following diagram No. 6.

The diagram shows that units of labour are shown on ox-axis and units of capital on oy-axis. A combination shows OK of capital and CL of labour while at B combination OK_1 of capital and OL_1 of

labour showing the same amount of output (100 units). But the producer has employed more of labour and less of capital and on account of it the iso-product curve slopes downward to the right.

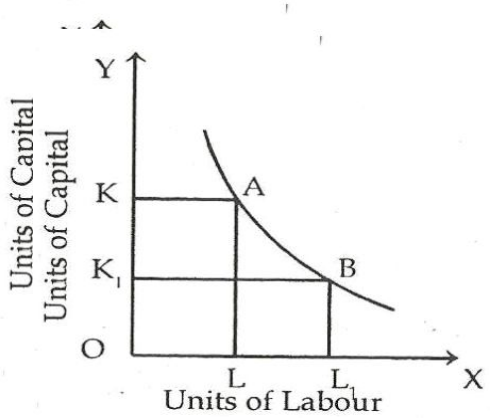


Diagram 6

(2) Iso-product curves are convex to the point of origin : As an indifference curve is convex to the origin. similarly an iso-product curve is also convex to the origin. In an iso-product curve a factor of production is substituted by another factor of production and consequently the marginal rate of technical substitution of labour for capital ($MRTS_{LK}$) declines and on account of decreasing MRT_{LK} the iso-product curves are convex to the origin. It is shown by the following diagram:

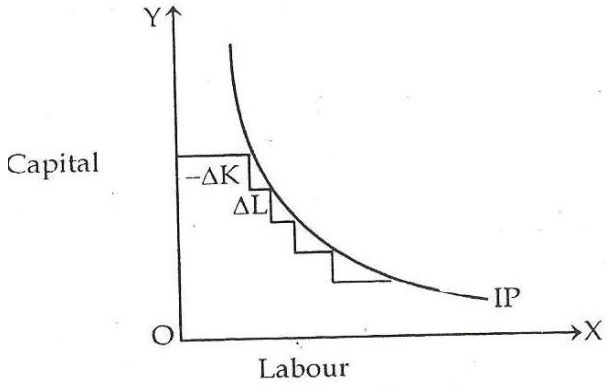


Diagram 7

Table 6

$MRTS_{LK}$

Combination	Labour (L)	Capital (K)	MRTS LK
A	1	20	-
B	2	15	5
C	3	11	4
D	4	8	3
E	5	6	2

The table reveals that we are increasing the units of labour and reducing the units of capital. The $MRTS_{LK}$ shows a declining trend.

(3) Two iso-product curve never intersect each other

Another characteristics is that two iso-product curves do not intersect each other as different iso-product curve shows different level of output. It is shown by the following diagram:

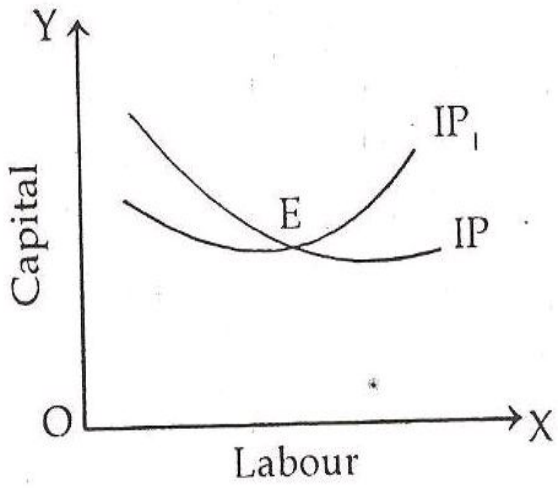


Diagram 8

Capital and labour are shown on oy-axis and ox-axis respectively. IP and IP_1 are two iso product curves. E is the point where IP and $1P_1$ intersect each other. Before E point IP is higher than $1P_1$ and after E point IP_1 is higher than IP. In such a situation it is difficult to know which Iso-product curve gives higher level of output. Hence we can say that it is indeterminate and two iso- product curves do not intersect each other.

(4) Higher the Iso-quant curve higher is the level of output : A producer gets the same level of output with different combinations of two inputs on the Iso-product curve. But in case of different Iso-product curve the level of output differs. Higher the Iso-product curve higher the level of output and lower the Iso-product curve lower will be the level of output. It is shown in the following diagram:

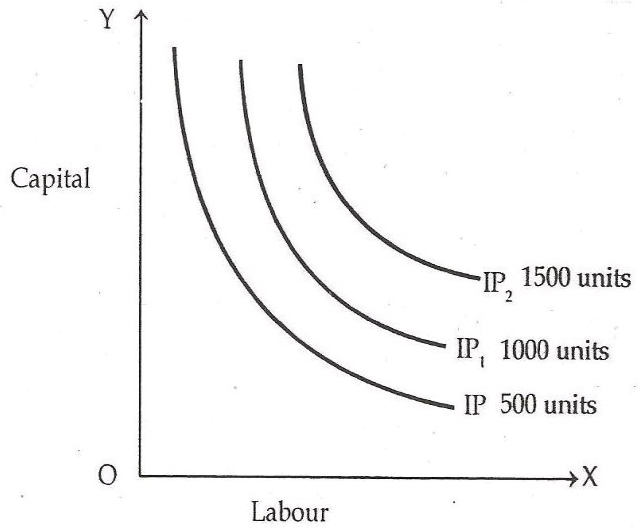


Diagram 9

The diagram shows Iso product map in which three Iso-product curves are showing different levels of output. IP, $1P_1$ and $1P_2$ are showing 500 units 1000 units and 1500 units respectively which show increasing trends. Higher the Iso-product curve higher is the level of output (IP_1 to IP_2), lower the iso-product curve lower will be the level of output (IP_1 to IP). The highest iso product curve is IP_2 and the lowest iso-product curve is IP.

Marginal Rate of Technical Substitution

Marginal rate of technical substitution is an important concept in the study of Iso-product curve analysis. The marginal rate of technical substitution is the rate at which two factors of production (inputs)

are substituted. For example we have two factors of production—capital and labour. The marginal rate of technical substitution of labour for capital ($MRTS_{LK}$) is that rate at which one unit of labour substitutes the number of units of capital. The $MRTS_{LK}$ can be studied from the following table:

Table 8

Marginal Rate of Technical Substitution

Combination	Factor A (Labour)	Factor B (Labour)	Marginal rate of technical Substitution of A for B ($MRTS_{AB}$)
A	1	12	-
B	2	8	4:1
C	3	5	3:1
D	4	3	2:1
E	5	2	1:1

The table reveals that all the combinations of factor A (labour) and factor B (capital) give the same level of output. If he has A combination then 1A+12B will give the same level of output when he employs 5 units of A and 2 units of B (5A+2B) at E combination the level of output remains unchanged. Hence the marginal rate of technical substitution of factor A for factor B can be written mathematically in the following formula:

$$MRTS_{AB} = \frac{\Delta B}{\Delta A}$$

Generally the MRTS declines because as we employ more of factor A then we have to employ less of factor B. It is called the MRTS and each iso-product is convex to origin on account of declining MRTS.

Iso-cost curve

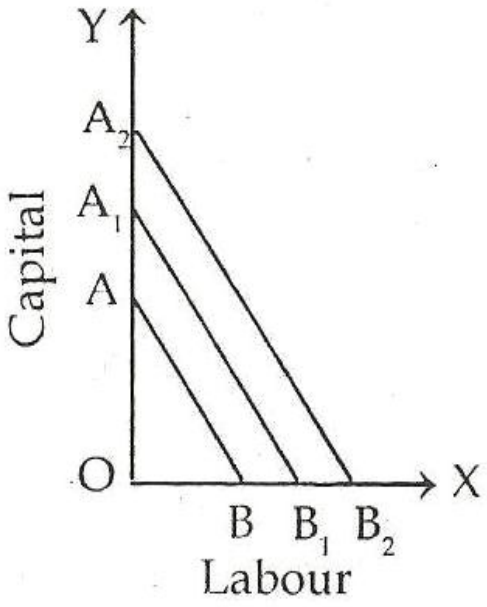


Diagram 10 : ISO - Cost Curve

As we know that different combinations of two inputs give the same level of output which is shown by an iso-product curve. Higher the iso-product curve higher will be the level of output. A producer is faced with the problem of choice because of his resources are limited and they have alternative uses. The

choice of producer depends upon the resources at his disposal and the factor prices. An iso-cost curve shows the various combinations of two inputs (labour and capital) that can be employed by a producer with his given resources. It means the resources of a producer and prices of two inputs are shown by this curve. It is given in the diagram.

In the diagram labour and capital are shown on ox-axis and oy-axis respectively. AB, $A_1 B_1$ and A_2B_2 are iso-cost line or curves showing different combinations of labour and Capital. If the producer wants to employ more of labour and less of capital then he should keep in his mind his budget and the prices of both these factors Higher the iso-cost curve higher will be the need for resources. Iso-cost curve is also known as outlay line and factor cost line.

Producers Equilibrium Least Cost Combination of Inputs or Factors

A producer is assumed a rational human being. His aim is to maximise his total production by attaining a least cost combination of factors of production (inputs). Thus a producer will be in equilibrium when a producer gets a given amount of output with the least cost combination of factors of production. He has several alternatives to produce a given amount of output but he will choose that combination by which he attains optimum factors of production in such a way that he minimise per unit cost of production. Iso-product curves help a producer to attain an optimum or least cost combination of factors of production

A producer's equilibrium can be attained with the help of two tools namely:

(i) Equal or Iso-product map
(ii) Iso-cost or equal cost curve.

An individual firm or a producer attains the optimum combination or least cost combination of two factors of production where iso- cost curve is tagent to iso-product curve. It can be explained with the help of the diagram.

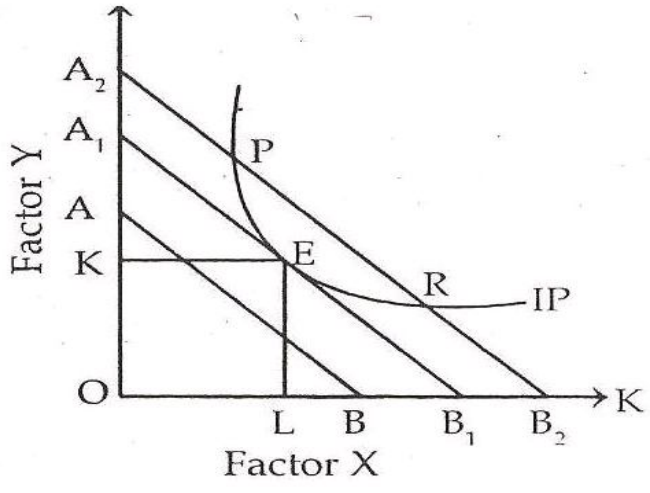


Diagram 11: Least Cost Combination of Factors

The diagram Shows factor-y on oy axis and factor-X on ox axis. AB, A_1B_1 and A_2B_2 are the Iso-cost curves. IP is the iso- product curve on which PER are three combinations, a producer will choose that combination which gives him the least cost. In the diagram the least cost combination is E where the cost of production is least or iso product curve touches the A_1B_1 iso-cost curve. Other combinations (P and R) are on higher Iso-cost curve. Thus by selecting other combination the cost of production will be higher than that of point E. Hence we can say that with given output, the E combination is optimum which gives least cost combination for a given amount of output.

7.6 Returns to Scale

The changes in total output on account of the change in the factors of production in the same proportion is called the returns to scale. In the long run all the factors of production are variable and even the scale of production can be changed according to the demand for various goods and services in the economy. Returns to scale is concerned with long term production function. It is studied with the help of iso-product curves. Returns to scale are of three types as shown below:

(1) Increasing returns to scale.

When the change in total output is more than in proportion to the proportional change in all the factors of production then it is called the increasing returns to scale. Thus the rate of increase in output is higher than the increase in factors of production.

When the distance between various iso product curves decreases on the expansion path or scale line then the increasing returns to scale will operate. It reveals that the increase in output in the same proportion require less ratio of labour and capital. Thus output increases more than in proportion to the units of factors of production employed under this law. It can be explained with the help of the following diagram:

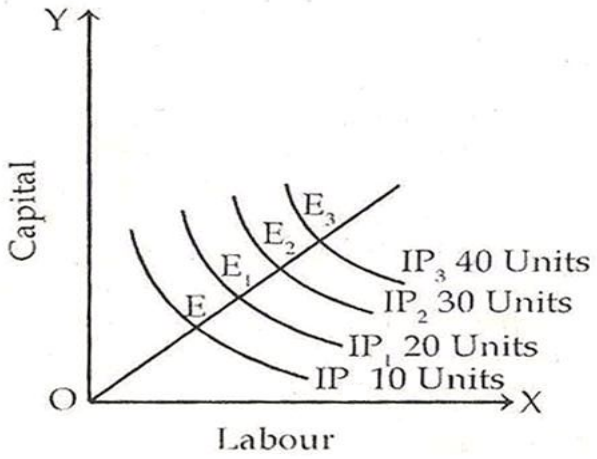


Diagram 12 : Increasing Returns to Scale

Capital and labour are shown on oy-axis and ox- axis respectively. IP, lP_1, $1P_2$ and lP_3 are different iso-product curves showing different levels of output viz 10 units, 20 units, 30 units and 40 units. The distance between successive iso-product curves diminishes as output is expanded by increasing the scale. The distance $OE > EE_1 > E_1E_2 > E_2E_3$ which reveals that for equal increase in output, firm has to employ less and less amount of labour and capital.

Causes of Operating the Law

The increasing returns to scale operates on account of the following causes or reasons:

(1) Indivisibilities of Inputs - There are some factors of production which are indivisible. Indivisibility means that they are available in a given shape or they can not be divided into small pieces. Machine, managers, research, finance and marketing are such examples of individualities. With the increase in the scale of production the efficiency increases and the output increases more than in proportion to the change in inputs.

(2) **Division of labour and specialisation -** When the scale of production is increased the division of labour and specialisation is introduced. A process of production is divided into sub-process and

each process is completed by each group of workers and at the same time the specialist are appointed for different departments viz finance manager, marketing manager, personnel manager, purchasing manager and so on. Their services lead to increase in the production and the increasing returns to scale operates.

(3) **Dimensional efficiency -** Increasing returns to scale is the result of operating dimensional efficiency in a business firm which is on account of the large size. The size increases the efficiency of all inputs and the increasing returns operates. Thus the investment in capital assets after a point will increase the output due to increased dimension of efficiency.

(4) **Economies of large scale -** When the scale of production is increased the internal and external economies of scale will operate and on account of it the increasing returns to scale will also operate.

Internal economies are on account of firms own size and organisation while external economies are caused by the concentration and localisation of industries. All these economies lead to increase in output more than in proportion to the change in the ratio of two inputs.

(2) Constant Returns to Scale

When total output of a firm increases in the same proportion in which the change in inputs takes place the law is called constant returns to scale. The proportion of two inputs remains constant. When all iso-product curves showing the same level of output have the equal distance between them on the expansion path or scale line, the law operating is called constant returns to scale. It is explained with the diagram.

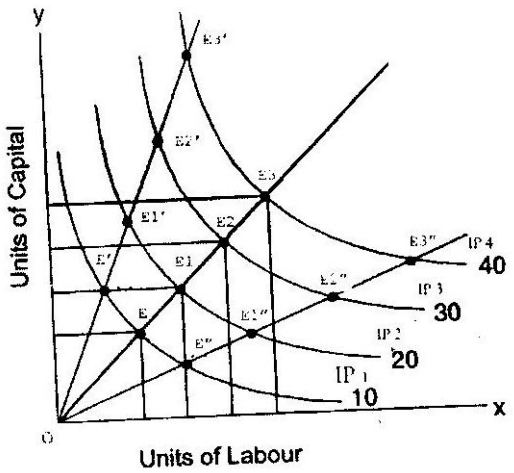


Diagram 13 : Constant Returns to Scale

Capital and labour are shown on oy-axis and ox-axis respectively IP, IP_1, IP_2 and IP_3 are different in product curves showing different levels of output viz 10 units, 20 units, 30 units and 40 units. The distance between iso-product curves is indicated by E, E_1, E_2 and E_3. The distance on scale line (OP) are equal. $OE = EE_1 = E_1E_2 = E_2E_3$. The distance between all iso- product curves remains constant, which reveal that the production increases in the same proportion in which inputs are changed. Hence it is constant returns to scale. This law operates at the point where neither the internal and external economies nor internal and external diseconomies are enjoyed by the firm during long period.

(3) **Diminishing Returns to Scale**

When proportionate change total output is less than the proportionate change in all the factors of production then, the diminishing returns to scale will operate. The distance between various iso-Product curves on the scale line increases, the diminishing returns to scale will operate Because for getting the same level of output we have to employ more of all inputs. It is explained with the help of the following diagram:

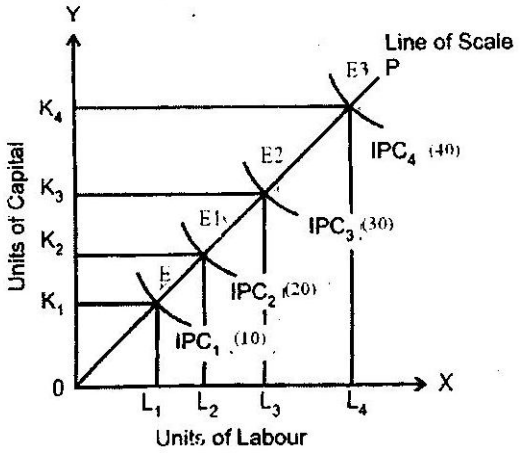


Diagram 14 : Diminishing Returns to Scale

Labour and capital are employed on ox-axis and oy-axis. OP is the scale line on which E, E_1, E_2 and E_3 different is product curves are showing different levels of output. The distance between these curves are increasing on the scale line which shows that we have to employ more of inputs and the resultant output is less than in proportion to the change in inputs. $OE<EE_1<E_1E_2<E_2E_3$ which show the diminishing returns to scale.

Causes of Operating the Law Diminishing Returns to Scale

The diminishing returns to scale operates on account of the following reasons :

(1) Diseconomies of large scale - When the scale of production is increased, the internal and external diseconomies of scale operate. On account of these diseconomies the output increases less than in proportion to the change in the inputs and the diminishing returns to scale operates.

(2) **Delay in Decision-making and its implementation** - With the size of scale of production the decisions are taken at different levels of management. Delay in decision-making and its implementation lead to increase in output less than in proportion to the changed in all variable inputs. Pressure from top management, red tapism and diseconomies of managerial skill lead to diminishing returns to scale.

(3) **Managerial inefficiency -** With the increase in the size and scale of production in the long period the management becomes a complicated process. It results into managerial inefficiency leading to operation of diminishing returns to scale operates.

(4) **Entrepreneur is not variable -** Entrepreneur is one of the factors of production. He is neither variable nor divisible input. In practice he is fixed and indivisible input and on account of change in other variable inputs the ratio under the large scale leads to imbalances and the law of diminishing returns to scale operates.

7.7 Summary

Production function is the functional relationship between input and output. It is divided into two parts i.e. short run production function and long run production function. Short run production function is applicable in short period. Short period is that period in which at least one factor remains fixed and at least one factor remains variable. It is known as law of returns.

Long run production function is applicable in long period. Long period is that period in which not only all factors of production are variable but also the technology can improve.

7.8 Key Words

Production Function	:	The Functional relationship between input and output is called production function. The production tells us with given technology what will be the resultant output with given technology what will be the resultant output with different combination of inputs.
ISO Product Curve	:	An ISO-Product curve is a locus of various combinations of two factors of production giving the same level of output and a producer is indifferent to each of such combination.
Marginal Rate of Technical Substitution	:	The Marginal rate of technical substitution is the rate at which two factors of production (Inputs) are substituted.
ISO Cost Curve	:	An ISO-cost curve shows the various combinations of two inputs (Labour and capital) that can be employed by a producer with his given resources.

7.9 Self Assessment Questions

1. What are the stages of laws of returns? What are the causes of their operation?
2. "The law of variable proportions has universal applicability in all spheres of production." Comment.
3. Define iso product curves. Explain features of iso-product curves.
4. What do you mean by Returns to Scale? Explain its various stages using suitable schedule and diagrams.

7.10 Reference Books

- Mehta P.L., Managerial Economics
- Agarwal M.D.& Deo Som: Business Economics
- Mathur N.D., Business Economics
- Dwivedi D.N., Principles of Economics

Unit - 8 : Cost Concepts, Classifications and Cost Functions

Structure of Unit

8.0 Objectives

After completing this unit you will be able to :

- To assess the meaning and concepts of cost.
- To understand cost-output relationship in short period.
- To understand cost-output relationship in long period.

8.1 Introduction

Cost and output analysis is related to production function, factor prices and efficiency of the entrepreneur. Various Cost Concepts have been propounded by different managers, economists and accountants. Production function explains the inputs and the resultant output relationship through which an Individual takes decision regarding the production and tries to attain its objective of maximization of output and minimization of cost of production. An entrepreneur tries to take decision accordingly.

The meaning of the cost differs from one discipline to another. An accountant has different point of view than that of an economist. A sociologist thinks in different way and his point of view is different from those of accountant and economist. Hence the concept of cost is used in different forms. The concept of costs is used in different way in decision-making by business managers. Following are some important concepts of cost:

8.2 Concepts of Cost

(1) Money Cost - Money cost is that cost which is expressed or measured in monetary terms. It is the cost in which the expenses are included namely price of raw materials, wages of labour, interest on capital. rent on land, salaries of managers and the normal profit of entrepreneur. Money cost is called accounting cost of production. Money cost consists of three elements in it. They are:

(i) Explicit Costs - These costs consist of all the payments made on the basis of contract to various factors of production employed by a firm like, prices of raw materials, rent, wages, interest, salaries, depreciation of plant and machinery and selling cost incurred during a given period of time. The record of such costs is maintained by the accountant.

(ii) Implicit Costs - These costs are invisible cost of production. The payment made to the owned factors of production is included in these costs. Interest on owned capital, wages to owned labour, salary to owned managers, rent to owned building, furniture and other infrastructures of the owner of the firm are part of implicit costs. The calculation of implicit cost is a difficult task.

(iii) Normal Profit - It is also a part of money cost. It is the minimum remuneration which a firm should get in order to remain in an industry. It is over and above the explicit and implicit cost of an individual firm. It is a motivational factor for a firm to continue its functions.

A business manager should take into consideration all three parts of money cost because they affect his business decisions. Explicit costs can easily be calculated as their record is maintained by the accountant in a business firm while the calculation of implicit cost is difficult. Money cost can be calculated as follows:

Money cost = Explicit cost + Implicit Cost ÷ Normal Profit

(2) Real Cost or Social Cost -Real cost means all those pains, efforts and sacrifices which are borne for production of any commodity. In other words, efforts and sacrifices made by various sections of the society for production of any commodity is the real cost of production. According to Prof. Marshall, "the direct and indirect efforts which are to be made by various types of workers in production of any commodity, or the restraint or waiting which is required to be undertaken for accumulating capital, all such efforts or sacrifices are collectively called real cost of the commodity".

According to this concept, the price of any commodity will be equal to the total pain and sacrifice borne for production of that commodity.' For example, in production of commodity 'A', the pain and sacrifice involved is twice than that for the production of commodity "B'. Hence, price of commodity 'A' will be two times of the price of commodity 'B',Marshall has termed real cost as 'Social Cost', because the society has to face the pains and sacrifices in production' of the commodities.

The concept of real costs has been criticised on following grounds:

1. The concept of real costs may be important from the viewpoint of the society and the nation, but from practical view point, it has no importance.

2. Pains and sacrifices may be experiences but these cannot be expressed in terms of money. In other words, concept of real costs is psychological and subjective, because realisation of pain for same type of work is of different types for different persons, which cannot be considered for purposes of assessment of income, due to lack of any certain yardstick.

(3) Opportunity Cost - The concept of opportunity cost 'is based on the fact that factors of production are limited and each factor has possibility of alternative uses. When any particular factor is used for production of any particular commodity, that factor loses the opportunity of being used for production of another commodity. Thus, that cost which induces any particular factor of production to remain in its existing use is known as opportunity cost. In other words, opportunity cost is the sacrifice of that alternative commodity or commodities, which can be produced with the help of these factors, from which the existing commodity has been produced. According to Benham, "Opportunity cost or alternative cost of anything is the next best alternative that could be produced instead by the same factors or by an equivalent group of factors costing the same amount of money".

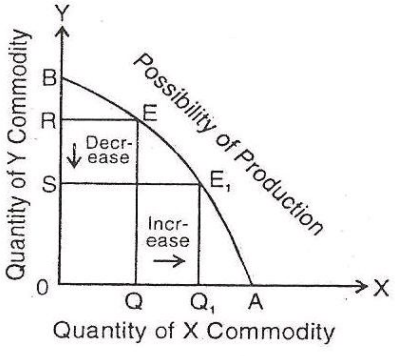


Diagram 1

Thus, that price of any unit of any factor which is necessary to retain' it in the given industry is called transfer income or transfer price. For example, if a farmer is producing 25 quintals of wheat with help of given land and factors of production and it can produce 30 quintals Bajra, with these factors, then opportunity cost of 25 quintals wheat is 30 quintals Bajra, because he is sacrificing 30 quintals of Bajra for 25 quintals wheat. Hence, the opportunity cost of any certain commodity is that best alternative, which has been sacrificed.

The opportunity cost may also be explained with the help of the diagram. In this diagram, AB line shows various possibilities of production of two commodities 'X' and 'Y'. It is known as production possibility curve. The quantity of factors with the producer is limited, from which two commodities 'X' and 'Y' may be produced. If the producer wants to increase the production of 'X', he will have to reduce the production of commodity 'Y'. Hence, it is clear that for increasing the QQ quantity of 'X' commodity, RS quantity of 'Y' commodity will have to be reduced. This is called "opportunity cost".

Following are the assumptions and characteristics of opportunity cost:

1. Opportunity cost or income is expressed in terms of monetary cost or income.
2. Opportunity cost includes both explicit and implicit costs.
3. The quantity of factors of production remains constant, in a certain time period.
4. The economy has the stage of full employment and perfect competition.
5. This concept applies to all types of industries and all factors of production.
6. Opportunity cost depends upon specialisation. The factor which is highly specialised will have low opportunity cost. If it is fully specialised, then its opportunity cost will be zero, as this factor completely lacks another alternative.
7. It is assumed that only two commodities 'X' and 'Y' are being produced in the economy.
8. All units of factor are similar in all respect.

(4) Direct and Indirect Cost - Direct cost is concerned with the production of a commodity. It is incurred directly on the factors of production. Such cost can easily be identified and it is directly concerned with the process of production. For example, there is production of commodity-X the direct cost can be calculated by taking into consideration the salaries of all the employees, cost of raw material, fuel charges etc.

Indirect costs are those costs which are not concerned directly with the production of a commodity. Such costs consist of selling cost, office overheads, rent of the building, salaries of security staff, depreciation of the machines etc. The allocation of these costs should be done judiciously on all the departments, processes or goods. Thus indirect cost can be calculated by deducting production cost of goods and services from the total cost.

$$\text{Indirect Cost} = \text{Total Cost} - \text{Direct Cost}$$

On the basis of direct and indirect costs a business manager can take the decision regarding the contraction and expansion of any production activity, working of any department or process.

(5) Incremental Costs and Sunk Costs - When a business firm changes its business activities or nature of its business then the incremental costs are incurred by the firms. It is the cost due to change in the level of business activity. For example, a business firm purchases a new machinery in place of an old machinery or a new product is included in the process of production and all such changes increases the total cost of production of that firm is called incremental costs. The difference between the changed total cost and initial total cost (before such change) is incremental cost. It is calculated as follows:

Incremental Cost= Changed Total Cost - Initial Total Cost

Sunk costs are those costs which are not affected by the changes in the level of business activity or nature of business of a business firm. These costs remain unchanged. Depreciation is an example of such costs. Such costs are also known as bad debt costs. When investment is made in a sick unit it is a bad debt because the investment made by the business manager may be recovered or may not be recovered.

Both incremental and sunk costs are important when the various alternatives are evaluated by the business manager while taking the business decisions. The incremental costs differ from one alternate to another while sunk costs do not change.

(6) Replacement Costs and Historical Costs - When an old machine is replaced with a new machine and cost incurred in such replacement is called replacement cost. It is also called substitution cost. It is important for such business firms where projects are replaced and production process is changed.

Historical cost is that type of cost which is based on the purchase price of a machinery initially. This cost is shown by an accountant in his balance sheet at the original cost of a machine rather than the present cost prevailing in the market or market cost of the machine.

Replacement cost plays an important role in business decision making because it affects the total cost of a business firm.

(7) Fixed Costs and Variable Costs - Fixed costs are those costs which are fixed whether production is being carried on or there is no production at all. These costs are short run costs wherein they remain fixed from zero production to the maximum possible production of a business firm. These costs are called supplementary costs, general costs, indirect costs and overhead costs. Rent of building, land tax, insurance premium, depreciation, salaries to managers, interest on permanent or fixed capital etc. are examples of such costs.

Variable costs are those costs which are directly related to production of a firm. They vary with the production. When production is not carried on, such costs will not arise. Cost of raw materials, direct wages, expenses on fuel etc. are the examples of such costs. These costs depend upon the volume of output.

(8) Short Run Costs and Long Run Costs - Short run costs are those costs which are concerned with the short run production of a firm. They are of two types namely fixed costs and variable costs.

Long run costs are those costs which are concerned with the long run process of production. In the long run all the factors of production are variable and even the scale of production can be changed. All the costs during long run are variable costs and no cost is a fixed cost.

(9) Controllable and Uncontrollable Cost :- Those costs which remain in the control of management and organization are known as controllable costs. Usually, Such costs include direct and variable costs.

Uncontrollable costs are those costs, which are beyond the control of the management and the organization, in the short term. Usually, fixed costs are uncontrollable costs.

(10) Urgent and Postponable costs : The costs which are absolutely essential to keep the production, marketing and production function of the firm continued are known as urgent Costs. It is not possible to postpone their use. For Example, raw materials, labour, fuel, production over heads, office overheads and distribution and marketing overheads, etc.

In every firm, some costs are such which may be postponed for some time and they do not materially affect the production. These are know as postponalbe costs ; for example, repair of building, painting and white washing, purchasing new furniture in place of old furniture and labour welfare activities, etc.

8.3 Cost-Output Relationship in Short Period

Cost and output are closely related because they effect each other. Time element plays an important role in price determination of a firm's cost. During short period two types of factors are employed. One is fixed factor while others are variable factors of production. Fixed factor of production remains constant with a change in production, while only variable inputs can be varied. Raw material, semi-finished material, unskilled labour, energy etc. are variable inputs which can be changed during short run. Machines, capital, salaries of managers and technical experts are included in fixed inputs. During short period an individual firm can change variable factors of production according to requirements of production while fixed factors of production cannot be changed.

The cost output relation during short period can be shown as below:

Short Run Total Costs

Short run total costs of a firm are classified as follows:

Total Costs - Those expenses which are incurred by a firm in the production of any commodity are included in it or total cost is the aggregate of total fixed cost and total variable cost. Total costs is calculated as follows:

Total cost (TC) = Total fixed cost (TFC) + Total Variable cost (TVC)

Total costs change due to change in the total variable cost only during short period because total fixed costs (TFC) remain constant. Short run total costs can be shown from the following table :

Table 1

Short Run Total Costs

Output (Units)	Total fixed cost (TFC) Rs.	Total Variable cost (TVC) Rs.	Total Cost (TC) Rs.
0	100	0	100
2	100	60	160
3	100	80	180
4	100	90	190
5	100	100	200
6	100	120	220
7	100	150	250
8	100	190	290
9	100	240	340
10	100	320	420

The table shows that total fixed cost remain constant when the production is zero or it is increasing while total variable cost is zero when production is zero and it changes with the change in output and total cost is the summation of total fixed cost and total variable cost.

Total Fixed Cost (TFC) - Those costs which remain constant when the output is zero as well as it is increasing are called total fixed costs. Such costs are borne by the firm whether there is production or not. Plant, land and building, machinery, tools, equipment, implements, contractual rent, insurance fee, maintenance cost, property tax, interest of the capital, manager's salary etc. are the items which are

included in total fixed costs. These costs are borne even there is zero production during short period. The table 1 shows when production is zero the total fixed cost is Rs. 100 and when it is 10 units even than it is Rs. 100. Hence, total fixed costs remain constant. TFC is shown in diagram 2 which is perfectly horizontal to ox-axis.

Total Variable Costs (TVC) - Those costs which vary with the production of a commodity during short period and they have direct relationship with the change in production. When Production is zero these costs will be zero and when production increases they will move in the same direction. These costs are incurred on raw material, direct wages and expenses on energy or power. Variable costs are also called prime costs or direct costs. Total variable costs are shown in diagram 2.

Thus, total cost is the summation (aggregates) of total fixed costs and total variable costs. All these costs are related to short run production. They are shown in the diagram 2 on the basis of the table 1.

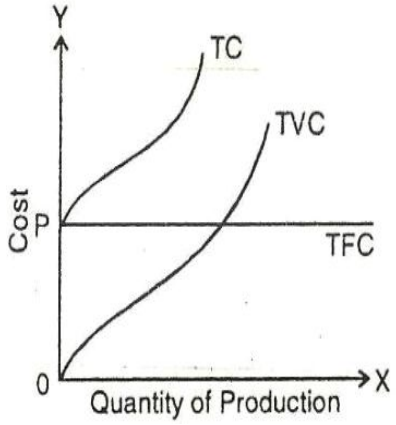


Diagram 2

The diagram 2 shows TC, TFC and TVC. TFC is parallel to OX-axis and it remains constant whether production is zero or it is 10 units. TVC starts from zero production where it is zero and goes on increasing with the increase in output. TC is the total of TFC and TVC. When production is zero total cost is equal to TFC and it increases with increase in production. The difference between TVC and TC is equivalent to TFC which remains constant.

Average Costs or Unit Costs

During short period average costs or per unit costs can be classified into following categories:

(i) Average fixed costs (AFC)
(ii) Average variable costs (AVC)
(iii) Average Costs (AC)
(iv) Marginal Cost (MC)

(i) Average Fixed Cost (AFC): The average fixed cost is the total fixed cost divided by the units of output. There is an inverse relation between output and average fixed cost. With the increase in output average fixed cost decreases and with the decrease in output the average fixed cost will increase. The shape of average fixed cost becomes rectangular hyperbola with the increase in output. It is calculated by using following formula:

$$AFC = TFC/Q$$

Q is volume of output, AFC and TFC are average fixed cost and total fixed cost.

(ii) Average Variable Cost (AVC): The average variable cost is total variable cost divided by the volume of output. Average variable cost falls with the increase in output, reaches at its minimum and then starts rising. The operation of law of increasing returns the AVC decreases, the operation of constant returns leads to constancy in AVC and the law of diminishing returns leads to increase in AVC. The shape

of AVC is U-shaped because of the operation of the laws of returns during short period. The AVC is calculated by using the formula given below:

$$AVC = TVC/Q$$

AVC and TVC are average variable cost and total variable cost while Q is the volume of output.

(iii) Average Cost (AC): Average cost is also called average total cost (ATC) during short period because it is the aggregate of AFC and AVC. AC can be calculated by dividing total cost (TC) by the volume of output or by aggregating AVC and AFC. Following is the formula of calculating AC:

$$AC = TC/Q$$

AC and TC are average cost and total cost while Q is the volume of output.

Another formula for the calculation of AC is as given under:

$$AC = AFC + AVC$$

The AC curve decreases with the increase in output and remains constant upto a point and thereafter it increases with the increase in output. Its shape is U- shaped due to operation of the law of returns during short period.

(iv) Marginal Cost (MC): It is an addition to total cost by producing an additional unit of output. It can be calculated as the change in total cost divided by an additional unit change in the output. The formula for its calculation is as given below:

$$MC = \frac{\Delta TC}{\Delta Q}$$

MC is marginal cost, Δ TC is change in TC and Δ Q is change in the volume of output.

For example, if the total cost (TC) of 5 units of a commodity is Rs. 550 and 6 units of a commodity is Rs. 600, then the marginal cost of 6th unit is Rs. 50. It can be calculated on the basis of the above formula as given under:

$$MC = 50/1 = 50 \text{ or Rs. } 50$$

The MC cost changes with the change in AVC and it is independent of fixed cost. In the beginning the MC falls, reaches at its minimum and thereafter continuously rises. MC is also U-shaped. The MC curve cuts the AC and AVC curves at their minimum points.

The cost output relation during short period can be seen from the following table:

Table 2

Short Run Output Relation (Rs.)

Total cost	Average Cost						
	TFC	TVC	TC (TFC+ TVC)	AFC	AVC	AC (AFC+ AVC)	MC
1	2	3	4	5	6	7	8
0	100	0	100	0	0	0	-
1	100	35	135	100	35	135	35
2	100	60	160	50	30	80	25
3	100	80	180	33.3	26.7	60	20
4	100	90	190	25	22.5	47.5	10
5	100	100	200	20	20.0	40.0	10
6	100	120	220	16.66	20.0	36.66	20
7	100	150	250	14.3	21.4	35.7	30
8	100	190	290	12.5	23.75	36.25	40
9	100	240	340	11.1	26.67	37.7	50
10	100	320	420	10.0	32.0	42.0	80

The above table reveals the trends in total costs (TFC and TVC), average cost (AFC and AVC) and MC. TFC remains constant while TVC goes on increasing and consequently TC is also increasing. AFC is decreasing, but it is positive AVC decreases, remains constant and thereafter increases. AC also decreases, remains constant and shows an increasing trend. MC increases, remains constant and thereafter shows an increasing trend.

On the basis of the table 2 we can show the costs and output relation during short period in the following diagram:

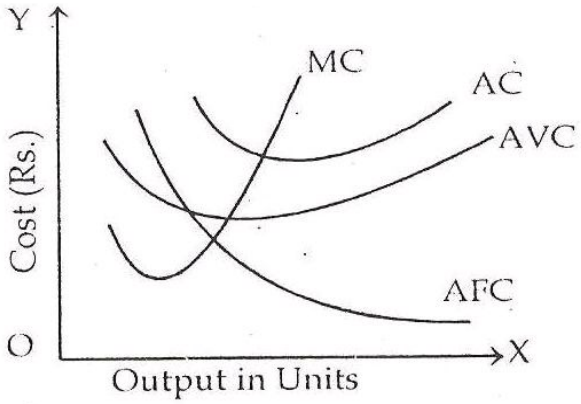


Diagram 3 : Cost and Output Relation

The diagram shows cost on OY-axis and units of output on OX-axis. AC, MC and AVC are U-Shaped curves. The U-Shaped curves are on account of the operation of the laws of returns during short period. AFC curve shows a decreasing trend, MC curve passes through the minimum points of AC and AVC curves. There is a close relationship between AC and MC as given below :

1. AC and MC fall in the beginning but MC falls more rapidly than AC and MC is below AC or AC is greater than MC (AC>MC)
2. When AC rises MC also rises but is rises more rapidly than the AC and MC is greater than AC (MC>AC)
3. When AC is minimum it is equal to MC. The MC curve cuts the AC curve at its minimum points.

The relation between AC and MC can be seen from the following diagram during short period.

Relationship between Average Cost and Marginal Cost

Average Cost and marginal cost are closely related, which may be explained as follows :

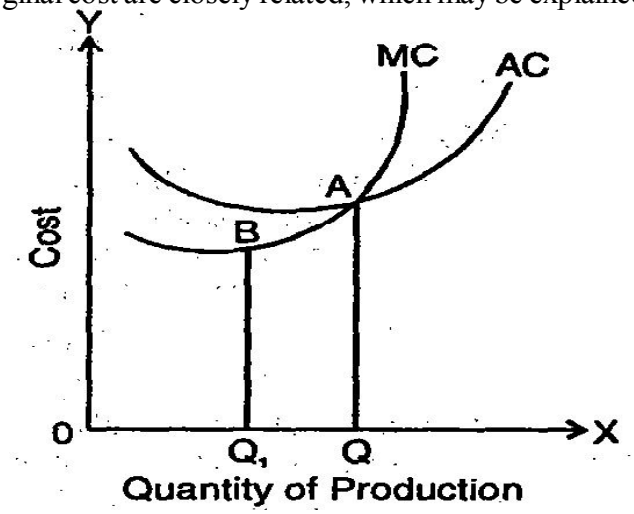


Diagram - 4

(i) AC and MC both are calculated on the basis of total cost of production.
(ii) When at initial stage, AC curve falls, then MC curve falls up to a limit, but after a stage, MC curve starts rising, although AC curve goes on falling. Hence, MC is always less than average cost, in conditions of decreasing average costs.
(iii) When AC curve is at its lowest point, then MC curve cuts AC curve from below, i.e. minimum average cost is equal to marginal cost.
(iv) When AC curve increases, then MC curve is above AC curve and increases faster than AC curve.

8.4 Cost-Output Relationship in Long Period

Long period is that period in which the producer can make all required changes in each factor of production. In long period, due to longer time duration, any firm can change all its factor of production, production methods and scales of production. That is why spencer has said, in long term production function no factor is fixed, due to long time period and no cost of the firm is fixed. In long period, long term marginal cost and long term average cost have important role in price determination, which is explained, as follows :

1. Long Term Average Cost:

Long Term average cost is calculated by dividing long term total cost by the units of production. Long term average cost curve explains the minimum long term average cost at various quantities of production. In other words, the curves framed by touching various short term average cost curves for production are known as long term average cost curve. It may be explained by the diagram also.

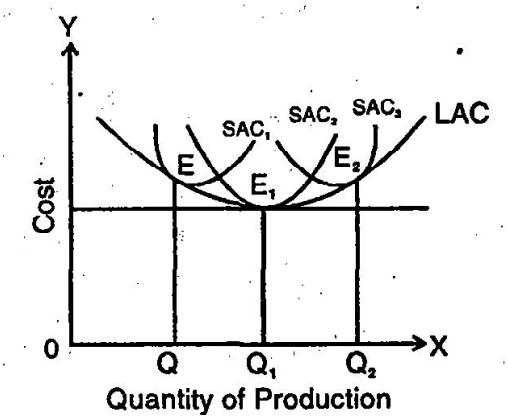


Diagram 5

In this diagram, long term average cost, LAC has been shown. In LAC curve, short term AC Curves. SAC_1, SAC_2 and SAC_3 have been shown. It should be remembered here that SAC_1 and SAC_2 and SAC_3 are the best plants of different production levels, like (1) SAC, curve plant OQ, (2) SAC_2, curve plant, show the best quantity of OQ_1 and (3) SAC_3 curve plant production quantity of OQ_2 . If a curve is drawn by Joining these various curves from each other, LAC curve will be formed. The characteristics of long term average cost may be explained by this diagram

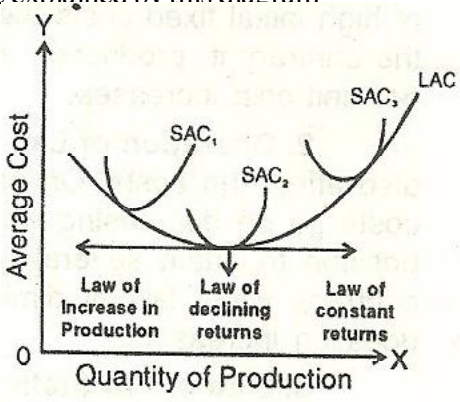


Diagram 6

1. Long term average cost (LAC) is the envelope of all short term average cost curves (SACs). That is why LAC is also known as envelope curve.
2. LAC is always less than SAC. That is why, all SAC curves are located above LAC.
3. LAC indicates minimum cost of production and optimum size of the firm (Law of constant returns).
4. LAC curve only touches the SAC curves and not cuts them.
5. LAC curve is also U shaped like SAC curves, but LAC curve is more flat as compared to SAC.
6. LAC curve does not touch all SAC curves at their lowest points.

LAC touches SAC at its lowest point at its own lowest points. Till LAC curve falls, it touches the falling parts of SAC curves and when LAC curve rises upwards, then it touches rising part of SAC curves.

2. Long Term Marginal Cost:

Long term marginal cost curve is also of 'U' shaped. In long term difference between fixed costs and variable costs comes to an end. All costs become variable and total variable cost and total cost become equal. Hence, in long run, marginal cost can be expressed or defined in the terms of variable cost. The total cost in the longer term due to production 'of one additional unit is known as long term marginal cost.

Long term marginal cost and long term average cost have the same relationship which is in short term marginal cost and short term average cost.

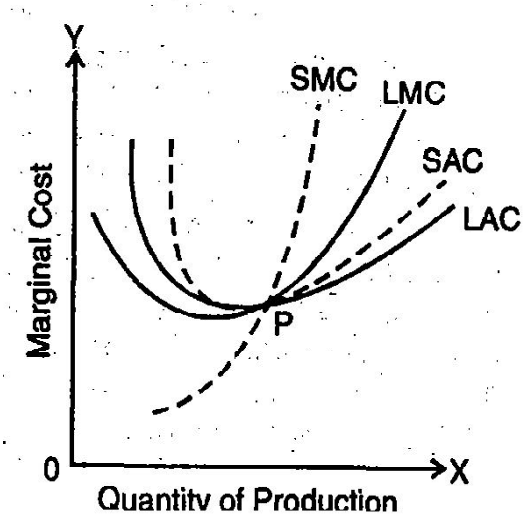


Diagram 7

It is clear from the diagram that when LAC falls, then LMC is less than it. At lowest point P of LAC, SMC becomes equal. Thereafter LAC increases and LMC remains higher than that. In the diagram, SAC and SMC are short term average cost curve and short term marginal cost curve, respectively. Thus, it is clear that at point P, LAC = LMC = SAC = SMC.

Why LAC Curves U-shaped

In the short run SAC curve is U-shaped because the laws of returns operate but in the long run LAC is also U-shaped because the Laws of Returns to scale operate namely law of increasing return to scale, Law of Constant Returns to scale and the Law of Diminishing Returns to scale. As the level of output is expanded or scale of operation is increased by the large firm they will enjoy economies of scale but if these firms produce beyond their installed capacity then they might get diseconomies of scale. Economies of scale bring down the fall in unit cost and diseconomies results into rise in it.

8.5 Summary

Cost and output analysis is related to production function, prices of factors of production etc. Cost differs from one discipline to another. In short period cost can be divided into two parts i.e. fixed cost and variable cost because a part of factors of production remains fixed in short period and a part of factors of production remains variable. While in long period all factors of production remains variable, therefore cost is variable only.

8.6 Key Words

Money Cost	:	Money cost is that cost which is expressed or measured in monetary terms. It is the cost in which the express are included namely price of raw materials, wages of labour, interest on capital, rent on land, salaries of managers and the normal profit of entrepreneur. Money cost is called accounting cost of production.
Real cost	:	Real cost means all those pains, efforts and sacrifices which are borne for production of any commodity. In other words, efforts and sacrifices made by various sections of the society for production of any commodity is the real cost of production.
Opportunity cost	:	that cost which induces any particular factor of production to remain in its existing use is known as opportunity cost. In other words, opportunity cost is the sacrifice of that alternative commodity or commodities, which can be produced with the help of these factors, from which the existing commodity has been produced.
Direct cost	:	Direct cost is concerned with the production of a commodity. It is incurred directly on the factors of production. Such cost can easily be identified and it is directly concerned with the process of production.
Indirect cost	:	Indirect cost are those costs which are not concerned directly with the production of a commodity. Such costs consist of selling cost, office overheads, rent of the building, salaries of security staff, depreciation of the machines etc.
Fixed cost	:	Fixed costs are those costs which are fixed whether production is being carried on or there is no production at all.
Variable cost	:	Variable costs are those costs which are directly related to production of a firm. They vary with the production. When production is not carried on, such costs will not arise.

8.7 Self Assessment Questions

1. Define cost and explains various concepts of cost.
2. Explain short run costs by using suitable schedule and diagram.
3. Explain relationship between Average Cost and Marginal Cost.

8.8 Reference Books

- Mehta P.L., Managerial Economics
- Agarwal M.D.& Deo Som: Business Economics
- Mathur N.D., Business Economics
- Dwivedi D.N., Principles of Economics

Unit - 9 : Market and Price Determination

Structure of Unit

9.0 Objectives

After completing this unit :

- You can understand the market structure.
- You will learn general theory of price determination.
- You will come to know the role of time element in price determination.

9.1 Introduction

Generally the term market refers to a place where buyers and sellers are physically present to purchase and sale goods and services for a price. But in economics the market is a comprehensive term and there is no particular place where the buyers and sellers are physically present. Buyers and sellers are scattered and they are in contact with one another through the means of communication like letters, agents, brokers, telegraphs, telephone, newspapers, e–commerce etc. Transactions are finalized on the basis of samples and the goods are handed over or transferred from one place to another. Thus in economics market is a wider term.

9.2 Meaning and Features of Market

In economics the term market is used to an area where buyers and sellers of a particular commodity are scattered and they are in contact with one another to purchase and sale of goods and services. Different definitions have been given by different economists. Some of these are described below:

(1) **According to Prof. Stonier and Prof. Hague**, "——by a market economists mean any organisation whereby buyers and sellers of a goods are kept in close touch with each other"

(2) **According to Professor Coornot,** "Economists understand by the term market, not any particular market place in which things are brought and sold but whole of any region in which buyers and sellers are in such free intercourse with one another that the prices of the same goods tend to equality easily and quickly."

(3) **According to Professor Jevons**, "—but the word has been generated so as to mean any body of persons who are in intimate business relations and carry on extensive transactions in any commodity."

(4) **According to Professor J.C. Edwards**, "A market is that mechanism by which buyers and sellers are brought together. It is not necessarily a fixed place."

(5) **According to Professor Chapman**, "The term market refers not necessarily to place but always to a commodity and the buyers and sellers who are in direct competition with one another."

(6) **According to Professor J.K. Mehta**, "By a market economists mean any organization whereby buyers and sellers of a good are kept in close touch with each other."

Salient features of market

The following are the salient features of a market:

(1) **One area -** Market does not mean that the buyers and sellers of a commodity are physically present. But market is one area or region in which buyers and sellers of the commodity are scattered. They are in close touch with one another through different means of communication.

(2) **Buyers and sellers -** Exchange requires at least one buyer and one seller of a commodity. Buyers and sellers are a must for a market. Transactions take place between sellers and buyers but their physical presence is not necessary. They may have contact through different types of communication.

(3) **One commodity -** For the existence of a market there should be atteast one commodity like wheat, vegetables, ghee, sugar etc. and the market is termed as cloth market, wheat market, vegetables market etc.

(4) **Knowledge of the Market –** Buyer and seller posses knowledge of market related to available goods, their features, uses etc.

9.3 Classification of Markets

Markets can be classified into several categories on the basis of the elements found in their existence. They are as below:

(1) **On the basis of area or region -** On the basis of area or region a market can be classified into the following categories:

(i) Local market - When buyers and sellers of certain commodities are limited to an area or region then the market is called local market. Heavy weight goods and perishable goods have the local market because their demand is concerned with a particular area or region like bricks, stones, milk, vegetables etc.

(ii) Regional market - If the buyers and sellers of a commodity are concentrated to a certain region or state, the market is called regional market. The area is wide than the local market.

(iii) National market - When the demand for some goods is limited to the boundary of the country, the market is called national market.

(iv) International market - When the demand for goods crosses the boundary of a country, the market is called international market. Gold, silver, food grains and medicines are bought and sold throughout the world. Hence their market is international market.

(2) **Markets on the basis of time element**

On the basis of time element the market can be classified into following categories:

(i) Very short period market - The supply of goods in this market is limited to their stock only. Producer cannot increase their supply. The demand determines the price of such commodities. The price under this market is called market price.

(ii) Short period market - During this period, production can be increased to the productive capacity and producers can adjust the supply according to capacity of fixed factor. Demand plays an important role in price determination.

(iii) Long period market - It is a market wherein the supply can be adjusted to the quantity demanded. All the factors of production are variable and even the scale of production can. be changed. Supply plays an important role in price determination. The price under this market is called 'Normal Price.'

(iv) Very long period market - Under this market both demand and supply can be changed. Demand increases due to increase in population, change in tastes, habits and fashion while supply

can be increased by increasing the variable inputs and even the scale of production can be changed. There is price determination by the economic forces of demand and supply and the permanent equilibrium is attained.

(3) Market on the basis of functions

On the basis of functions markets can be classified into following categories:

(i) Mixed or general market - A market where all types of goods are bought and sold is called mixed or general market. Markets in cities are found of this category like departmental store.

(ii) Specialized market - A market where a particular commodity is sold is called a specialised market like Vegetables market, food grains market, cloth market etc.

(iii) Marketing by samples - When the goods are bought and sold on the basis of samples, the market is called marketing by samples. Oil seeds, food grains and raw cotton are bought and sold on the basis of samples.

(iv) Marketing by grades - When the goods are graded and then different buyers and sellers deal in such goods on the basis of their grades, then the market is called marketing by grades. Agricultural products are graded and then they are sold accordingly.

(4) On the basis of nature of Commodity

The market is also classified on the basis of nature of commodity as given below:

(i) Product market - A market where a particular product is bought and sold is called a product market. For example agricultural products are sold in agricultural markets (Krishi Mandis) is a market of this type.

(ii) Stock market - A market where stock and shares, bonds, securities, debentures etc. are bought and sold is called stock market. Bulls and bears are engaged in finalizing the transaction as per the market rates.

(iii) Bullion market - A market where silver and gold are bought and sold is called bullion market. In this market metallic trading takes place.

(5) Markets based on legality

On the basis of legality markets can be put into two categories as given below:

(i) Legal market - A market where legal transaction of goods and services take place between buyers and sellers. It is recognized by the government. It is also called a fair market.

(ii) Illegal market - A market where high prices are charged what have been fixed by the government and it happens when the goods are in short supply. Business men and trades earn profits by indulging in black marketing, smuggling and hoarding.

(6) Markets based on competition

On the basis of competition can be of following categories:

(1) Perfect competition or Pure Competition
(2) Imperfect competition
- **(i) Monopolistic competition**
- **(ii) Oligopoly**
- **(iii) Duopoly**

(3) Monopoly

(1) Perfect competition or pure competition: A market structure where a large number of buyers and sellers selling homogeneous product at an uniform price is called perfect competition.

Professor Leftwitch has defined, "Perfect competition is a market in which there are many firms selling identical product with no firm being large enough relative to the entire market so as to be able to influence market price."

Salient Features of Perfect Competition

The following are the salient features of perfect competition:

(1) A large number of buyers and sellers - There is a large number of buyers and sellers of a commodity under this market structure. No individual seller or buyer is in a position to influence the market price as they sell or purchase a small portion of the total stock available in the market.

(2) Homogeneous product - The product sold by various firms in this market is identical. Identical product means that each unit of the product is perfect substitute.

(3) Free entry and exist of firms in an industry - In this market each individual firm is free to enter and exit the industry whenever they are interested. There are no restrictions on the entry and exit of firms in the industry.

(4) Perfect mobility of factors of production - All the factors of production have perfect mobility. Whenever there is change in their remuneration they can move from low paid remuneration to highly paid remuneration in other industries under this type of market.

(5) Perfect knowledge of market conditions - Under this type of market buyers and sellers have perfect knowledge regarding the price of the product, its availability and who are selling the product and who are buying the product. Perfect knowledge leads to existence of single price in the market.

(6) No transport cost - Under this market there is no transport cost because the market is adjust to the area. Commodity is easily carried away from one part of the market to another that there is no need of transport cost.

(7) Absence of artificial restrictions - Under this type of market there is non-existence of any artificial restrictions on the demand and supply of the product, prices of inputs and products and price determination

Pure competition - Prof. Edward Chamberlin has distinguished perfect competition and pure competition. He says that in pure competition there is lack of monopoly elements. The following are the salient features of pure competition:

- **A large numbers of buyers and sellers**
- **Homogenous product**
- **Free entry and exist of firms in an industry**

Professor Baumol has defined, "An industry is said to be operating under conditions of pure competition when there are many firms, homogeneity of products, freedom of entry and exit, independent decision- making."

Thus the above characteristics are also found in perfect competition. We can say that perfect competition is a comprehensive term and it includes pure competition in it.

(2) Imperfect competition

Another type of market structure based on competition is imperfect competition. There are small number of firms selling differentiated product. The concept of imperfect competition was developed by Mrs. Joan Robinson and Professor Chamberlin in 1933. Under this market there is a large number of buyers and sellers with product differentiation, there is no restrictions on entry and exit of firms but there is an existence of non-price competition among these differentiated products.

Mrs. Joan Robinson has defined, "Imperfect competition is the stage between perfect competition and monopoly." Professor Lerner has defined, "Imperfect competition obtains when the seller is confronted with a falling demand curve for the product."

According to Professor Chamberlin, "Competition is said to be imperfect if the number of sellers is limited and there is product differentiation."

On the basis of definitions of imperfect competition we can say that the following are the salient features of imperfect competition:

(1) A small number of buyers and sellers.

(2) Ignorance of buyers and sellers.

(3) Product differentiation.

(4) Differences in prices.

(5) Non-price competition or advertisement and sales promotion.

(6) High transport cost.

(7) Other factors prevailing in the market namely trade mark, behavior of sellers, credit facility, home delivery and repair services, guarantee, samples etc.

Forms of Imperfect Competition

There are different forms of imperfect competition are as given under:

(i) Monopolistic competition

(ii) Oligopoly

(iii) Duopoly

The above categories of imperfect competition are discussed below:

(i) Monopolistic competition : It is one of the forms of imperfect competition. There is neither perfect competition nor pure monopoly market structures in practice. Monopolistic competition is a market structure in between perfect competition and monopoly. It has some of the characteristics of perfect competition and some of the characteristics of monopoly. Some of the definitions of monopolistic competition are given below:

(1) Professor Leftwitch has defined, "Monopolistic competition is a market situation in which there are many sellers of a particular product, but the product of each seller is in some way differentiated in the minds of consumers from the product of every other seller."

(2) Professor Chamberlin has defined, "Monopolistic competition is that market structure in which there is co-existence of competition and monopoly in some degrees."

(3) According to Professor J.S. Bain, "Monopolistic competition is a market structure found in the industry where there are large number of small sellers, selling differentiated but close substitute products."

Characteristics of Monopolistic Competition

The following are the salient features of monopolistic competition:

(1) A large number of buyers and sellers - In a monopolistic competition market there is a large number of buyers and sellers. Sellers of a commodity are not in a position to effect the market behavior individually and the buyers purchase the goods as per their preferences. The number of buyers and sellers is smaller than those of perfect competition in this market.

(2) Product differentiation - Product differentiation is another characteristic of the monopolistic competition. But these products are near substitutes. The differentiation is based on the quality, shape, size, packing, trade mark, brand, colour, behavior of the seller and location of the shop. However being the differentiation the products of a seller are close substitute of another seller.

(3) Free entry and exit of firms - Under this market structure all the firms are free to enter and exit in the industry as and when they are interested. New firms are free to enter the market with new brands of products which are close substitutes of the existing brands.

(4) Non-price competition - Under monopolistic competition firms complete with one another without changing the prices of their products. But they indulge in advertisement and sales promotion techniques (non- price competition) to attract more customers in order to boost their sales.

(5) Varying preferences of consumers - Under monopolistic competition sellers are selling varied products which are different in quality and quantity. Buyers buy these products according to their preferences, nature, income etc. Buyers are attracted by the sellers on the basis of specialized qualities of their products.

(6) Facilities to the customers - Under monopolistic competition sellers of a product provide various facilities to their customers so that they are attracted to purchase more of their products. Credit facility, home delivery, repair facility. All these facilities attract customers.

(7) Existence of competition and monopoly elements - Under monopolistic competition some of the characteristics of perfect competition are in existence such as a large number of buyers and sellers, free entry and exit of firms in industry. On the other hand some of the salient features of monopoly namely product differentiation and non-price competition are also found in this market.

(8) Demand curve is highly elastic - Under monopolistic competition the demand curve is highly elastic because firms are free to enter and exit the industry.

Thus we can say that product differentiation is the main characteristic on the basis of which monopolistic competition is recognized as a different market structure.

(ii) Oligopoly

It is one of the kinds of imperfect competition. It is a market structure when the number of sellers are few. Oligopoly may be of two types. First is pure oligopoly where homogeneous product is sold while oligopoly may be differentiated oligopoly when the products are differentiated. Reactions of firms are taken into consideration and the firms are interdependent.

Thus oligopoly is a market situation in which there are few sellers of a product and each sellers supply affects the market prices.

Characteristics of Oligopoly

The following are the salient features of an oligopoly market structure:

(1) A few sellers - Under oligopoly market there is a few sellers of a commodity. Each seller controls a major part of the total supply in the market and by his activities other sellers are affected and he is in a position to influence the price of the product in the market.

(2) Homogenous and differentiated products - Under the oligopoly sellers may sell homogenous or differentiated products. On the basis of these products oligopolist may be called pure oligopoly or oligopoly with product differentiation.

(3) Interdependence - All the firms under oligopoly are inter dependent. The policies of an individual affect the policies of other sellers of the product because these products are close substitutes. Production and price policies are taken into consideration while formulating these policies by each producer or seller in the market.

(4) Advertisement and sales promotion costs - Under oligopoly the inter dependency of producers or sellers the advertisement and sales promotion costs play important role. By spending on these activities the seller will be in a position to attract more and more customers and boost his sales in comparison to his competitors who are spending less on these activities. Other competitors are also forced to spend on these activities in order to keep himself in the market.

(5) Cut throat competition - All these firms or sellers have cut throat competition under the oligopoly market structure. Due to existence of such competition sellers form their cartel.

(6) Restrictions on the entry and exit of firms - Under this type of market entry and exit of firm is difficult because of patent rights, trade marks, brands, and preferences. Old firms are unable to leave the industry because of heavy investment in permanent assets.

(7) Indeterminate demand curve - In oligopoly market structure the demand curve of a firm is not definite because the behavior of individual firm is not free and certain. The behavior of an individual firm depends upon the behavior of other firms in the market. We cannot draw a demand curve on account of such uncertainty.

(8) Price rigidity - Under oligopoly market structure there is price rigidity and price war. Individual firm reacts and acts according to the actions of the other firms and a price war starts between them and it leads to cut throat competition or price war and price rigidity emerges.

(iii) Duopoly

A market wherein there are two sellers or producers of a product is called duopoly. They have a complete hold over the supply of that product.

Product of both the sellers is homogeneous and the price is also the same.

Both the firms are interdependent and they try to keep the same price. If a seller of the commodity lowers the price then the other seller is forced to reduce its price because customers will prefer to purchase cheaper commodity. Both the sellers have to think over the possible impact when they are taking independent decisions relating to price and production. In order to maximize the profits of each other they may form an association or can share the market and can charge high prices from the customers. It will lead to exploitation of the customers.

(3) Monopoly

When there is a single seller or producer of a commodity or service the market structure is called monopoly market. He has full control on its supply and there is no close substitute. Like Rajasthan State Electricity Board, Railways are the examples of this type of market structure. Some of the definitions of monopoly are given below:

(1) According to Stonier and Hague, "It can be well remarked that the producer under pure monopoly is so powerful that he is always able to take the whole of all consumers income whatever levels of his output. The average revenue curve of the firm under pure monopoly will be a rectangular hyperbola with an elasticity of demand equal to unity."

(2) According to Professor Chamberlin, "A monopolist should be taken that who has full control over the supply of a particular product."

(3) According to Professor Ferguson, "A pure monopoly exists when there is only one producer in a market. There are no direct competitors."

Thus, a monopoly market structure is that where there is a single seller of a commodity having full control over its supply and there is no close substitute.

Characteristics of Monopoly

On the basis of above definitions we can describe the characteristics of monopoly market structure as given below:

(1) Single seller and large number of buyers of a commodity or service is the characteristics of monopoly market. Individual buyer cannot influence the price of the product.

(2) No close substitute - Under monopoly market the commodity or service sold by the seller has no close substitute.

(3) One firm or one industry - The seller or producer of a commodity or service is firm as well as an industry. There is no distinction between the firm and industry under the monopoly market.

(4) Restrictions on the entry - Under monopoly no firm can enter the industry or market as there are several type of artificial and natural restrictions imposed by the monopolist. These restrictions may be in the form of copy right, patent, license, owner of mines etc.

(5) Control over the supply - Under monopoly the seller of a commodity has full control over the supply and he is a price maker. He is free to fix whatever price he charges in order to attain his objective of maximization of profit.

(6) Either price of supply fixation - A monopoly either fixes the price or determines the supply of its product. He does not do both the things simultaneously. In order to maximize his profit he will either fix the price or control the supply of his output.

9.4 General Theory of Price Determination

In an open competitive market it is the interaction between demand and supply that tends to determine price and quantity. This can be shown by bringing together demand and supply. It can be shown by the following schedule:

Table 1

Determination of Price

S.No	Price (Rs.)	Demand (Units)	Supply (Units)
1	1	60	5
2	2	35	35
3	3	20	45
4	4	15	55
5	5	10	65

When we plot the above points on a single graph with price on Y-axis and quantity demanded and supplied on X-axis, we get a figure like this:

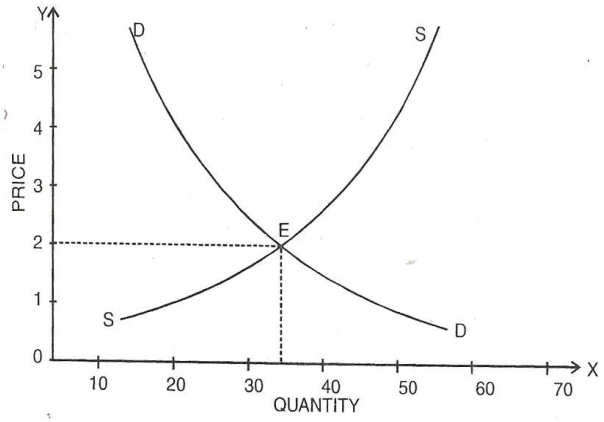


Diagram 1: Determination of Equilibrium Price

It is easy to see which will be the market price of the commodity. It cannot be Re. 1, for at that price there would be 60 units in demand, but only 5 units on offer. Competition among buyers would force the price up. On the other hand, it cannot Rs. 5, for at that price there would be 65 units on offer for sale but only 10 units in demand. Competition among sellers would force the price down. At Rs. 2, demand and supply are equal (35 units) and the market price will tend to settle at this price. This is equilibrium price and quantity — the point at which price and output will tend to stay. Once this point is reached we will have stable equilibrium. It should be noted that it would be stable only if other things were equal.

Changes in Demand and Supply

The facts of real world, however, are such that other things (like income, tastes and preferences, population, etc.) always change causing changes in the demand and supply. The four main changes in demand and supply are:

(i) An increase (shift to the right) in demand;
(ii) A decrease (shift to the left) in demand;
(iii) An increase (shift to the right) in supply;
(iv) A decrease (shift to the left) in supply.

We will study each of the above changes one by one.

(i) An increase in demand : In figure 2, the original demand curve is DD and supply curve is SS. At equilibrium price OP, demand and supply are equal to OQ.

Now suppose the money income of the consumer increases, the demand curve will shift to D_1D_1 and the supply curve will remain same. We will see that on the new demand curve D_1D_1 at OP price demand increases to OQ_2 while supply remains the same i.e. OQ. Since supply is short of the demand, price will go up to OP_1. With the higher price supply will also shoot up and new equilibrium between the demand and supply will be reached. At this equilibrium point, OP_1 is price and OQ_1 is the quantity which is demanded and supplied.

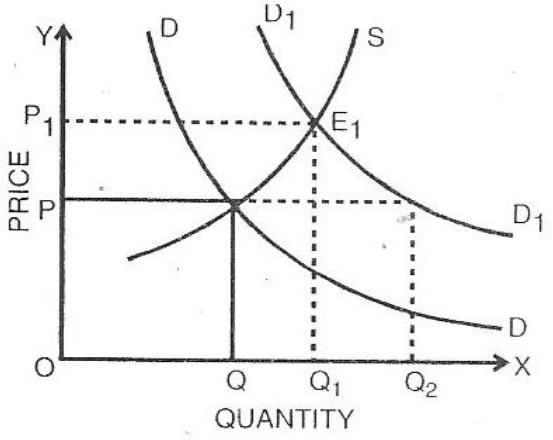


Diagram 2 : Increase in Demand, causing an increase in equilibrium price and quantity

Thus, we see that as a result of an increase in demand, there is an increase in equilibrium price, as a result of which the quantity sold and purchased also increases.

(ii) Decrease in Demand: Opposite will happen when the demand falls as a result of a fall in income, while the supply remaining the same. The demand curve will shift to the left and become D_1D_1 while the supply curve remaining as it is. With the new demand curve D_1D_1 at original price OP. OQ_2 is demanded and OQ is supplied. As the supply exceeds demand, price will go down and quantity demanded will go up. A new equilibrium price OP_1 will be settled in the market where demand OQ_1 will be equal to supply OQ_1.

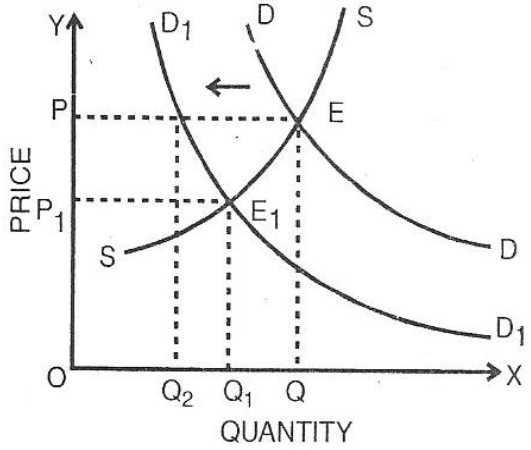


Diagram 3 : Decrease in Demand resulting in a decrease in price and quantity demanded

Thus with a decrease in demand, there is a decrease in the equilibrium price and quantity demanded and supplied.

(iii) Increase in Supply : Let us now assume that demand does not change, but there is an increase in supply say, because of improved technology.

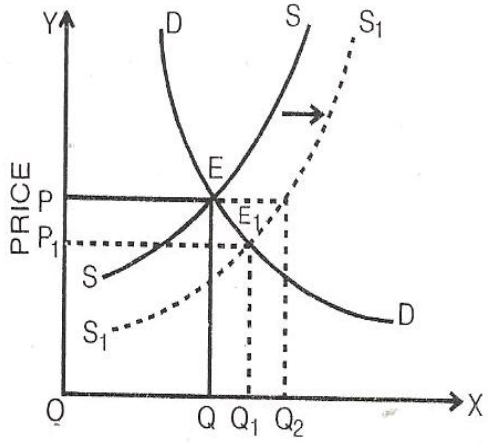


Diagram 4: Increase in supply, resulting in decrease in equilibrium price and increase in quantity supplied

The supply curve SS will shift to the right and become S_1S_1. At the original equilibrium price OP. OQ is demanded and OQ_2 is supplied (with new supply curve). Since the supply is greater than the demand, the equilibrium price will go down and become OP_1 at which OQ_1 will be demanded and supplied.

Thus, as a result of an increase in supply the equilibrium price will go down and the quantity demanded will go up.

(iv) Decrease in Supply *:* If because of some reason, there is a decrease in the supply we will find that equilibrium price will go up but the amount sold and purchased will go down as shown below:

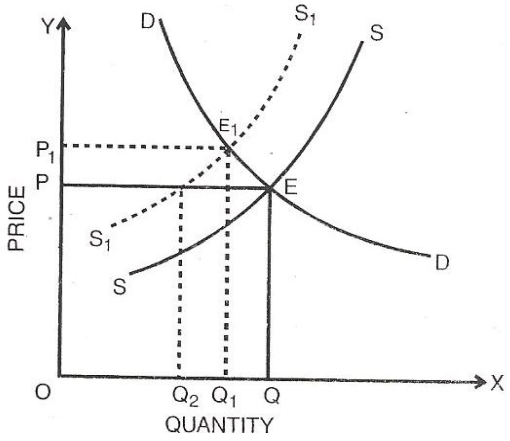


Diagram 5: Decrease in supply causing an increase in the equilibrium price and a fall in quantity demanded

Simultaneous change in demand and supply

Upto now, we were considering the effect of change either in demand or in supply on the equilibrium price and the quantity sold and purchased. There may be cases in which both the supply and demand change at the same time. During a war, for example, shortage of goods will often decrease supply while full employment causes high total wage payments which increase demand.

We may explain the changes in both demand and supply with the help of diagrams as follows:

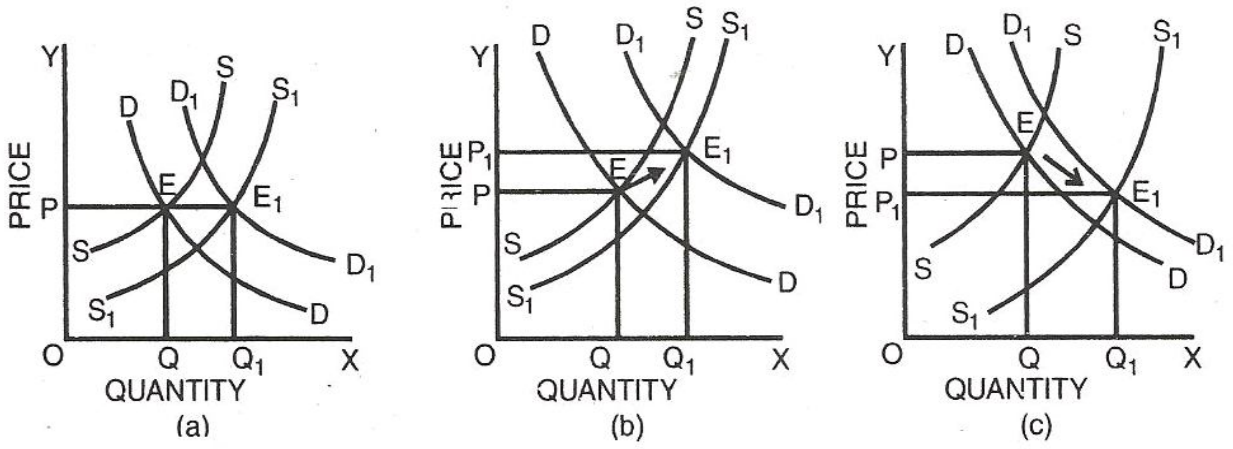


Diagram 6 : Simultaneous change in demand and supply

Diagram 6 shows simultaneous change in demand and supply and its effects on the equilibrium price. In the figure, the original demand curve DD and the supply curve SS meet at E at which OP is the equilibrium price OQ is the quantity bought and sold.

Diagram 6 (a), shows that increase in demand is equal to increase in supply. The new demand curve D_1D_1 and S_1S_1 meet at E_1. The new equilibrium price is equal to the old equilibrium price (OP).

Diagram 6 (b), shows that increase in demand is more than increase in supply. Hence, the new equilibrium price OP_1 is higher than the old equilibrium price OP. Opposite will happen i.e. the equilibrium price will go down if there is a simultaneous fall in the demand and supply and the fall in demand is more than the fall in supply.

Diagram 6(c), shows that supply increases in a greater proportion than demand. The new equilibrium price will be less than the original equilibrium price. Conversely, if the fall in the supply is more than proportionate to the fall in the demand, the equilibrium price will go up.

9.5 Role of Time Element in Price Determination

Generally price of a commodity is determined by economic forces of demand and supply. Equilibrium price will be at that point where demand curve intersects the supply curve. Price changes due to changes the quantity demanded and supplied during a given period of time. Professor Marshall has explained the importance of time element in price determination. The supply of a commodity cannot be adjusted to the quantity demanded because time is the most important constraint. Scale of production, size of firm, supply of raw material and other factors of production can be changed only when there is sufficient time. Time can be classified into four categories as given below:

(a) Very short period or market period
(b) Short period -
(c) Long period
(d) Very long period

(a) Very Short Period or Market Period

It is a period in which the supply of a product or commodity is limited, to the available stock. In other words, the supply of the commodity cannot be increased. The time is so short that the supply of the commodity is equal to its stock available. If the commodity is perishable its supply will be perfectly inelastic because it cannot be stored and the total quantity cannot be changed but in case of durable a part of it can be stored for some time by the producer or seller. Demand plays a dominant role in price determination during this period because supply is as passive factor.

The price determined by the interaction of demand curve and supply curve and equilibrium price is called market price. There is direct relation between demand and price of a commodity during very short period.

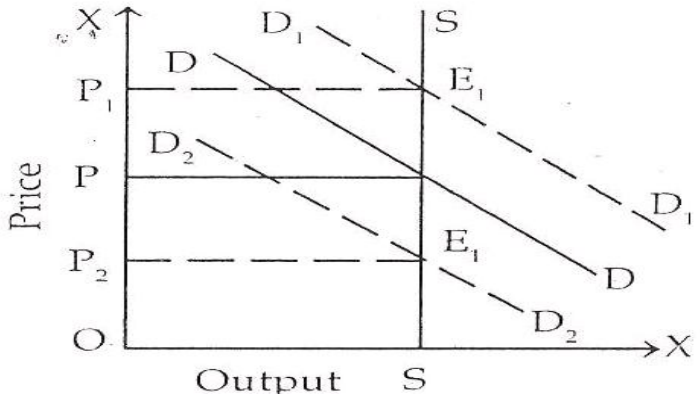


Diagram 7 : Very short Period Price (Perishable Goods)

Price and output are shown on oy-axis and ox-axis respectively. SS is the supply curve and DD is the demand curve. SS is perfectly inelastic supply curve. The initial price was OP and output was OS. When the demand increases the demand curve shift upward and the new demand curve is D_1D_1 . The price is determined at E_1 point where price is op_1 and the output remains constant. When demand decreases the demand curve shift downwards and it becomes D_2D_2 and the new price equilibrium is at point E_2 where the price is OP_2 and output remains the same. Thus, in case of perishable good there is a direct relationship between the change in quantity demanded and the change in price as has been explained in diagram 7.

(b) Short period

During short period the supply of a commodity can be adjusted to its quantity demanded to the extent which the installed capacity of a plant has not been fully utilized. A producer can increase the supply by the maximum utilization of capacity and resources available. During this period price is determined by demand and supply of a commodity but demand is more powerful than the supply. The equilibrium price is called short run price. The following diagram shows the price determination during short period:

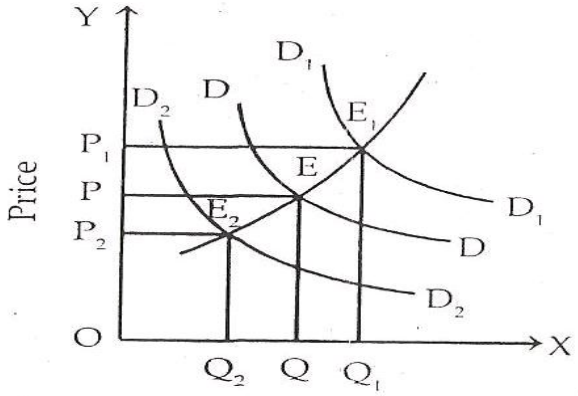


Diagram 8 : Short Period Price

The diagram shows that initial equilibrium is at E where price is OP and output is OQ. When demand increases the new demand curve (D_1D_1) will intersect SS at E_1 point and the price will be OP_1 and quantity demanded will be OQ_1. When demand decreases the demand curve will shift downward to D_2D_2 and E_2 price will be determined. The price will be OP_2 and amount demanded will be OQ_2 only. Thus, during short period supply of a commodity can be increased and it is elastic. However, the demand affects the price and there is direct relationship between the demand of a commodity and its price during short period. Thus on the basis of the short run price determination we can come to the following conclusions:

(1) Short run price is affected by demand and supply both. But demand has more influence than the supply.

(2) Price increases with the increase in demand during short period but the increase in price is lesser than that of very short period during short period.

(C) Long period

During this period producer of a commodity has sufficient time. All the factors of production are variable and even the scale of production can be changed. Supply of a commodity can be adjusted to its demand during this period. Firms take into consideration the concept of total cost. During this period equilibrium is attained which is called long run normal price. It can be shown from the following diagram:

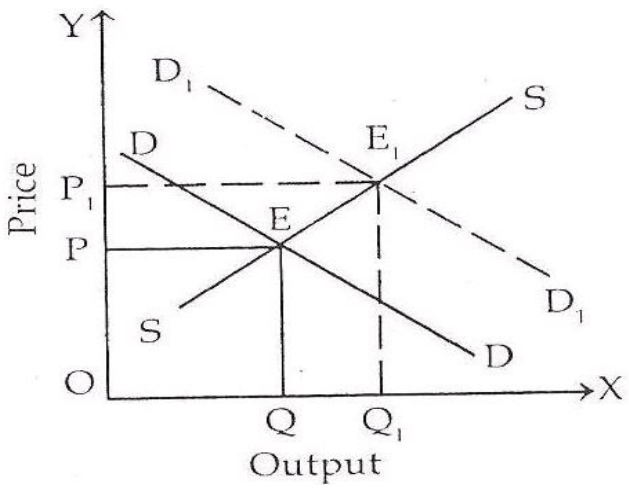


Diagram 9: Long Run Price

Price and output are shown on oy-axis and ox-axis respectively. Price is determined at Point E where supply curve (SS) intersects the demand curve (DD). Price is OP and output is OQ. At this price demand and supply of a commodity are equal. During this period the supply plays an important role in price determination because producer is in a position to adjust its supply according to its demand. During long period with the increase in demand of a commodity its price will increase but this increase in price will be less that of very short period and short period prices as shown in the diagrams.

(d) Very Long Period

It is the aggregate of various long periods. The period is very lengthy. Determinants of demand and supply of a commodity go under change during very long period. Size of population, sources and supply of raw materials, techniques of production, supply of capital, habit, fashion and tastes of consumers etc. undergo a rapid change during very long period. It is very difficult to know which type of changes will take place during this period. Hence price determination is not studied and analyzed during this period. This period has a theoretical importance only.

9.6 Summary

Market is a comprehensive area where buyers and sellers are scattered and they are in close touch with one another to purchase and sale of commodity at a price. On the basis of competition a market can be classified as perfect competition, imperfect competition and monopoly.

Generally price of a commodity is determined by forces of demand and supply. The point, at which demand curve and supply curve both intersects each other, is called equilibrium point.

In determination of price, time element plays an important role. Time classified into four parts i.e. very short period, short period, long period and very long period.

9.7 Key Words

Market	:	In economics the term market is used to an area or region where buyers and seller of a particular commodity are scattered and they are in close contact with each other to purchase and sale of goods and services.
Perfect competition	:	A market structure where a large number of buyers and sellers selling homogeneous product at an uniform price is called perfect competition.
Imperfect competition	:	This is a market in which there are large number of buyers and sellers with product differentiation, there is no restrictions on entry and exit of firms but there is an existence of non-price competition among the sellers of these differentiated products.
Monopoly	:	It is a marker in which there is a single seller of producer of commodity or service in the market.
Duopoly	:	It is a market in which the number of seller are two only.
Oligopoly	:	Oligopoly may be of two types. First is pure oligopoly where homogeneous product is sold while oligopoly may be differentiated oligopoly when the products are differentiated.

9.8 Self Assessment Questions

1. Define market and explain various types of market .
2. What is monopolistic competition? How does it differ from perfect competition.
3. Define Monopoly market and explain its features.
4. Price of a commodity is determined by demand and supply forces. Explain with the help of diagram.
5. What is the effect on equilibrium price when there is change in demand and supply? Explain.
6. Explain the importance of time element in the theory of price determination.

9.9 Reference Books

- Mehta P.L., Managerial Economics
- Agarwal M.D.& Deo Som: Business Economics
- Mathur N.D., Business Economics
- Dwivedi D.N., Principles of Economics

Unit - 10 : Price and Output Determination Under Perfect and Imperfect Competition

Structure of Unit

10.0 Objectives

After completing this unit, you will be able to :

- Assess the meaning and characteristics of perfect competition and imperfect competition.
- Know that how price and output are determined during short period under both the markets.
- Know the price and output determination during long period under both the markets.
- Know which market is realistic and which is unrealistic.
- Know the optimum utilisation of resources under both the markets.

10.1 Introduction

In the last units you have studied the cost concepts and classification of costs, market classification, general theory of price determination, time elements in price determination.

In this unit you will study the salient features of perfect competition and imperfect competition, difference between pure competition and perfect competition. Salient features of imperfect competition, price and output determination during short and long period under both the market structures. You will understand the unrealistic and imaginary situation under perfect competition while realistic market situation under monopolistic competition.

10.2 Meaning and Characteristics

Perfect competition is a market structure in which following characteristics are found :

(1) A large number of buyers and sellers
(2) Homogeneous product
(3) Free entry and exist of firms in an industry
(4) Perfect knowledge of market conditions
(5) Perfect mobility of factors of production
(6) No transport cost
(7) Firm is a price taker
(8) Price, average revenue and marginal revenue are equal (P=AR=MR) and they are horizontal to OX–axis.

Under perfect competition there is a large number of buyers and sellers and they jointly affect the total demand and supply of the goods and services produced by an industry.

The product produced under perfect competition is identical in shape, colour, packing, weight, quality etc. All the units of the product are homogeneous.

All the firms are free to enter and exist the industry in this of market. When existing firms are earning profit other firms will be attracted and when existing firms are incurring losses then some of them will leave the industry. Thus there is no restrictions on the entry and exist of firms in industry.

Perfect knowledge of market conditions is another characteristic of the market. Buyers and sellers are aware of the product, price and quantities offered.

All the factors of production – land, labour, capital, entrepreneur and organisation have the perfect mobility whenever they are getting higher remuneration elsewhere. Under perfect competition there is no transport cost because the whole market is adjacent.

Firms are price takers and price is determined by the total demand and total supply of the product in industry. Whatever price is determined by industry is accepted by individual firms and accordingly they take decision regarding the quantity of output.

Price, average revenue and marginal revenue are the same and they are horizontal to OX-axis because the price of the product remains constant for buyers and sellers.

10.3 Price and Output Determination During Short Period Under Perfect Competition

The price and output determination is done by the industry as a whole and the individual firm accepts it. There are three situation during short period under this market structure as given under :

1. Profit making situation
2. Loss incurring situation
3. Normal profit

Profit Making Situation – Under perfect competition during short period some firms earn profit as shown in the following diagram :

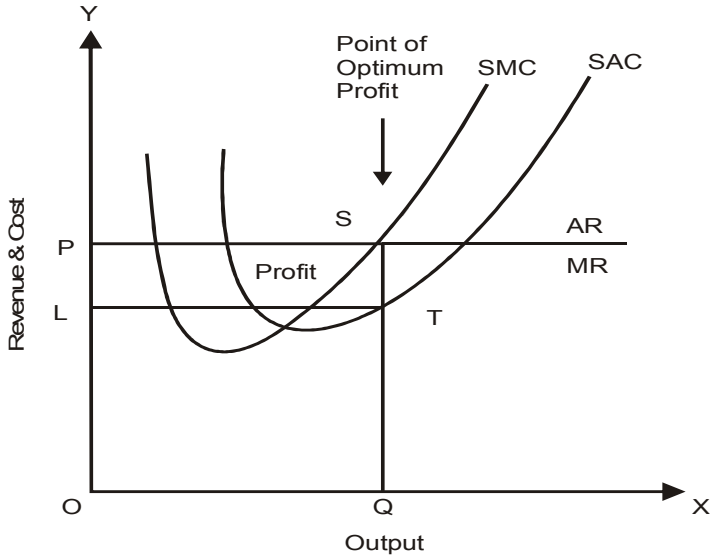


Diagram 1 : Profit Making Situation

Industry is shown on the left side wherein SS is the total supply and DD is the total demand for the product. The point of E is equilibrium of industry where supply curve intersects the demand curve. The price is OP and quantity of output is OQ. The right side diagram is of an individual firm where AR and MR are average revenue and marginal revenue and they are equal to price (P=AR=MR). AC and MC are average cost and marginal cost curves of the firm. The point of equilibrium of the firm is at the point where MC cuts the MR curve from below. The average and marginal revenue curves are above the AC and MC curves. The price and output of the firm are OP and OQ respectively. The average profit earned by the firm is (AR-AC)ST and total profit is PLTS.

Loss Incurring Situation – During short period some firms may incur loss when their AC and MC curves are above their AR and MR curves at equilibrium point as shown in diagram 2.

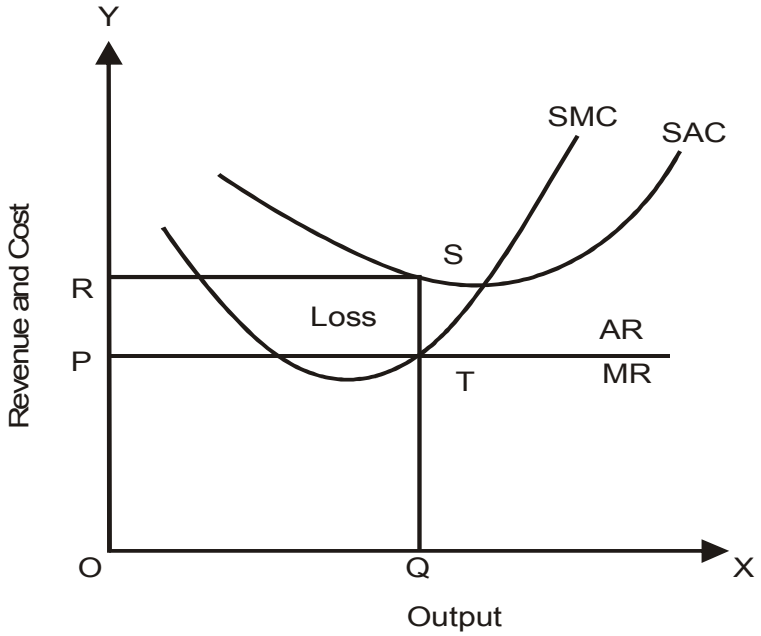


Diagram 2 : Loss Incurring Situation

The point of equilibrium of industry is at E point which indicates the price determined by the total demand (DD) and total supply (SS) where OP is price and OQ is output. On the right side of the diagram depicts the P=AR=MR and AC and MC cost curves of the firm. Cost curves are above the revenue curves (AR & MR) which shows the firm is incurring loss, OP is price, OQ is output, average loss (AC–AR) is ST and total loss is RPTS.

Normal Profit – During short period under perfect competition some firms may earn normal profit which is the situation of neither profit nor loss as shown in diagrams 3.

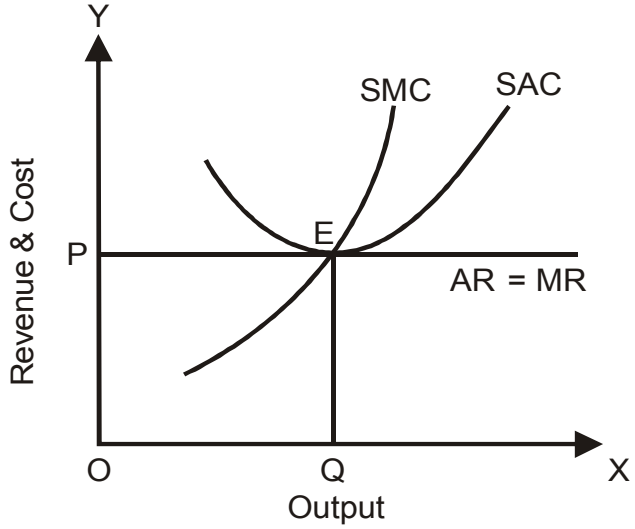


Diagram 3 : Normal Profit

The point of equilibrium of industry is at E, price is OP and output is OQ, the same price is accepted by the firm. Price, revenue and costs are shown on OY-axis while output on OX-axis. The price is OP and output is OQ and the point of equilibrium of the firm is at point E where P=AR=AC=MR=MC. This firm is called optimum firm during short period under perfect competition because it has optimum utilisation of its resources.

10.4 Price and Output Determination During Long Period Under Perfect Competition

There is free entry and exist of the firms in an industry. If existing the firms are earning abnormal profit, more firms will be attracted to the industry, production will increase and the price of the product will fall and profit will be evaporated. On the other hand if firms are incurring loss no firm would like to stay in the industry in the long period and they will leave the industry. Number of firms will decrease, output will decrease and the price of the product will increase thereby the loss incurring situation will be converted into normal profit. Thus there will be neither profit nor loss simply normal profit will be earned by the firms in the industry and normal profit is the part of cost. Price and output during long period under perfect competition is shown in the following diagram :

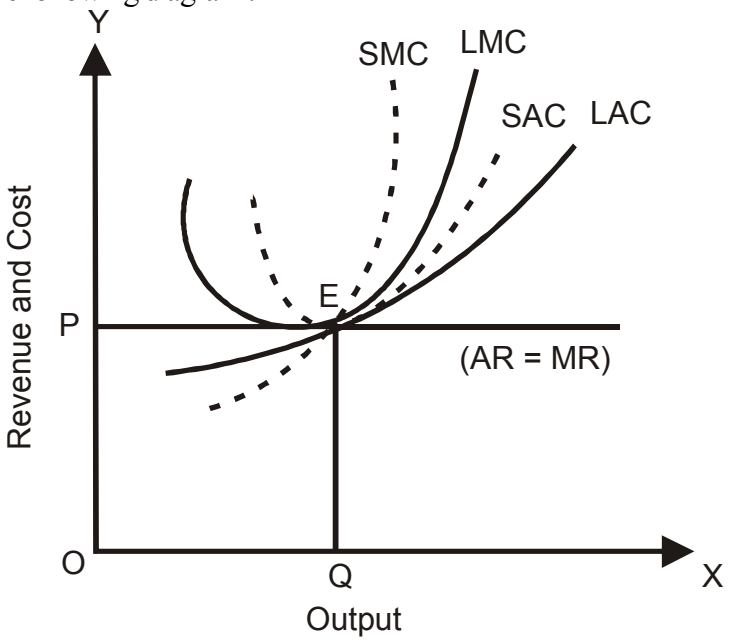


Diagram 4 : Normal Profit

The price and output in industry are OP and OQ respectively. They are determined by the total demand (DD) and total supply (SS) and point of equilibrium of industry is at point E. While the point of equilibrium of firm is at Point E_1. Price is OP and output is OQ. At point E long run average cost (AC) is equal to long run average revenue (AR), long run marginal cost is equal to long run marginal revenue and price (P=AR=AC=MR=MC). This is a situation of normal profit during long period and the firm is called 'optimum firm'.

Activity A

1 State whether the following characteristics are of perfect competition :

(1) A large number of buyers and sellers.

(2) Homogeneous product.

(3) Perfect mobility of factors of production.

(4) No transport cost.

2 State whether the following situation is related to perfect competition :

(1) P=AR=MR

(2) P=MR=AC=MR=MC optimum firm during short period.

(3) P=LAR=LAC=LMR=LMC optimum firm during long period.

(4) The market structure is imaginary and unrealistic.

10.5 Price and Output Determination Under Imperfect Competition During Short Period

Imperfect competition is that market structure wherein the following characteristics exist :

(1) A large number of buyers and many sellers.

(2) Free entry and exit of firms in industry.

(3) Product differentiation.

(4) Non-price competition.

This market structure is also called monopolistic competition and this is a market having some of the characteristics of perfect competition and some of the characteristics of monopoly market. Under imperfect competition there is a large number of buyers and sellers.

All the firms are free to enter as well as free to exist the industry under imperfect competition. If the firms are earning profit other firms will be attracted and the volume of production will increase. When the films are incurring loss they can continue during short period expecting that in the long run they will earn profit. But in the long run no firm would like to stay as there is no restriction on their exist. Thus the firms will leave the industry. Another characteristic of this market structure is the product differentiation. Product is differentiated in the form of shape, size, colour, quality, wrapper etc. Consumers know it that the product of particular firm is different than the product of other firms.

Non-price competition is also another characteristic of imperfect competition. This characteristic deals with the sales promotion and marketing strategy. A firm spending on advertisement and sales promotion will attract more customers in comparison to other firm spending less on this item. Thus the firm spending more will compete successfully and consumers/buyers will have attachment with the product.

There are three situations of firms under imperfect competition during short period as given under :

1. Profit making situation
2. Loss incurring situation
3. Normal profit

Profit Making Situation – When the firm's average cost and marginal cost curves are below its average revenue and marginal revenue curves, the firm is earning profit as shown in the following diagram :

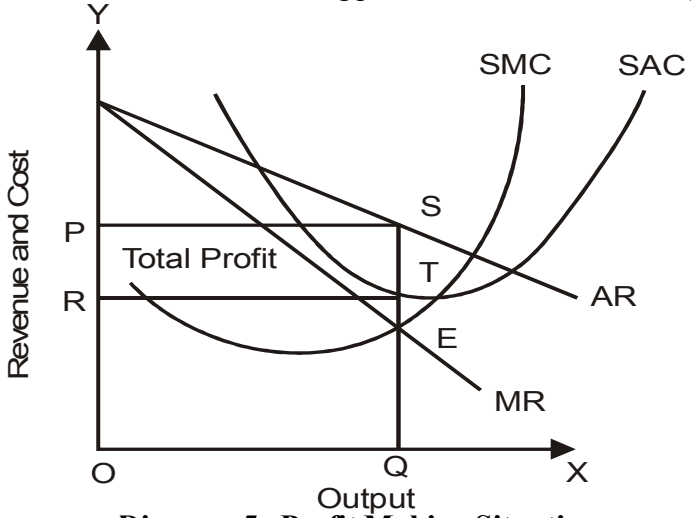


Diagram 5 : Profit Making Situation

The above diagram clearly shows that AR and MR are revenue curves and AC and MC are cost curves of the firm. The point of equilibrium of the firm is E where the MC curve cuts the MR curve from its below. The price and output are OP and OQ respectively. Average profit (AR-AC) is ST while the total profit is PRTS.

Loss Incurring Situation – When firm's Cost Curve (AC) is above the Average Revenue (AR) then the firm is incurring loss as shown in diagram 6:

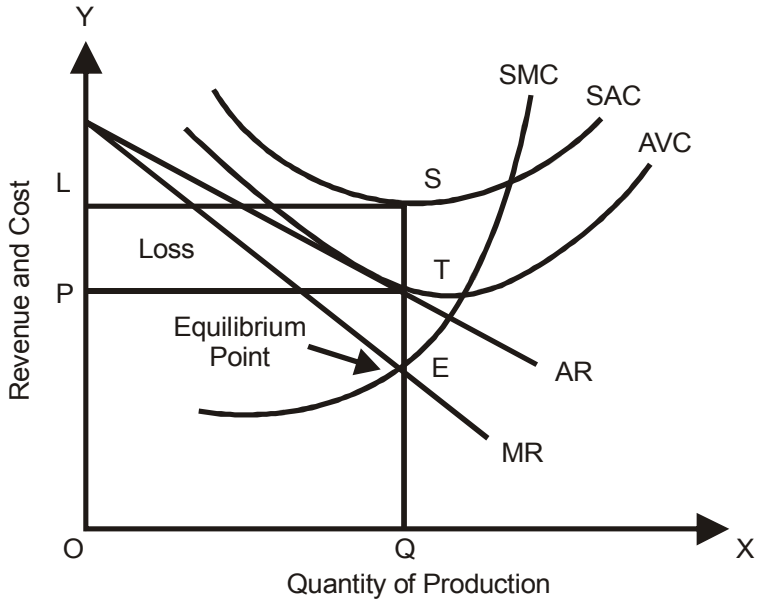


Diagram 6 : Loss Incurring Situation

The diagram shows that point of equilibrium is E where MR=MC, price OP and output is OQ. The AC is above the AR. The average loss (AC–AR) is ST and total loss is LPTS. The firm is incurring loss.

Normal Profit – When the AC curve is tangent to AR curve of the firm, the situation is normal profit as shown in the diagram 7 :

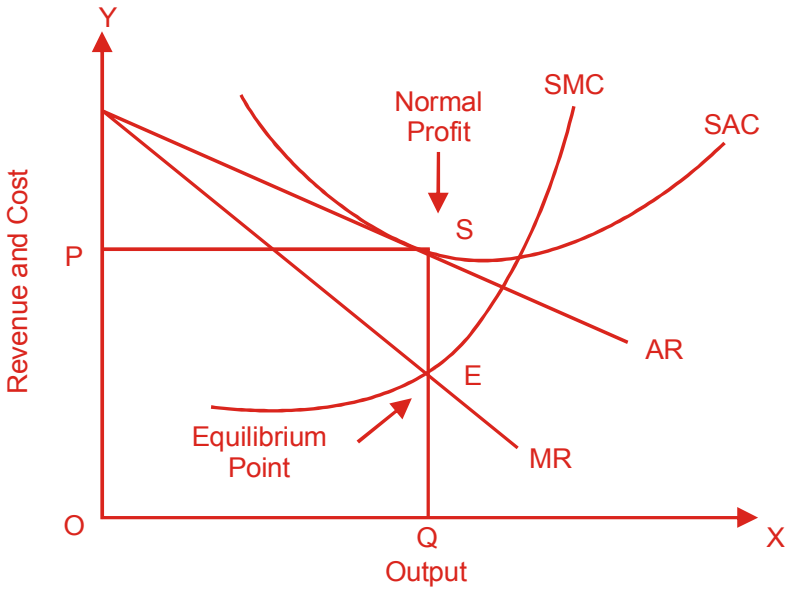


Diagram 7 : Normal Profit

The diagram shows the point of equilibrium E where MR=MC. The AC curve is tangent to AR curve at S point. Price is OP and output is OQ.

10.6 Price and Output Determination Under Imperfect Competition During Long Period

Free entry and exit of firms in industry is one of the characteristics of imperfect competition. During the long period when firms are earning profit more firms will be attracted and there will be more production the price of output will deline and thereby profit earning situation will be converted into normal profit. On the other hand when firms are incurring loss they cannot carry on production during long period and they ~~leave~~ industry thereby production decreases and the price will increase and loss incurring situation will be converted into normal profit. Thus under imperfect competition there will be neither profit nor loss but simply normal profit as shown in diagram 8 :

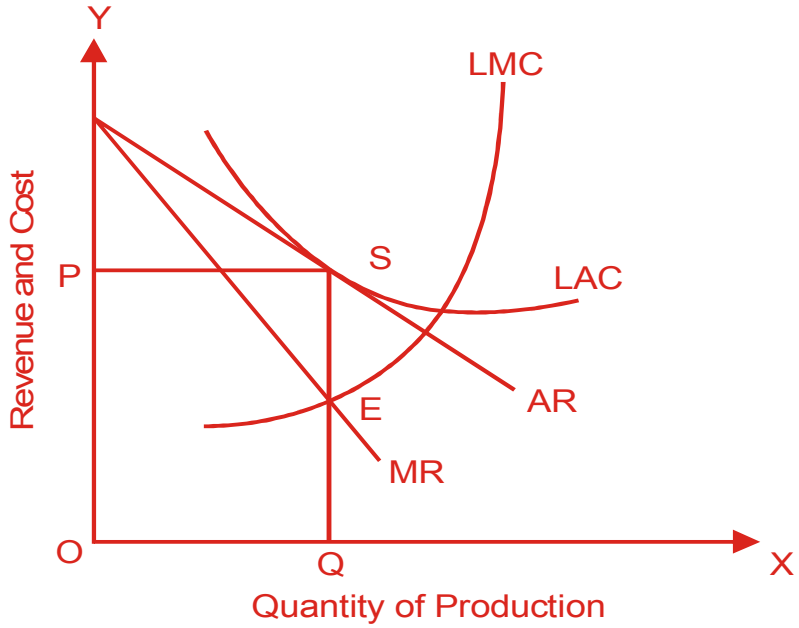


Diagram 8 : Normal Profit

Price, revenue and costs are shown on OY-axis while output is shown on OX-axis. The E point shows the point of equilibrium where the firm's MC=MR. Price is OP and output is OQ while the AC is tangent to AR at point S which clearly indicates the situation of normal profit during long period.

Conclusion

Thus we can say that perfect competition is an imaginary and unrealistic market structure while imperfect competition is a realistic market situation where all the characteristics are found. Product differentiation and non-price competition (Sales promotion and advertisement strategy) are found in real life situation.

Activity B

1 State whether the following characteristics are of imperfect competition :
(1) A large number of buyers and sellers.
(2) Non price competition.
(3) Product differentiation.
(4) P = AR > MR

2 State whether the following statements are correct or incorrect :
(i) Imperfect competition is a realistic market structure.
(ii) Sales promotion and advertisement are essentials of the imperfect competition.
(iii) Price and output are determined independently due to product differentiation.
(iv) Normal profit is different than perfect competition.

10.7 Summary

Price and output determination under perfect competition and imperfect competition during short period and long period reveals that during short period under perfect competition, profit, loss and normal profit situation are found as firms have no say in price determination as it is dictated by the industry and an individual firm is a price taker and takes decision regarding the quantity of output. During long period firms earn normal profit under perfect competition as there is free entry and exit of firms in industry. All the characteristics of perfect competition are imaginary and unrealistic.

Imperfect competition is a realistic market structure and all the characteristics of the market are found in real life namely product differentiation, non-price competition, free entry and exist of firms in industry and a large number of buyers and sellers in the market.

Under imperfect competition during short period price and output determination reflects three situations – profit, loss and normal profit decided by the costs and revenue curves of the firm. During long period there is neither profit nor loss under imperfect competition because of free entry and exit of firms in industry. Thus there will be normal profit only.

10.8 Key Words

Homogeneous Product	:	The product under perfect competition is identical so far the colour, shape, size, quality are concerned.
Differentiated Product	:	Where the product is differentiated on the basis of colour, size, shape, quality, wrapper etc.
Non-price Competition	:	Firms spend a lot on advertisement and publicity for boosting the marketing of the product.

10.9 Self Assessment Questions

1 Discuss the price and output determination under perfect competition during short period.

2 Discuss the characteristics of perfect competition. How is price and output determined under perfect competition during long period?

3 Discuss price and output determination under imperfect competition during short period.

4 Discuss the salient features and price and output determination under imperfect competition during long period.

5 Describe in brief the difference between perfect competition and imperfect competition.

10.10 Reference Books

- Chaudhary C.M. : Business Economics
- Stonier and Hague: A Text Book of Economics Theory

Unit - 11 : Price and Output Determination Under Monopoly, Discriminating Monopoly and Oligopoly

Structure of Unit

11.0 Objectives

After completing this unit, you will be able:

- To know the salient features of different markets namely monopoly, discriminating monopoly and oligopoly.
- To know the price and output determination during short period and long period.
- To learn the theory of different market structure having relevance of such markets in realistic world.

11.1 Introduction

Monopoly is a market structure where the following characteristics are found :

(1) Single seller/producer of a commodity/service.
(2) One firm one industry.
(3) No close substitute.
(4) Restriction on the entry of firms in industry either natural or artificial such as patent, copyright, owner of mines, creating environment against the competitors etc.
(5) Either price or output is determined by the monopolist.
(6) Profit motive.
(7) Price is equal to Average Revenue and Average Revenue is greater than Marginal Revenue (P=AR7MR).

Discriminating monopoly is a market having the following characteristics :

(1) Single seller/producer of a commodity/service.
(2) He charges different prices for the same product/service from different customers.

The preconditions for discriminating monopoly are as given under :

(1) There should be a single seller/producer of a commodity/service.
(2) These should be two separate markets.
(3) The price elasticity of demand in both the markets must be different.
(4) Profit motive.

Oligopoly is a market structure in which there are few firms only namely Indian Oil companies. If there is homogeneous product the market is called pure oligopoly and if the product is differentiated the market is called oligopoly with differentiated product. There may be different types of price and output determination namely independent pricing, price leadership and cartel etc.

11.2 Price and Output Determination under Monopoly during Short Period

Under monopoly price and output determination during short period can be studied under three situation since one firm one industry is the salient feature of the market as given under :

(1) Profit Making Situation

(2) Loss Incurring Situation

(3) Normal Profit Situation

Profit Making Situation – Under monopoly the AR and MR are falling and its AC and MC are U-shaped. The output and price will be determined when the MC=MR and MC cuts the MR from its below. When the AC is less than AR the situation will be of profit earning under monopoly. This situation can be seen from the following diagram 1 :

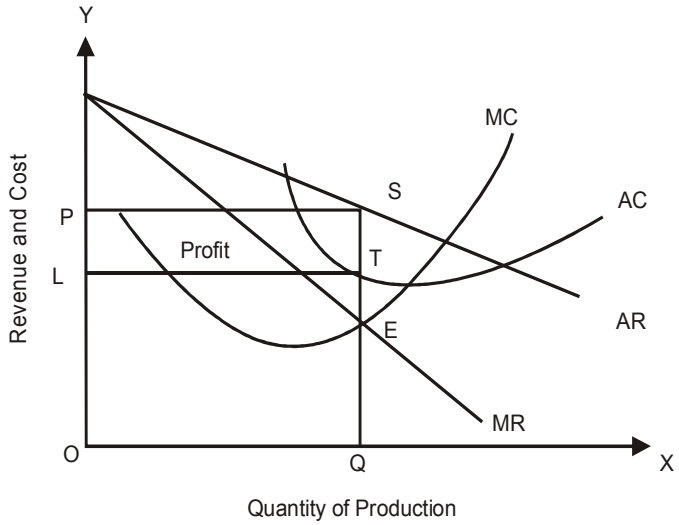


Diagram 1 : Profit Making Situation

The price, revenue and cost curves are shown on OY-axis while output on OX-axis. AR and MR are Average Revenue and Marginal Revenue curves while AC and MC are Average Cost and Marginal Cost curves of the firm. The point of equilibrium is E where MC=MR and MC cuts the MR curve from below. The price is OP and output is OQ. Average cost is below Average revenue and the firm's average profit (AR-AC) is equal to ST while the total profit is PLTS.

Loss Incurring Situation –

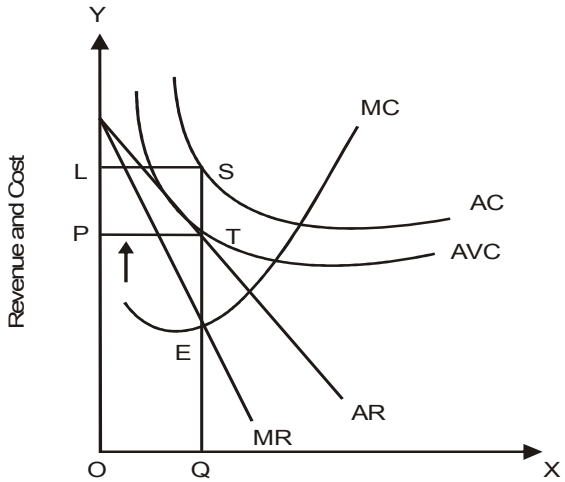


Diagram 2 : Loss Incurring Situation

Monopoly firm will incur loss when its AC is above AR and the point of equilibrium will be when MC=MR and MC cuts the MR from below. It will determine the price, output and loss incurred by the monopoly firm as given under :

The diagram indicates that at point E the firm is in equilibrium. The price and output are OP and OQ while average loss (AC–AR) is ST and total loss is equal to LPTS.

Normal Profit – Under monopoly market during short period the firm may earn normal profit also when AC curve is tangent to AR curve and the MC curve cuts the MR curve from its below. It will determine the price and output accordingly. This situation can be seen from the following diagram 3 :

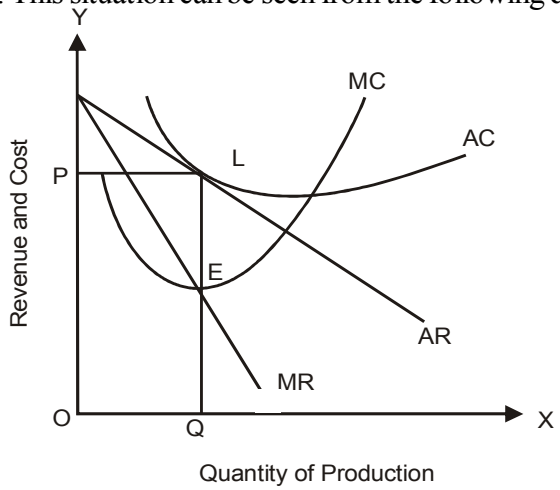


Diagram 3 : Normal Profit

The above diagram depicts the Normal Profit situation. AC curve is tangent to AR curve at is point and the E point is the point of equilibrium of a monopoly firm where MC=MR and MC curve cuts the MR curve from its below. The price is OP and output is OK.

11.3 Price and Output Determination under Monopoly during Long Period

One of the salient features of Monopoly market is profit motive. During long period Monopoly firm will earn profit only. The volume of profit will depend upon the operation of the Laws of Returns. The maximum volume of profit will be under the Law of Increasing Returns because of the decreasing cost while the minimum profit will be when the firm is operating under the Law of Diminishing Returns. The profit under the Law of Constant Returns will be in between the maximum and minimum volume of Profit.

The situation of Profit making under Monopoly market during long period can be seen from the following diagram 4:

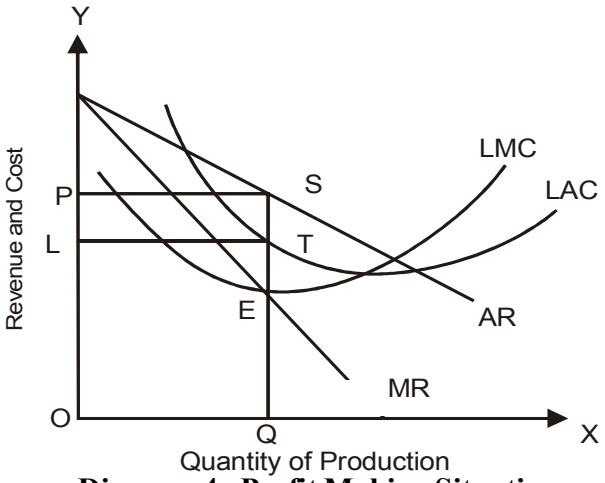


Diagram 4 : Profit Making Situation

The diagram depicts the point of equilibrium at point E where MC=MR and MC curve cuts the MR curve from its below. The price is OP and output is OQ. The average profit (AR-AC) is equal to ST and total profit is equal to PLTS.

Activity A

1. The following are the characteristics of a Monopoly market structure:
   (i) Single seller/producer of a commodity/service
   (ii) One firm one Industry
   (iii) Restrictions on the entry of firms in industry
   (iv) Profit Motive
   (v) P=AR> MR

2. Under Monopoly during short period three situations are found :
   (i) Profit making situation'
   (ii) Loss incurring situation
   (iii) Normal Profit

11.4 Price and Output Determination under Discriminating Monopoly

Discriminating monopoly is a market structure wherein a single seller/producer charges different prices from different customers for the same product or service. For example electricity companies charge different prices per unit for domestic use and commercial use.

The price and output determination under discriminating monopoly is only possible when three conditions are met as given under :

(1) Single seller/producer of a commodity/service (Monopoly Market)
(2) There must be two separate markets.
(3) The elasticity of demand for the product/service should be different in both the markets.

The price and output determination under discriminating monopoly can be seen from the following diagram 5:

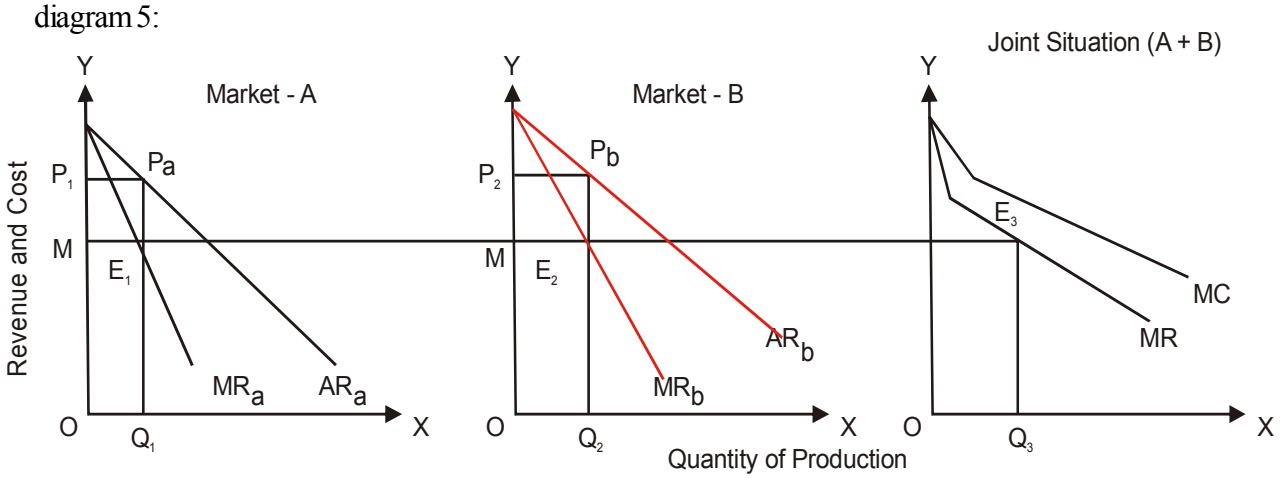


Diagram 5

The diagram shows market A, Market B and combined market. It reveals that three preconditions of discriminating monopoly are met. Market A has average revenue (ARa) and marginal revenue (MRa) while Market B has average revenue (ARb) and marginal revenue (MRb) respectively. The last part of the diagram shows aggregate marginal revenue (SMR) while marginal cost (MC) curve cuts the SMR at point E and from this point of equilibrium the line is drawn passing through Market B and Market A. It clearly

tells us the price and output in both the markets as given under :

Market	Price	Output
Market A	PaQa	OQa
Market B	PbQb	OQb

While the combined market has OQ output which is equivalent to OQa + OQb. Market A has less elastic demand while Market B has highly elastic demand. Consequently the price in A Market is higher than Market B. Output is more in Market B.

Thus the discriminating monopoly is a realistic market. It is generally found in case of public utility services wherein ability to pay the price of a product/service is taken into consideration. For example consumption of electricity, availability of drinking water and hospital services to the needy poor and the rich section of society. It is desirable to attain socio-economic objections as well as optimum utilisation of natural resources in the country.

Activity B

1. This discriminating monopoly has the following characteristics :
   (i) Single seller/producer of a commodity/service.
   (ii) Different prices are charged from different customers for the same product/service.
   (iii) there should be two different markets.
   (iv) The price elasticity of demand for the product/service should be different in both the markets.

2. Discriminating Monopoly is a realistic market as given under :
   (i) Public utility services – Railways, electricity charges, hospital services.
   (ii) This market is also found in case of international trade wherein the commodity is sold at low price in international market while at higher price in domestic market.

11.5 Price and Output Determination under Oligopoly

Oligopoly is a market structure where a few large firms compete against each other and there is an element of interdependence in the decision making of these firms. Any decision one firm takes relating to price, product or marketing will affect the trade of the competitors and it results in countermoves. The behaviour of an individual firm depends on the behaviour of other firms and thus must be taken account of when decisions are made. The competitors are then likely to react with their counter policies under such a situation and follow the aggressive and defensive marketing strategies.

The element of interdependence of firms has made the formulation of a systematic analysis of oligopoly very difficult. The interdependence of the firms makes prediction difficult.

Salient Features of Oligopoly – The following are the salient features of oligopoly market situation.

(1) **A few sellers** – Under this type of market there is a few sellers with homogenous or differentiated product. Each seller has a significant part of the market demand and affects the price and output in the industry.

(2) **Interdependence** – Oligopolistic is not independent to take decision like perfect competition and monopoly markets. The oligopoly firm has to take into consideration the actions and reactions of his rivals while determining its price and output. The cross elasticity of demand is highly elastic because the products are close substitutes.

(3) **Existence of Price Rigidity** – Any change in price under oligopoly market leads to action and reaction of rivals one normally one firm sticks to its price. If an individual firm reduces the price, its rivals will also do so and thus will not allow it to take any advantage of price reduction. If a firm tries to raise the price, other firms will not follow. Thus the firm would not try to either reduce or raise the price and there will be a situation of price rigidity

(4) **Existence of Monopoly Element** – Oligopoly with product differentiation will make the firms to enjoy some monopoly power and each product will have some loyal customers. It will lead to collusion with each other and they raise price and earn some monopoly revenue.

(5) **Non-Price Competition** – Due to high cross elasticity of demand for products and price rigidity under oligopoly sales promotion strategy is adopted to raise the sales. The advertised product will shift the demand. Therefore non-price competition develops.

All types of oligopoly markets recognise the interdependence of firms and there is no general model which can explain pricing and output decisions in all kinds of oligopoly situations. We can discuss the price and output determination under the following oligopoly situations :

(i) Differentiated oligopoly
(ii) Perfect Collusion
(iii) Imperfect Collusion
(iv) Independent Action

Price Output Determination under Differentiated Oligopoly – When there is a few firms in the market producing differentiated product is called differentiated oligopoly. Pricing under differentiated oligopoly can be studied assuming that there are two firms. Since product are differentiated, price change by any one of the firms will not be able to help the firm, it will not raise the price with the fear that it will lose its customers to its rival and it will not cut the price because there will be retaliatory action from the rival. Under this situation, price cannot be a very effective instrument of the oligopoly. The firms will not have any agreement because their products are differentiated. The firms can have two possibilities in such a situation as given under :

(i) Price War
(ii) Monopoly behaviour of the oligopolist

When there is no product differentiation under oligopoly there will be a price war among firms. This can be seen from the following diagram :

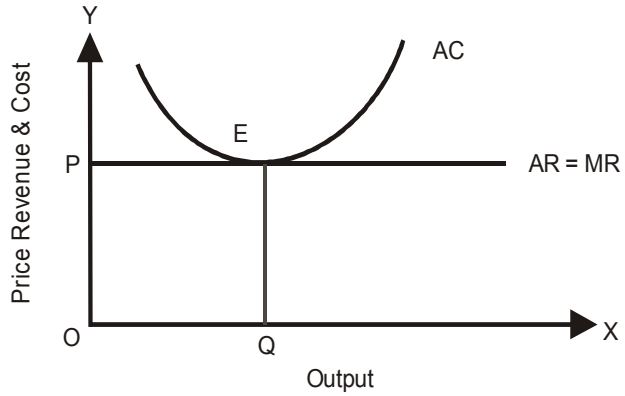


Diagram 6 : Price War – Homogeneous Product

The price war pushes price down to OP, where average cost is equal to average revenue and marginal revenue (AC=AR=MR) and the firm earns only normal profits. OQ is the optimum output produced at the minimum average cost. If the firm raises its price above OP, it will lose all its customers as the product of all firms is identical. The firm will not reduce the price below OP because that will not give even normal profit and in the long run the firm will exit the industry if it incurs any loss.

When there is differentiated product the pricing under oligopoly will be determined as given under

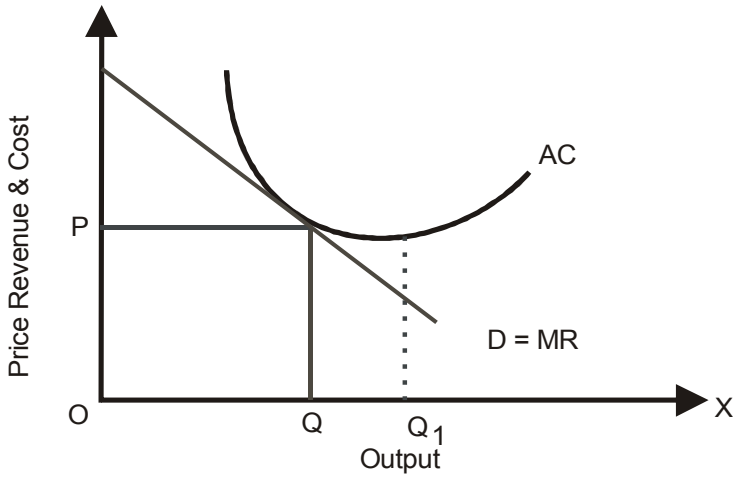


Diagram 7 : Oligopoly with Product Differentiation

In case of oligopoly with product differentiation after the price war, the long run price comes down to OP. The output is OQ sells at OP price and earns only a normal profit. The equilibrium of the firm is identical to that of the monopolistic competition. But the output is less than optimum level (OQ_1). Thus it is clear that the firms earn only normal profit due to price war strategy. If the firms come to an agreement/ understanding they can avoid price war and they could earn monopoly profit. The actual price will be between the understanding of the firms and the prevailing demand conditions in the market.

Pricing under Perfect Collusion – When the firms under oligopoly enter into price competition with each other, they will bring down the price to the level of production cost. In such a situation it is in the interest of oligopolists to collude, raise price and restrict output. Collusion is just the opposite of competition. The firms cooperate with each other in taking collective actions to keep their bargaining position stronger against the consumer. Perfect collusion primarily consists of cartel arrangements. Under cartel there is agreement among independent firms on subjects like prices, output and market sharing. There are two types of cartels as given under :

(i) Centralized cartels, and
(ii) Market sharing cartels

Under *centralised cartels* the firms in an industry reach an agreement which maximises joint profits. Such cartel can act as a monopolist. Since the firms produce homogenous product, the market demand for the product is the cartel's demand. The cartel management knows the demand, price and marginal costs of its firms.

The output of the cartel is shared between firms on the efficiency of the firms. If the firms have identical costs, the market is shared equally between them. If some firms are inefficient they are asked to close down temporarily or permanently.

Under Market Sharing Cartel – Firms in the industry produce homogeneous products and agree upon the share of each firm. Each firm sells at the same price but sells within a given region and such system functions only if the firms have identical costs.

Pricing under Price Leadership – Perfect collusion is not found in practice. Mutual distrust and unwillingness to surrender all of their sovereignty are hurdles in perfect collusion. One of the types of imperfect collusion is price leadership. According to Professor Burns, "If changes are usually or always inaugurated by the same firm and usually or always followed with similar price changes by other sellers, price competition may be said to involve price leadership."

Types of Price Leadership – There are three types of price leadership as given under :

(1) Dominant firm price leadership.

(2) Collusive price leadership.

(3) Barometric price leadership.

Dominant firm price leadership is based on the assumption that the oligopoly industry is composed of one large firm together with many small firms. The large firm is the dominant firm can drive out its rivals by a price war. To avoid such situation a collusion is arrived at between the dominant firm and the small firms. This collusion is formed in the form of price leadership by the dominant firm. The dominant firm fixes the price and other firms act as price takers. This type of price leadership is also called partial monopoly. The remaining firms act as perfectly competitive firm. The price determination under this situation can be seen from the following diagram :

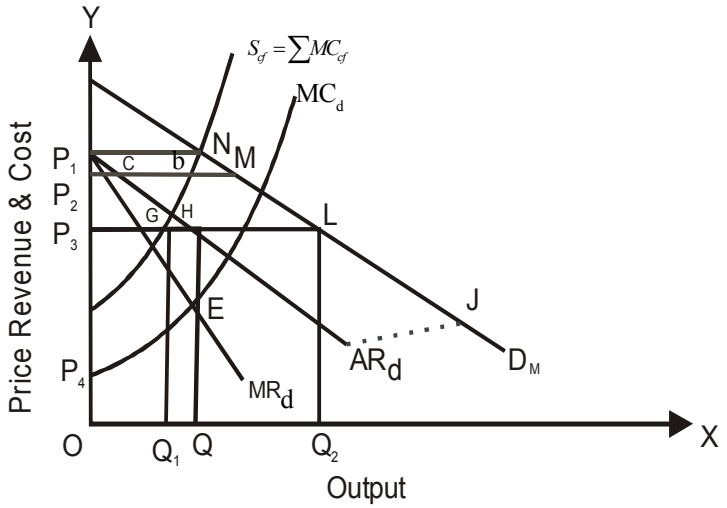


Diagram 8 : Dominant Firm Price Leadership

The above diagram shows that DM is the market demand curve, S_{cf} is the supply curve of the small competitive firms. S_{cf} is equals the sum of the individual marginal cost curves of the small firms (SMC_{cf}). At P_1 the supply of small firms P_1N equals the market demand. The dominant firm would sell nothing at P_1 price. At P_2 price, P_2B is supplied by small firms and BM by dominant firm. If on the horizontal line P_2M we mark a distance P_{2C} equal to the share to the dominant firm BM. We get a point C on dominant firm's demand curve. We get the dominant firm's demand curve (ARd) and the MRd is the curve for the dominant firm. Below the P_4 small firms do not supply at all and they would not be able to cover their average variable cost – JDm portion of the market demand. The dominant firm's demand curve is the line P_1ARdJDm and the marginal revenue curve is MRd.

The dominant firm maximises its profits where its MCd is equal to its MRd (MC_d=MR_d) at point E and the price is O P_3 while small firms supply P_3G at P_3 price leaving GL for the dominant firm to supply.

The Low Cost Price Leader – It is also called price leadership by the efficient firm. The price and output determination under such situation can be seen from the following diagram :

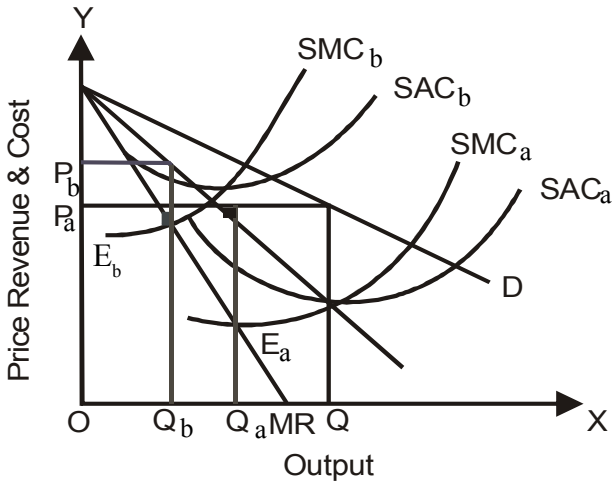


Diagram 9 : Low cost Price Leadership

The above diagram shows that A is an efficient firm because its lower cost while B firm is less efficient due to higher cost. The market demand curve is D. If the firms share the market equally, each firm faces demand curve D.

The firm with lowest cost charges P_A price which is followed by B (High Cost Firm). Each of the firm sells Q_A output which is together equal to OQ. The profit maximisation price quantity combination for firm B would be P_B, Q_B. Thus firm A fixes price and firm B is price taker. But this type of price leadership is maintained only if the follower supplies exactly his quota share of output. Thus, share-of-the market agreements are an integral part of low cost price leadership.

Baromatri Price Leadership deals on the basis of one firm acting as a 'barometer' reflecting changing market conditions or costs of production that require a change in price. The firm with a large share of the market or a low cost firm faces the problems when the MRTP Act is enforced by the government. Since the barometric leader has very little power to impose his decisions on other firms in the industry, his leadership will be of short duration. This type of leadership may move from one firm to another and it may even break down.

Kinked Demand/Stickiness of Prices in Oligopoly – Professor Paul M. Sweeny has used the kinked demand curve to explain price rigidity. The assumption behind the theory of kinked demand is that each oligopolist will act and react in a way that keeps conditions tolerable for all members of the industry. Under such situation products are homogeneous and prices are also the same. If one firm sells at lower price than that of its competitors, these competitors will also reduce the prices. If one firm sells its product at higher price, its competitors do not react by raising their price. In the first situation the firm does not gain, but in the latter the firm loses its customers to its rivals. Thus the firms do not raise the prices nor cut the prices because they fear a price war. So the prices in oligopoly tend to be sticky. The kink demand curve of the firm indicates the stickiness of prices. The Kink shows that price reduction by a firm is followed by its rivals but price increase is not. Therefore, the firm will not like to make away from the Kink. This can be explained from the following diagram :

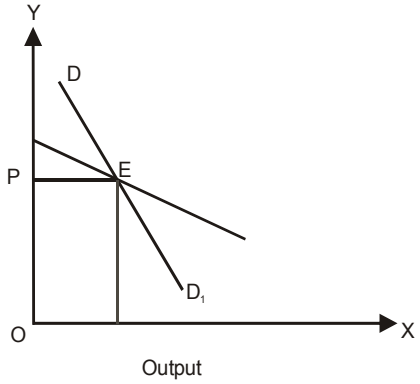


Diagram 10 : Kinked Demand

The diagram shows that dd_1 is the individual demand curve and firm's market share curve DD_1 intersects at E point. It is assumed that an oligopolist reduces his price he expects his competitors to follow it, while no competitor will follow him when he raises the price. The relevant demand curve for the firm is dED_1 with a Kink at E. For price reduction below P, the share of the market demand curve, D_1E is relevant as the counter moves by the rivals will keep the market share of the firm constant, when price is raised above P, the firm goes alone and therefore the relevant demand curve for the firm is its own demand curve dE. Such a Kinked demand curve of a firm is also shown as given under :

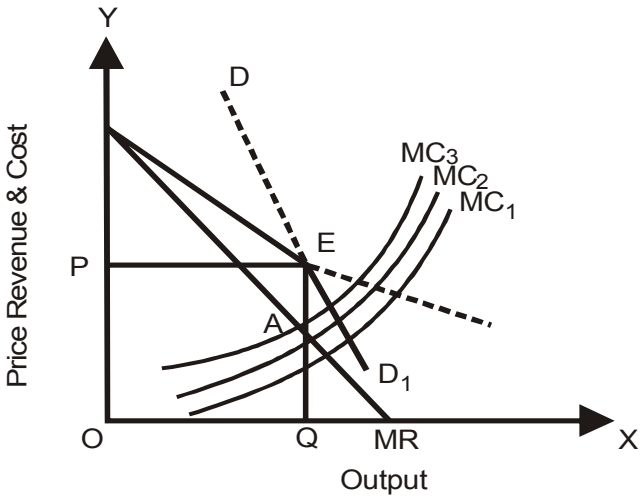


Diagram 11 : Stickiness of Price

The upper part of the demand curve has a higher price elasticity than the lower part. Due to the Kink in the demand curve of the oligopolist, his MR curve is discontinuous at the level of output corresponding to the Kink. The MR curve has two parts : the part dA corresponding to the upper part of the demand curve (dE) and BMR corresponding to the lower part of the demand curve ED_1.

The equilibrium is defined by the point at the Kink E because at any point to the left of the Kink MC is below MR, while the right of the Kink is higher than MR. Thus total profit is maximised at the point of the Kink. The MC passes through the segment of AB of the MR curve. So long as MC passes through the segment AB, the firm maximises its profit by producing OX units of output and selling at OP price. This indicates that there is a range within which costs may change without affecting the equilibrium price and output. Thus, the Kink explains that why price and output do not change despite changes in costs within the range AB.

Activity C

1. Oligopoly market structure has the following characteristics :
   (i) A few firms in the market.
   (ii) Pure oligopoly producing homogeneous product.
   (iii) Imperfect oligopoly producing differentiated product.
   (iv) Independence.

2. Price and output determination under Oligopoly are of different categories :
   (i) Under differentiated product – Price War.
   (ii) Pricing under collusion – Centralised cartels and market sharing cartels.
   (iii) Pricing under price leadership.
   (iv) Kinked demand curve/stickiness of prices in oligopoly.

11.6 Summary

Monopoly is a market structure where there is a single seller/producer of a commodity or service. One firm one industry, restrictions on the entry of the firms in industry, profit motive are some of the characteristics of the market. There are three situations – Profit, loss and normal profit during short period and profit earning situation during long period.

Discriminating monopoly is a market where single seller / producer sells the product / service at different prices to different customers. Oligopoly is a market where there are a few firms producing homogeneous product or differentiated product. There is interdependence, existence of price rigidity, existence of monopoly element and non-price competition.

11.7 Key Words

Market Structure	:	The number and relative sizes of buyers and sellers in a particular market.
Monopoly	:	Single seller / producer of a commodity or service complete restrictions to entry in industry.
Price Discrimination	:	Charging different prices from different customers by monopolist for the same product or service.
Cartel	:	A group of firms that have joined together to make agreements on pricing and market strategy.
Oligopoly	:	A market where there is a few firms selling homogeneous or differentiated product.
Price Leadership	:	The dominant firm determines the price and other firms follow it.
Product Differentiation	:	A wide variety of shape, colour, weight, quality, packing Makes the product of one firm different than others

11.8 Self Assessment Questions

1. Discuss Price and output determination under Monopoly.
2. Discuss price and output determination under Discriminating Monopoly.
3. Discuss Price and output determination under oligopoly.
4. Write short notes on the following :
   (i) Price Leadership.
   (ii) Centralised cartels.
   (iii) Pricing under perfect collusion.
   (iv) Price war.
   (v) Kinked demand curve.

11.9 Reference Books

- Stonier and Hague : A text book of Economic Theory
- Chaudhary C.M. : Business Economics
- Chaudhary, Jain and Chandelwal : Managerial Economics

Unit - 12 : National Income

Structure of Unit

12.0 Objectives

After completing this unit, you will be able :

- To know about the national income
- To know what is the significance of national income in India or different sector.
- To know what problems are faced by developing countries while calculating national income.
- To know about the remedies of national income
- To know about national income and economic welfare.
- To know the practical approach of national income.

12.1 Introduction

The concept of National income is very important in macro economic theory. It helps in the study of various economic problems affecting the economy as a whole. This is an important concept because the economic level of any nation may be assessed on the basis of comparison of the national incomes of various nations. On the basis of national income government can formulate and direct various policies to control the economic activities. National income in general sense means the total value of commodities and services produced in any country during a year. It is a term which is used interchangeably with national dividends, national output and national expenditure.

In other words, the net volume of production of commodities and services reaching to the ultimate consumers, or the net volume of commodities and services relating to capital goods of the country in a certain year is called **National Income**. The most important objective of our economic activity is increasing the National income. **Economic Welfare** of a country depends upon what goods and services are made available for the consumption of its people. The economic welfare of a society can be best measured by its national income. National Income is the final outcome of all economic activities of a nation valued in terms of money. Economic activities should be distinguished from the non economic activities from a national point of view. Like a nurse provides her services to a hospital it is economic activity and if she takes care of her own child it is non economic activity. So in economic activities we can include all human activity which create goods and services that can be valued in money. In non economic activities includes spiritual, psychological, social and political services.

12.2 Definitions

The concept of national income has been defined by different economists. Some definitions are given below:

According to Marshall, "The labour and the capital of country acting on its natural resources produce annually a net aggregate of commodities, material and immaterial including services of all kinds."

According to National Income Committee of India, "National income estimates measure the value of commodities and services turned out during a given period, counted without duplication."

In the words of Shapiro, "National Income is the sum total of wages, rent, interest and profit or sum of the factor earnings of the normal residents of a country in one year."

According to central statistical organization, "National Income is the sum of factor income earned by national residents of a country in the form of wages, rent, interest and profit in an accounting year."

According to Prof. Fisher, "National income or dividend consists solely of services as received by ultimate consumers, whether from their national or from their human environment."

Conclusion: Thus, we can conclude that, the national income is aggregation of rent, wages, interest and profit or aggregate of income of all factors of production for a certain period or we can say one year.

12.3 Characteristics of National Income

1. Related to any country: - national income is related to any country like national income of India, national income of China.
2. This is calculated on yearly basis.
3. The basic need for national income is for production and consumption.
4. National income includes commodities as well as services.
5. We can calculate national income on the basis of product flow term or real flow term and on the basis of monetary term.
6. National income shows the economic welfare of a country.
7. National income is related with macro economic theory and accounting.
8. National income links income with production and economic activities in the economy.
9. National income is related to national product.
10. National income helps the government in formulating the policies to control the economic activities.

12.4 Various Concepts of National Income

Some of the important concepts of national income are as under:

(i) **Gross National Product (GNP)**: Gross National Product is the term of economics which means the total volume of goods and services produced during a year and calculated in terms of market price. Following are the recommendation which is used while calculating national the GNP:

- GNP is calculated in terms of money value of goods and services during a year.
- In order to avoid double counting GNP should be taken into consideration when goods and services are in the final hands of consumers.
- Free gifts and services are avoided while calculating GNP.
- Transfers payments are also not included in GNP because these are not the part of current production like pension, insurance allowance, etc.

- Illegal income is also not included in GNP like speculative activities, hoardings etc.

Activity A :

1 Define the meaning and characteristics of National Income.

Methods of calculating GNP: There are basically two methods of calculating GNP.

Income method of GNP: In this method income of all factors of production during the year are added.

GNP= Wages+ salaries+ rents +interest + profits of unincorporated firms + dividend of corporate business firms + undisturbed corporate profit +corporate taxes + indirect taxes + indirect payment.

Expenditure method of GNP : In this method GNP can be calculated on the basis of expenditure made on various goods and services during a year.

$$GNP = C+I(X-Z) + G$$

Here,

C	=	private personal consumption expenditure
I	=	Gross domestic private investment
X-Z	=	net foreign investment
G	=	government expenditure.

NOTE: Only newly produced goods are counted. Transactions in existing goods, such as second-hand cars, are not included, as these do not involve the production of new goods.

Income is counted as part of GNP according to who owns the factors of production rather than where the production takes place.

(ii) Net National Product (NNP) : When we deduct annual depreciation of capital assets from gross national product is known as Net National Product (NNP).

NNP= GNP- Depreciation : Net National product always computed on the basis of market price or factor price.

(iii) National Income at Factor Cost (NI): National income at factor cost is known by deducting indirect taxes and adding the subsidies in the net national product.

NI= NNP – Indirect Taxes + Subsidies.

(iv) Personal Income: Personal Income refers to income received by the individuals of a country in a year from all sources. In personal income we will include transfer payments like unemployment allowances old age pension etc., but we will not include those amounts which are not distributed to the factors of distribution.

Personal Income : Net National Income + transfers payments – undivided corporate profit- corporate income taxes- social security contribution

(v) Disposable Income: It may be defined as the actual income which can be spent on consumption by individuals and families. Disposable income is that part of income which is left after the deduction of direct taxes.

Disposable Income = Consumption expenditure + saving

(vi) Per Capita Income (PCI): it means how much income is received by an individual in a year in a country.

P C I = National Income / Size of Population.

(vii) Real Income: real income is the national income expressed in terms of level of prices of a particular year taken as a base.

Real Income = NNP of Current year * Base year Index / Current year Index.

Activity B

1 What is Gross National Product. Explain methods of its computation.

12.5 Methods of Measuring National Income

Various methods of measuring national income are as under:

1. Census of Production Method,
2. Census of Income Method,
3. Census of Expenditure Method, and
4. Social Accounting Method.

1. Census of Production Method

According to this method the value of all goods and services produced during a year is estimated and added at market prices. Depreciation of permanent assets is deducted from the total value of goods and services. In other words, net value of all commodities and services produced during the year is called national income. Production of consumer's goods, production of capital goods, goods and services produced by the government are aggregated during a year and thereafter their value is calculated at market prices. Under this method NNP at factor cost is converted and the following adjustments are made:

1. Indirect business taxes, namely sales tax, excise duty and export duty etc, are deducted.
2. Government subsidy is added.
3. Surplus from public sector enterprises is deducted.
4. Statistical adjustments are made.
5. Business transfers are deducted.

Thus, on the basis of this method the following formula can be used for the calculation of national income.

National Income : NNP- indirect business taxes + government subsidy- surplus from public sector enterprises- business transfer payments- sinking debts- statistical adjustments.

Following are the advantages of this method:

1. By this method we can easily and conveniently compute national income.
2. It is easy to asses the value of products of agricultural sector and manufacturing industries, etc.
3. We can use this method where we need to make comparison.
4. The computation is accurate in this method.

The method of calculating national income is simple but it has the following drawbacks:

1. There are possibilities of double counting while calculating the national income.
2. This method is used only where arrangement exists for census of total production during the year.

3. Production in non- monetised sector also posses the problem of estimation. Its correct measurement is not possible.

2. Census of Income Method

According to this method income of all the citizens are added. The income of all the factors of production in the form of rent, wages and salary, interest and profits during a year is added. But, while calculating national income the following precautions should be taken care of:

1. Transfer payment namely, pensions, income from lottery should not be included.
2. The goods and services which are not expressed in terms of money or for them monetary payments are not made. For example, services rendered by housewife for domestic purpose.
3. The remuneration for the owned factors of production at market price is added in national income.
4. Undistributed profits will be included in national income.

Thus, the formula for calculating national income as given under is used

National Income : wages, salaries and other payments+ net interest+ rent+ corporate profit before tax + income of incorporated industries.

Following are the advantages of Census of Income Method

1 This is easy method, because we can get accurate information about income from income tax office.

2 By this method, probability of duplication of income can be reduced.

3 The result derived by this method is more accurate, because we are getting statistics from statistical department.

This method has following limitations

1 There is under showing of income on account of tax liability. Some people save the tax by illegal ways, so we can not get the actual income.

2 Correct information is not given due to illiteracy and non maintenance of records.

3 The calculation of income in the form of goods and services cannot be easily made.

4 Sometimes undistributed profits are also left out from the calculation of national income.

3. Census of Expenditure Method

National income can also be measured on the basis of the expenditure of the people during a year. In this method, the total amount of expenditure is ascertained, by adding the annual expenditure incurred by various sections of the country on various items. It is also called income disposable method or consumption and investment method. The final expenditure at market price during a year is taken into account.

National income= Total Expenditure + Total Savings

This method has been following limitations:

1 Records are not properly maintained by peoples.

2 It is not an easy task to know total savings or total investment during a year.

3 We can not get reliable statistics in a developing country like ours regarding expenditure, saving and investment.

4. Social Accounting Method

According to this method various accounts relating to national income are divided into different and the total of these different classes is collectively used for the measurement of national income. This method is propounded by **Prof. Richard Stone**. This method has been defined by different authors.

1 Professor J.K. Mehta defined, "Social accounting refers to that part of descriptive economics which relates to the production or distribution of national income."

2 According to Edey and Peacock, "Social accounting is concerned with the statistical classification of the activities of human being and human institutions in ways, which helps us to understand the operation of the economy as a whole. The fields of studies summed up by the words social accounting embraces, however, not only the classification of economic activity, but also the application of the information thus assembled to the investigation of the operation of the economic system."

Thus, the social accounting method of measuring national income is a new method or technique which is used generally in developed countries. This is a method in which accounts of various, groups and subgroups of the economy are prepared and the national income account is estimated by combination of all factors.

The basic objective of this method is to obtain information about the economic policy and provide direction of the economy.

Advantages of social accounting method:

1 By this method, we can use the real economic situation of the country.
2 The method helps in the process of policy formulation and its execution in the economy.
3 It can be used for long run decision making and demand forecasting.
4 Social accounting helps in the field of planning.

Disadvantages:

1 This method is used in developed countries.
2 It is very difficult to compare it with other method.
3 It is costly and time consuming method.

Activity C

1 Discuss the methods of measuring National Income.

12.6 Importance of National Income

National Income is very useful in present economics studies and policy formulation. Importance or significance of national income can be seen in following heads:

1) Comparison of Real and Nominal income: If the national income data for a number of years is available in the form of income and physical product, comparison between real and nominal or money income can easily be made. This type of comparison will exhibit the trends of economic growth in a decade, a few decades or a century.

2) Indication of Prosperity: The national income data is an index of national progress and economic growth. Per capita income can indicate the rise or fall in the standard of living of the people.

3) Regional Comparison: National income data and other statistics help us to find out the contribution of a particular region in our total national product. the comparison between different regions will reflect the level of economic development and disparities between various regions.

4) **Reflect Sectoral Contribution**: The economy is generally divided into different sectors and sub sectors. Through national income statistics we can obtain a clear picture about the sectoral contribution to gross national product. This will determined the relative importance of each sector in the economy.

5) **Guide to Economic Planning and Policy Formulation**: We know very well that the government plays an important role in the economy in modern times. Planning has come to stay as an important tool for economic growth. National income data showing its distribution between various sections of the society. Free education, medical aid and social security schemes go along way to reduce income and inequalities. National income statistics are helpful in formulating necessary plan to develop backward areas and sectors.

6) **Inflationary and Deflationary Gaps**: National income statistics enable us to have an idea of inflationary or deflationary forces in an economy. Infact inflationary and deflationary gaps are the result of inconsistencies of certain sub totals related to national product and aggregate expenditure. The excess expenditure over the value of available output at base level of prices will result in inflationary gap.

7) **Basis of Economic Welfare**: National income analysis reflects the well being of the inhabitants of the country. They enable us to compare the standard of the living of the people in different countries or the people living in the same country at different times. We can measure the increase or decrease in the standard of living of the people with the help of national income.

8) **Basis of Economic Policy**: In the era of planning, national income statistics are regarded as comprehensive tool of economic policy. They throw light on the data pertaining to the country's gross income, output, saving, consumption etc. Without these estimates planning is almost impossible.

9) **Basis of Economic Structure**: National income statistics enable us to have a detail knowledge of the economic structure of the country. By this we can know the contribution made to national income by different sectors like mining, agriculture, industry, trade etc.

10) **Basis of Distribution of National Income**: By national income we can get data pertaining to wages, profits and interest which enables us to learn about the disparities in income among the different sections of the society.

11) **Basis of Budgetary Policies**: National income statistics enable the government to prepare their budgetary policies. The taxation and borrowing policies can be framed to neutralize the fluctuations in the level of employment.

12) **National Expenditure**: By national income different departments can get the information how to divide and use the national expenditure between consumption expenditure and investment expenditure.

13) **International Sphere**: A national income statistics play a pioneer role in fixing the burden of international payments among different countries and to determine quotas of different countries to international organizations like IMF, IBRD, and UNO.

14) **Distribution of Grants and Aids**: In the federal setup, national income estimates enable the central government to distribute the quantum of grants in aid among the state government and other constituent units.

15) **Facilitates Business Forecasting**; On the basis of national income producers can do changes in production and marketing mechanism. Forecasting of long term trends of business activities is also made.

16) **Indicator of Economic Progress**: National income provides information about economic progress, whether the nation is progressing well on the path of development or not.

12.7 Problems of Calculating National Income and Causes of Low National Income

Some problems, which developing countries are facing while calculating national income are given below :

1) **Lack of proper accounts and information**: In developing countries, the economy is based on small sector. The income of this sector is very low but the numbers of units are very large. These units are operated by very small artisans and uneducated and unskilled persons. In this sector, the accounts are not maintained properly, these industrialists do not keep proper accounts and record of their income. The information provided by them is generally inaccurate and wrong and hence it is not possible to collect reliable information for national income.

2) **Rapid increase in Population-** The major reason for low per capita income is the speedy growth of population along with the slower growth of the NI. Hence, to improve the rate of growth of per capita income in the country, it would be necessary to have a two-pronged attack. Once is to step up the growth of NI and the second is to take necessary steps to bring down the rate of growth of population.

3) **Double Counting**: This is the most important difficulty in measurement of national income. Several commodities and services are such which are used in production process more than once. In such conditions possibilities exists of there being counted repeatedly. It is also difficult to correctly and clearly distinguish between intermediary and final products.

4) **Low Productivity of Agriculture**: Agriculture plays an important role in developing economy, but in India this sector has low productivity and poor performance.

5) **Non availability of goods and services for exchange**: We have studied that in computation of national income only those commodities and services are included which are commercially used. In most of the developing countries people in rural areas do not incur many types of expenditure on production of primary goods, like villagers produce the required raw materials themselves. Since their raw material is not sold in the market, it is not included in national income. In such situations national income is estimated on lower side.

6) **Problems of non- monetary economy**: As we know that, nearly 70% of population of our country lives in the villages. In villages non monetary transaction are common. Most of the activities are not brought by money but by barter system. In such conditions, the non monetary transactions are not methods in national income and it results in computation of national production on lower side.

7) **Poor Industrial Development**: In developing countries the industrial development is not proper. The causes of poor industrial development are lack of sufficient capital formation, failure of the public sector to play the assigned role in spite of its dominance; the defective fiscal policy and the under-utilisation of the capacity in the industrial sector etc.

8) **Defective classification**: We calculate national income according to industries. But in developing countries most of the workers are engaged in different activities like partially in agriculture sector or partially in industrial sector. So it is difficult to calculate the true national income.

9) **Problems of new products and services**: National income is estimated at constant prices, as also at current prices. Some products are such, which are being produced, at present but were not produced in the base year. The important problem arises from such goods is how to know the prices of for the base year?

10) **Problems of the constituents of national income**: This problem arises when we want to compare the national incomes of two or more countries. The problem is the constituents of national income are not the same in all countries of the world. therefore, it becomes difficult to compare the national income of various countries.

11) **Regional imbalances**: Many states in India are extremely backward and underdeveloped. So regional imbalance creates problem in calculating accurate national income.

12) **Problem of collection of correct data**: Data collection methods are not reliable in developing countries like India because several defects exist in various methods applied for collection of data required for measurement of national income. For example, data related to agriculture in India are collected by Gram Sevaks or Patvaries, who are not trained in the art of data collection. They are not able to devote adequate time for data collection. Hence, such data are also neither accurate nor reliable.

13) **Difficult to know the value of services**: Various types of services are included in computation of national income. For example, the nurses or doctors provide their services in extra hours also, in addition to their assigned duty hours. It is difficult to know the values of such services. Hence, estimation of national income is also difficult for dispensation of such services.

14) Further, **the War with China and Pakistan** also led to the divergence of resources for defence, leaving less resource for the purpose of development.

Activity D

1 "India is facing some problems while calculating the national income." Discuss this statement in a group.

12.8 Suggestions for Raising National Income

Some suggestion are here to overcome or raising the national income. These are:

1. **Development of Industrial Sector:** The industrial and agricultural sector should be developed rapidly. In this context new agricultural techniques must be provided to the farmers and implemented in all agricultural areas. The fertilisers, pesticides, agricultural implements etc. should be used to improve the production. More stress should be laid on the development of cottage, small and rural industries.
2. **Practical training for effective administration**: The official should be trained for effective administration. Effective administrative arrangement should be made for maintenance of proper accounts and collection of reliable and complete information and data regarding national income.
3. **Proper Utilisation of Resources**- The factors causing the under utilisation of productivity capacity must be removed. Natural resources and productive capacity should be utilised more effectively. Facilities for irrigation and power should be increased sufficiently.
4. **Development of Science and Technology**. The production techniques should be improved. More emphasis should be laid on the development of science and technology.
5. To overcome the problem of **double counting** Value of finally produce commodities and services alone should be included in national income estimates.
6. **Development of Credit Facilities**. Capital formation should be stepped up. Saving schemes should be popularised more.

7. **Vocational Guidance**: The problem of unemployment and under- employment must be tackle more effectively. Self employment should be encouraged.
8. **Technical Training and Public Health Facilities**: Technical training and public health facilities should be strengthened in order to increase efficiency of labours. The regional inequalities must be eliminated from the backward regions.
9. **Equal Distribution of Wealth**: Inequalities in distribution of wealth income and economic opportunities should also be mitigated.
10. Data relating to national income should be collected by classifying agricultural sector on scientific basis.
11. All area of the economy should be classified properly and scientifically to remove the difficulty of national income computation.

Example: Calculate Gross National Product (GNP), Net National product(NNP), Net Domestic product at factor cost (NDP), Net Domestic Product at market price (NDP) by given data

				Rs. In crore
1)	GNP at market prices			2,96,000
2)	net factor income from abroad			(-)802
3)	Capital consumption allowances			11,300
4)	Net direct taxes			20,000
	i)	GNP at market price	=	2,96,000
	ii)	GNP at factor Cost	=	GNP at Market price- indirect taxes 2,96,000-20,000= 2,76,000
	iii)	NNP at factor cost	=	GNP at factor cost- depreciation 2,76,000-11300= 2,64,700
	iv)	NDP at factor cost	=	NNP at factor cost- net factor income from Abroad 2,64,700- (-) 802=2,65,502
	v)	NDP at market price	=	NDP at factor cost+ indirect taxes 2,65,505+ 20,000= 2,85,502

12.9 Economic Welfare and National Income

National income is always related with economic activities and economic welfare, because if the national income increases the economic conditions will Improve and therefore we can say that the national income is an indicator of economic progress and economics welfare.

According to Prof. A.C. Pigou, "Economic welfare is that part of total welfare which is directly or indirectly measured in terms of money." In economic welfare we include the satisfactions and dissatisfaction received from existing sources of the economy.

Welfare can be classified into two categories:

A) Economic Welfare
B) Non Economic Welfare

According to Pigou, Economic welfare is directly or indirectly measured in terms of money, but Non –Economic welfare is not measured in terms of money. Relation between national income and economic welfare may be studied, as follows:

1) Change in the size of national income and economic welfare
2) Change in distribution of national income and economic welfare
3) Stability in national income and economic welfare

1) Change in the Size of National Income and Economic Welfare:

Change in national income can be in two forms; 1) increase in national income 2) decrease in national income

When national increase the welfare is also goes up because production will increase, level of employment will increase, income will also increase. All a result standard of living will be high in the society and it will affect the economic welfare. On the contrary, if national income will decrease it will result into decrease in production, employment, standard of living and income. So it will badly affect the economic welfare of the people.

Following are the exceptions when national income increases but economics welfare declines:

1) **National income and share of the poor**: If poor people get declining share in the national income will adversely affected their economic welfare.
2) **Sources used for increasing national income**: If national income increases due to decrease in old age benefits, increasing working hours of the workers, exploitation of women and children and by taking work in unhealthy working conditions, etc, the real economic welfare will decrease.
3) **Increasing national income and shifting of consumer' preferences towards evils:** If national income increases, but social evils also increase, like increased use of liquor, smoking etc. this shift will virtually decrease the level of overall economic welfare of the society.
4) **Increase in production of non consumer goods**: If the increase in the total production in the society is attributable to increase in the production of non consumer goods, it will cause increase in the national income, but it will not add to the economic welfare.

2) Change in Distribution of National Income and Economic Welfare:

When national income distribution changes from one section of the society to another section, this change may be of two types:

1) Transfer of income from rich to poor
2) Transfer of income from poor to rich.

1) **Transfer of income from rich to poor**: If national income transferred from rich section of the society to poor section of the society, economic disparities are reduced and economics welfare increased.
2) **Transfer of income from poor to rich**: If national income transferred from poor section of the society to rich section of the society, economic disparities will increase and economics welfare will decline

3) Stability in national income and economic welfare: If national income rate is constant it means the economic welfare is also constant. But if the national income is not constant and it declines then it effects adversely to the economy, like decline in saving, investment and capital formation. It also has adverse effects on production, consumption and distribution of the country.

Case Study: Calculate Gross National Product (GNP), Net National product(NNP), Net Domestic product at factor cost (NDP), Net Domestic Product at market price (NDP) by given data

	Rs. in crore
1) GNP at market prices	1, 95,006
2) Net factor income from abroad	(-) 402
3) Capital consumption allowances	11,398
4) Net direct taxes	21,152

12.10 Summary

National income may be viewed from the angles of production, consumption and distribution. It is the part of macro economics. National income in general sense means the total value of commodities and services produced in any country during a year, it is a term which is used interchangeably with national dividend, national output and national expenditure. National income is related with any particular country, and also calculated for a year. The national income has various concepts like GNP, NNP, Personal income, Disposable income, Per Capita income etc.

We can calculate national income by different method. These methods are **Census of Production Method**, **Census of Income Method, Census of Expenditure Method and Social Accounting Method**. This unit shows the importance of national income in economic development, in comparison of real and nominal income and helps in Economic Planning and Policy Formulation.

In National Income estimation some problems are faced. These are lack of proper accounts and information, double counting, low productivity of agriculture, non availability of goods and services for exchange, problems of non- monetary economy, and difficult to know the value of services etc.

12.11 Self Assessment Questions

Very short type questions:

1 What is national income?

2 What do you understand by Gross National Product?

3 Define disposable income.

Short type questions:

1 Explain 4 causes of slow growth of national income.

2 Explain the features or characteristics of national income.

3 What do you understand by NNP and discuss the methods for estimation of NNP

Essay type questions:

1 What is national income? Discuss different methods of measuring national income.

2 Discuss the relationship between national income and economic welfare.

3 Describe the various methods of measuring national income with their advantages and disadvantages.

4. Discuss various concepts of national income.

12.12 Reference Books

- Dwivedi D N. : Managerial Economics
- Ahuja H. L. : Managerial Economics
- Bilas A., Richard : Managerial Economics

Unit - 13 : Business Cycle

Structure of Unit

13.0 Objectives

After completing this unit you will be able to understand :

- What is Business Cycle?
- Different phases of Business Cycle.
- Detail analysis of various theories of business cycle.
- Control of business cycle.

13.1 Introduction

An important feature of the working of a capitalist economy is the existence of alternating periods of prosperity and depression, generally referred to as 'business cycle' or trade cycle' There is no unanimity of opinion among the economists regarding the causes of this complex phenomenon. Their explanations range widely from the natural influences to the technological and other exogenous forces. The business cycle is associated with sweeping fluctuations in economic activity, i.e., production, prices and employment, etc.

13.2 Definition of Business Cycle

Since the extensive study has been conducted on the working of business cycle, but academicians have not yet completely succeeded in steering clear of multitude of complexities surrounding this phenomenon. In respect of its very definition, there has been much difference of opinion among the economists. However, Clement Juglar was the first known economist who stimulated much theorizing on cyclical fluctuations after he established statistically the omni-presence of business cycles in the first half of the 19 Century.

Keynes has defined a business cycle as "composed of periods of good trade characterised by rising prices and low unemployment percentages altering with periods of bad trade characterised by falling prices and high unemployment percentages."

According to Wesley C. Mitchell and Arthur F. Burns, "Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises. Cycle consists of expansions occurring at about the same time in many economic activities followed by

similarly general recessions, contractions and revivals which merge into the expansion phase of the next cycle this sequence of change is recurrent but not periodic, in duration business cycles vary from more than one year to ten or twelve years, they are not divisible into shorter cycles with amplitudes approximating their own,"

This definition brings out the following, important points:-

(i) Business cycles occur in the organised communities

(ii) Cyclical fluctuation is a characteristic of those economies in which private enterprise is predominant. Little information is available, if these are found in socialistic economies

(iii) Business cycles refer to the fluctuation in the aggregate economic activities. The variations in the individual activities do not constitute an over-all business cycle.

(iv) The expansions, recessions, contractions and revivals occur and recur in an unchanged sequence.

(v) The cyclical fluctuation may be recurrent but not periodic in the sense that there is no specific standard duration of a business cycle.

In the words of Gordon, "Business cycle consist of recurring alternations of expansion and contraction in aggregate economic activity, the alternating movements in each direction being self-reinforcing and pervading virtually all parts of the economy."

This definition has a distinct feature in that it lays emphasis on the fact that business fluctuations are self-reinforcing or cumulative in character.

A. H. Hansen has defined the business cycle as a "manifestation of the industrial segment of the economy from which prosperity or depression is redistributed to other groups in the highly inter-related modern society."

Through this definition, Hansen has pointed out that the cyclical variations get transmitted from one sector or group of industries to the others in a system. Similarly, the prosperity or depression in one economy may be transmitted to the other until business cycle becomes a global phenomenon in a world system where every economy is related to all the other economies.

13.3 Characteristics of a Business Cycle

On the basis of above definitions, the business cycle has following important characteristics -

(i) A business cycle is synchronic in nature -

Whenever the process of fluctuations gets started in any sector or group of industries, it is not possible to restrict the fluctuations exclusively to that sector or group of industries. The rest of economic activities in a country are bound to be affected by the cyclical phenomenon and thus all the sectors or industries in the economic system do experience almost simultaneous expansions and contractions.

(ii) It exhibits a wave like variation in economic activity-

The system moves from one extreme to another like a pendulum. The expansion or prosperity is followed by contraction and vice-versa.

(iii) The business fluctuations are recurrent in nature-

If a period of good trade is followed by a period of bad trade, it does not mean that the system will thereafter suffer continuously from the effects of low sales, low prices and incomes. A cyclical change is recurrent. There will be alternately being the expansions and contractions in the economic activities.

(iv) Although business cycles are recurrent, they are not periodic-

Some trade cycles may last only two or three years, while others may last for a longer period of say, six or eight or even larger number of years. The actual experience of the business world has cleanly shown that no fixed periodicity can be contemplated for a complete cycle.

(v) The cyclical fluctuations are self-reinforcing and cumulative-

Once the cyclical movement starts in one direction, it continues to feed on itself and as a result the rate of change becomes more and more accelerated. Over the contraction phase, the initial decline in sales or production may be very small but as the time posses, it assumes more and more catastrophic proportions. A similar pattern is exhibited by the expansion phase also.

(vi) The cyclical movement are generally asymmetrical-

The movement from trough (minimum point) to peak may be slow and halting but the downward movement may occur with a sudden and catastrophic pace. Thus, expansion may last longer than contraction. But the reverse cannot also be denied. It is always a matter of empirical circumstance than will determine whether prosperity or depression will longer in the economic system.

(vii) The impact of a cycle is differential-

It is true that economic cycles are all : pervasive, yet the impact of fluctuations upon different industries and sectors in a country is usually differential. Some industries are more sensitive to fluctuations than others and they may be affected disproportionately more than may others. For example, the capital - goods industries or construction industries are relatively much more sensitive than the other industries.

(viii) The business cycles may be international in character-

The cyclical changes in the advanced countries generally get transmitted to other countries of the world, since most of the countries in the present day world economy are mutually inter-dependent in the matters of international trade and payments. The conditions of prosperity or depression in one country affect, by a larger or smaller degree, the economic activities in the rest of the countries. The international transmission of cyclical fluctuations may not take place if a particular economic system is fully insulated from the effect of the forces of trade and payments.

The above characteristics tend to impress that the behaviour pattern of the business cycles is generally the same. But we must remember that no two individual cycles are exactly similar. The differences may exist in respect of their periodicity, causes and intensity.

13.4 Phase of a Business Cycle

So for we have studied that business cycle is a phenomenon involving the expansion and contraction in economic activity following each other in succession. It implies that there are two broad phases of a cyclical phenomenon. Burns and Mitchell, however, intervene to suggest that the points of peak and trough are the two critical mark off point between them. The point of peak marks the termination of prosperity while through indicates the point at which revival starts. Burns and Mitchell, in order to elaborate further, have decided a complete standard cycle from trough to trough into nine distinct stages as shown in following figure no 1. The points of trough have been designated by stages I and IX, while the peak has been designated by stage V. The expansion phase extends from II to IV and contraction extends from VI to VIII stages.

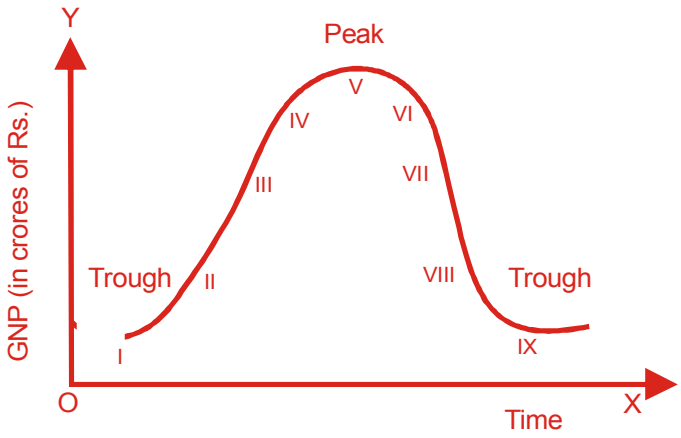


Diagram 1

J.A. Schumpeter has, however, disagreed with the above demarcation of the different phase of the business cycle. In his opinion, the expansion and contraction should not be marked off from peak to peak or from trough to trough, rather these should be marked off from equilibrium to equilibrium. Taking into consideration the equilibrium level of economic activity, Schumpeter visualises a four-phase cycle.

A typical four-phase cycle involves - depression, recovery (or revival), prosperity (or, full employment), boom (or overfull employment) and recession.

Depression

This constitutes the first stage or phase of a business cycle. It is a protracted period in which business activity in the country is for below the normal. It is characterized by a sharp reduction of production, mass unemployment, low employment, falling prices, falling profits, low wages, contraction of credit, a high rate of business failures and all round pessimism and despair. A decline in output or production is accompanied by a reduction in the volume of employment.

The consumer good industries, such as, food, clothing etc. are not so much affected by unemployment as the basic capital goods industries. The prices of manufactured goods fall to low levels since the costs are 'sticky' and do not fall as rapidly as prices, the manufacturers suffer huge financial loses. Many of these firms have to close down on account of accumulated lossess.

The fall in prices distorts the relative price structure. The prices of agricultural commodities and raw materials fall to a greater extent than the prices of finished manufactured goods. The agriculturists are hit more than the manufacturing classes.

The two longest depressions in the U.S. history were those of 1873-1879 and 1929-1933.

Recovery (Or Revival)

It implies increases in business activity after the lowest point of the depression has been reached. During this phase there is a slight improvement in economic activity to start with. The entrepreneurs begin to feel that economic situation was, after all, not so bad as it was in preceding stage. This leads to further improvement in business activity. The industrial production picks up slowly and gradually. The volume of employment also steadily increases. There is a slow but sure rise in prices accompanied by a small rise in profits. The wages also rise, though they do not rise in the same proportion in which the prices rise. Attracted by rising profits, new investments take place in capital goods industries. The banks expand credits. The business inventories also start rising slowly. The pessimism and despair of th preceding period is replaced by an atmosphere of all-around cautious hope.

The recoveries continue until business activity reaches approximately the same level that it had achieved before the decline set in. The rate of recovery, it has been found is generally related directly to that of the preceding depression. The more severe the depression, the more rapid recovery will be. Nothing definite can be said about the duration of recovery period. It depends upon the strength of forces which initiated the recovery. The recovery could be initiated by new innovations, government expenditure, changes in production techniques, investment in new regions, exploitation of new sources of energy etc.

Prosperity

This stage is characterised by increased production, high capital investment, in basic industries, expansion of bank credit, high prices, high profits, a high rate of formation of new business enterprises and full employment. There is a general feeling of optimism among businessman and industrialists.

Boom

It is the rapid expansion stage in business activity of new high marks, resulting in high stocks and commodity prices, high products, high profits and overfull employment.

The prosperity phase of business cycle does not end up with a stable state of full employment. It leads to the emergence of boom. The continuance of investment even after the stage of full employment results in a sharp inflationary rise of prices. This causes undue optimism among businessman and industrialists who make additional investments in various branches of economy. This puts additional pressure on the factors of production which are already fully employed, causing a sharp rise in their prices. Soon a situation develops in which the number of jobs exceeds the number of workers available in the market. Such a situation is known as overfull employment. Profits touch new heights. Attracted by the rising profits, the businessman and industrialists further increase their capital investments. This add fuel to fire. Runaway inflation raises its heads in all its ugliness. Prices rise sky-high. The tempo of the boom reaches new heights. There is an atmosphere of over-optimism will around. But the developing boom carries with it the seeds of self destruction. Bottle-necks begin to appear in various sectors of economy. Factors of production become scarce; causing the further spurt in their prices. The cost calculations of businessmen and industrialists are completely upset some new hastily set up firms collapse. This makes the businessman over cautions. They now begin to stay away from new projects and even stop the expansion of the existing units. This prepares the ground for succeeding stage. A boom as it is said in inevitably followed up a bust.

Recession

This feeling of over-optimism of the earlier period is replaced now by over-pessimism characterized by fear and hesitation on the part of the businessmen. The failure of some business creates panic among businessmen. The banks also get panicky and begin to withdraw loans from business enterprises. More business enterprises fail. Prices collapse and confidence is rudely shaken. Building construction slows down and unemployment appears in basic, capital goods industries. This initial unemployment then spreads to other industries. Unemployment leads to fall in income, expenditure, prices and profits. The recession, it should be remembered, has cumulative affect. Once a recession starts, it goes on gathering momentum and finally assumes the shape of depression - the first phase of the business cycle is complete.

The 1957-58 recession in the U.S.A. was a serve one.

The various phases of the business cycle can be illustrated by the following diagrame no.2

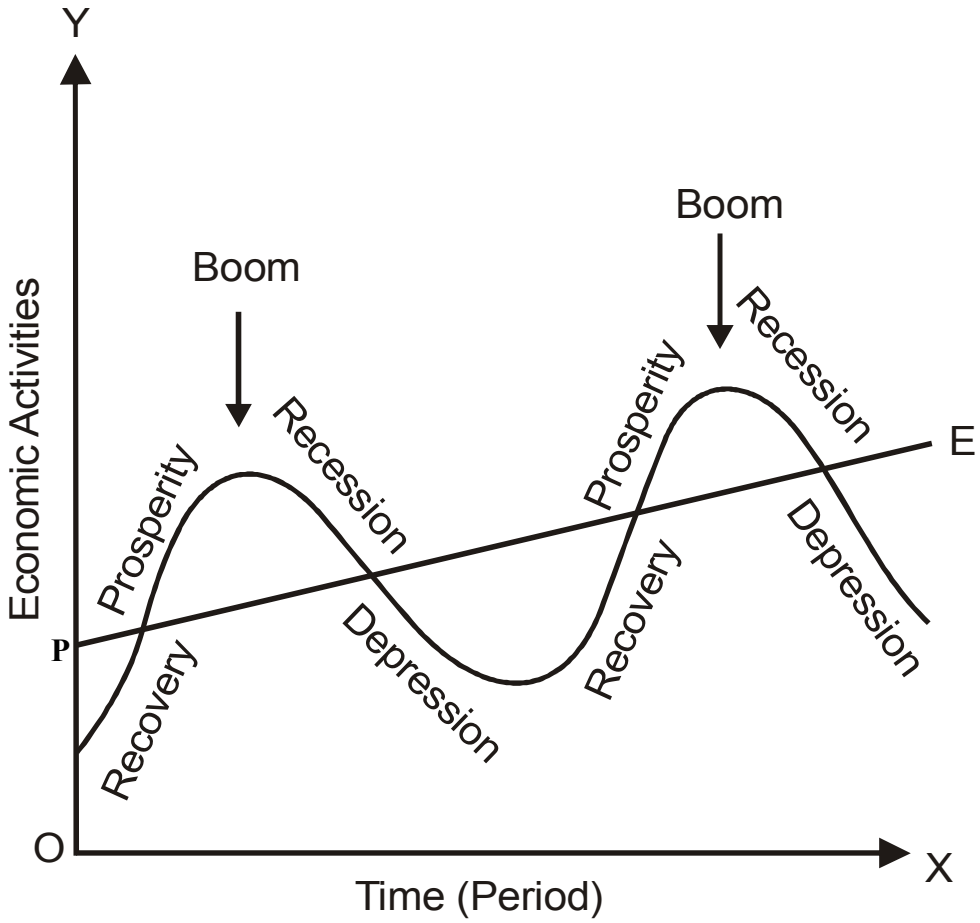


Diagram 2

In the diagram no. 2. PM is the full employment line. Above this line, we have two stages of the business cycle - a boom in the upswing and a recession in the downswing. Below this line again, we have two stages of the business cycle... recovery in the upswing and depression in the downswing. The business cycle, as shown in the above Diagram no.2 passes through five stages. It starts with depression to be followed by recovery, prosperity, boom, recession and to be followed by recovery, prosperity, boom, recession and ultimately ends up again with depression.

These are the five phases or stages of a typical business cycle. It does not, however, imply that every business cycle passes through these five stages in the same order. It is possible that the recovery stage without the business cycle entering into the prosperity and boom stages, as it actually happened in the U.S.A., in 1937. Likewise, we cannot say anything definite about the duration or length of the various stages at the business cycle. It is possible that the depression phase is a prolonged one to be followed by quick recovery. It is also possible that the depression is a short one, but is followed by prolonged recovery.

13.5 Various Theories of Business Cycle

To seek an explanation of the causes behind a business cycle, we have to study the important theories which have been put forward from time to time to throw light on this highly complex phenomenon of the capitalistic world. The important theories are as follows :

Metrological (Or Sunspot) Theory-

This is one of the oldest theory of business cycle. It is associated with the name of W. Stanley Jevons, British economist who in 1875 laid down the proposition that variations in the atmosphere of the Sun, as evidenced in the frequency and magnitude of sunspots, determined the rhythmical fluctuations of

the business activity. At definite intervals, certain dark spots appeared on the face of the sun which affected the transmission of heat to earth. This affected the agricultural crops which, in their turn, influenced the level of business activity in the economy. When the agricultural crops failed consequent upon the appearance of sunspots, the entire economy would be engulfed in a depression, the reason being that agriculture was an important branch of production. The depression in the agricultural sector soon spread to other sectors, and the entire economy became depressed. On the other hand, if the spots did not appear on the sun and the rainfall was good, there might be excellent harvest in the country, giving rise to period of prosperity for the people. The variations in the rainfall, it was pointed out, were so regular that periods of poor harvests often alternated with periods of good harvests. Consequently, a period of depression was often followed by a period of boom.

The metrological theory is not accepted these days as giving a valid explanation of the complex phenomenon of the business cycle. It lacks scientific character. The so-called sunspots are nothing more than a flight of imagination. Further, if we accept the theory, the industrialized countries should be immune from the operation of the business cycle, because agriculture is not an important branch of production in these countries. The fact, however, is that non-agricultural, industrialized country suffer more from the fluctuations of business activity than do the agricultural countries. Moreover, the metrological theory cannot satisfactorily explain the various phases of business cycle.

Psychological Theory

This theory is associated with the name of Prof. A. C. Pigou who developed it in his well-known work Industrial fluctuations. The psychological theory attempts to explain the business cycle phenomenon on the basis of changes in the psychology of the industrialists. According to this theory, business fluctuations are the result of the waves of optimism in pessimism in businessmen and industrialists. At times, the businessmen and industrialists are prone to be optimists. The big among them feel optimistic about the future prospects of business. They radiate their optimism to other businessmen and industrialists, who, in their turn, pass it on to others In this way, the entire business community becomes optimistic - minded. And in their thought of optimism, they make new investments in all branches of the economy. This leads to the emergence of boom conditions in the country. At other times, the businessmen and industrialists becomes pessimists with regard to future business prospects. The big among them communicate their pessimism to others and ultimately the entire business community becomes pessimistic-minded. New investments are stopped. Even the existing production facilities are curtailed. There is a general atmosphere of gloom and despair throughout the economy. This leads to the emergence of slump in the country. The booms and slumps are, thus, due to the alternating waves of optimism and pessimism on the part of investors.

The psychological theory has been criticized on the ground that it does not furnish a comprehensive explanation of the business cycle. According to this theory, the fluctuations in business activity are due to the alternating waves of optimism and pessimism in the moods of businessmen. It is true, but the theory does not explain what causes these alternating waves of optimism and pessimism.

Dr. Hayek's Over investment theory

Over investment theory is propounded by Dr. Hayek. Dr. Hayek explained that over issue of bank credit at artificially low interest rates is responsible for the operation of business cycle. He proceeded on the track of Wicksell. He observed the distinction between natural rate of interest and market rate of interest. He explained so long as market rate of interest coincides with the natural rate of interest, there is no trouble and economy remains in equilibrium. The trouble begins when there appears a discrepancy between market rate of interest and natural rate of interest. If the market rate of interest is less than the

natural rate of interest, the demand for funds for investment will exceed then the available supply of savings. The gap between demand of funds and supply of savings shall be filled in by the expansion of bank credit. The additional bank credit increases the supply of money which is its turn increases price level, resulting in inflation or boom. On the contrary the market rate is more than the natural rate of interest, the demand for funds for purpose of investment will be less than the available supply of savings. Bank credit will contract. The supply of money in circulation will be reduced. Price level will be decreased and it will lead deflation or depression.

The boom is then followed by depression. The prices of scarce factors continued to rise. This enhances cost of products and their profits turn into losses. The businessman get panicky. This leads to lower investment and reduction in investment brings in depression.

The Dr. Hayek's theory explains, the business cycle would not operate if the demand for funds for investment was met or financed by voluntary savings only. In other words, business fluctuations take place only when banks expand credit which lead to over investment and the resulting in inflation or deflation.

Dr. Hayek's theory too does not furnish a comprehensive explanation of business fluctuations.

Keynes Theory of Business Cycle

Prof. Keyhes explained that the operation of business cycle is due to fluctuations in volume of investment. He also analysed that fluctuations in investment occurs due to the fluctuations in marginal efficiency of capital (MEC). The nature of private investment depends upon two factors, (i) rate of interest (ii) the marginal efficiency of capital. The rate of interest may be more or less sticky or stable in nature. Hence, the MEC is the real strategic variable which determines the volume of private investment, and it is the fluctuations in the MEC, which cause fluctuations in investment. The MEC of particular capital asset depends upon two factors, (i) the prospective yield, and (ii) the supply price of the capital asset. The latter may be taken to be fixed in the short period so that it is the fluctuations in prospective yield (P.Y.), Which ultimately determine the MEC. A rise or an improvement in the MEC by leading to an increased investment, creates more employment and output and income in the economy. It initiates the period of prosperity which through the working of the multiplier leads ultimately to the emergence of boom. A decline or deterioration on the other hand, in the MEC, through decreased investment, leads to unemployment and consequently to the contraction of income and output. It initiated the period of depression which through the reverse working of the multiplier leads ultimately to the emergence of slump. With the basic cause of the trade cycle set forth. Keyne's define the course and the phases of the trade cycle in actual practice. He starts with a period of expansion and see how it leads to the emergence of the boom. The business activity is progressively expanding. The businessmen are optimistic about the future, expecting higher and higher profits. The MEC is rapidly rising the rate of interest is stable, so it is profitable to set up new enterprises. The economy and market picture is quiet rosy. The process of economic expansion setting up new ventures goes on and on till the economy reached at the peak of boom. At this stage some new forces come into operation which exert pressure on the MEC in the downward direction. Firstly as process of economic expansion goes on, cost of production start rising on account of the increasing scarcities of materials and equipments. Rising cost naturally have the effect of depression the MEC. Secondly the increasing abundance of output, resulting from rapid industrial expansion tends to lessen the yields or returns below expectations. These both causes combine to depress MEC. The business man are always very sensitive to a decline in MEC and adjust their output according that. Decline in the MEC shows depression while recovery shows gradual revival of the MEC. Revival of economic activity is slow process. The MEC cannot remain in a depressed state for ever. As time elapses, it tends to more up. The main causes lead to the revival of the

MEC. Firstly, as the time passes, the existing machinery and plants become worn-out and obsolescent and need to be replaced, necessitating the demand for new machinery and plant. Secondly, the surplus stocks of other goods also get exhausted with the passage of time. Both these causes tend to promote new business activity. Further, the costs are also considerably cut down as a result of the fall in the prices of raw materials and equipment. Wage costs also go down. All these have the effect of toning up the MEC.

The real contribution of Keynes' theory of the trade cycle lies in the explanation of the turning-points the lower as well as upper turning-points of the business cycle. The Keynes, however, the most important cause of the downturn is the MPC., according to which the expenditure on consumption goods does not increase in proportion to the increased income of the community. This sets a limit to the expansion of the output of consumption goods. This fact alone react upon MEC. Which tends to move now is the downward direction. To Keynes the most important cause for the upturn is the MPC according to which the expenditure of community does not decrease in proportion to the decreased income of the community. This sets a limit to downward contraction of the output of consumption goods. This fact reacts favourably on the MEC which now tend to more in the upward direction. Keynes had given a satisfactory answer of the turning points of the trade cycle. Keynes consumption function filled a serious gap and corrected as serious error in the previous theory of the business cycle.

Criticism of Keyen's Business Cycle Theory

(i) Prof. Hazlilt criticizes Keynes for attributing the economic crisis to a sudden, collapse in the 'marginal efficiency of capital'. According to him, Keynes' 'marginal efficiency of capital' is a very vague term and can give rise to different possible meanings.

Prof. Hazlilt says "Keynes' explanation of the crisis as a sudden collapse of the marginal efficiency of capital is either a useless truism or an obvious error.

(ii) Keynes' advocacy of a cheap money policy or low interest rates as a remedy for economic crisis has not been relished by the critics who have subjected Keynes to harsh criticism on this score. His critics are of the view that a cheap money policy encourages excessive borrowings, excessive credit expansion, imprudent speculation and various types of distortions and instabilities in the economy. It might lead to a policy of perpetual inflations, for the only way to keep the interest rate low is by a constant expansion of the money and credit supply.

(iii) Finally, Keynes' plea for governmental intervention and "a socially controlled rate of investment" as a tool to fight depression and unemployment has not been liked by his critics who have taken him to task for making this extraordinary' suggestion. His critics point out that the acceptance of Keynes' suggestion to socially control the value of investment would amount to putting the entire economy in the hands of government officials who are neither perfectly rational, nor completely informed, nor incorruptible, nor free from the taint of political interest.

13.6 Control of Business Cycle

The business cycle, by creating cyclical fluctuations in economic activity, does a great deal of harm to the smooth and orderly progress of society. Efforts should, therefore, be made to check the operation of the business cycle. But something can be done to mitigate the ravages of the business cycle. Following measures are suggested

1. Monetary Measures :

Generally, the short business cycle always aggravated by the monetary factors. Monetary factors may not cause the business cycle, but once the cycle occurs, the monetary factors do aggravate it. Monetary inflation, by leading to higher prices, higher profits and an optimistic approach, strengthens the upswing of the cycle. Monetary deflation, on the contrary, by leading to lower prices, lower profits and a pessimistic thought, reinforce the downswing of the cycle. Some steps should be taken to check and control the monetary factors' which aggravate business fluctuations caused by the business cycle. For this, the government may evolve a suitable monetary policy to deal with the situation. So far as money supply is concerned, its undue expansion could be checked by insisting upon a proper and adequate cover against note issue. As regards bank credit, the central bank of the country could utilize the various methods of control, i.e., bank rate, open market operations, reserve ratio, moral suasion, etc., to control it.

2. Fiscal Measures

It is possible that monetary policy, taken alone, may not suffice to check cyclical business fluctuations. it is, therefore suggested that monetary policy should be properly integrated with a suitable fiscal policy to achieve the desired results. The three main instruments of fiscal policy - taxation, spending and borrowing - can be used by the government to achive this purpose.

If business activity shows signs of slackening down or there are symptoms of a downswing, the government should not levy any taxes on the people. Even the existing taxes should be substantially reduced. This would leave more money in the hands of people who should be encouraged to spend it on buying additional goods and services to offset the decline in demand and business activity. At the same time, the government itself should embark on a 'vast spending programme to stimulate business activity in the economy. The government, at a time of depression, should initiate public works projects of various types involving expenditure of money and additional employment for labour. This would help in offsetting the decline in effective demand and business activity. The funds to finance the public works projects should be obtained either by printing more paper money or by borrowing from the banks. The government should, at such a time, follow the policy of deficit budgeting, which alone, will increase the flow of income-stream into the economy. Public borrowings can also be employed by the government as an instrument to fight depression and unemployment. The government should try, as far as possible, to borrow from those sections of the people with whom the funds are lying idle. The idea is to utilize those funds through borrowing for productive purpose.

When the economy recovers and a wave of prosperity sets in, the government should follow an exactly opposite policy. It is, thus, evident that a compensatory fiscal policy followed by the government would help to maintain a constant circuit flow by bringing about stabilization in the economy.

3. Automatic stabilizers

No doubt, Monetary policy and Fiscal Policy are two strong weapons to check the cyclical business fluctuation but they also pre-suppose a certain amount of alertness and promptness on the part of the government to enforce them at the right moment. The economists have, therefore, suggested the introduction of a number of automatic stabilizers to deal with the business cycle. An automatic stabilizer is an economic shock - absorber that helps smooth the cyclical business fluctuations of its own accord without requiring deliberate action on the part of the government. One such device is progressive income tax. This tax is so devised that people in higher income brackets are taxed at a progressively higher rate than those in the lower income-brackets. For example, a rich man with a very high income may have to pay a tax of 50% whereas a person with a low income may have to pay 5% of his income. Such a progressive type of income tax tends automatically to offset cyclical fluctuation, because in an upswing, when incomes are

rising, people would pay more taxes to the government and, thus, their expenditure would be checked; and downswing when income are declining and tax-percentage is low, people would pay less taxes to government, leaving more funds for them to spend.

The another built-in stabilizer is unemployment-insurance. During the period of prosperity the employers pay taxes to the government at enhanced rates, but the government does not pay unemployment allowances to the unemployed persons. Money, therefore, accumulates with the government. To that extent, the spending of the people is checked. On the other hand, during the period of depression the government lowers the taxes, but pays out unemployment allowances to the people, which automatically is strengthen consumer's buying power and recessionary pressures are tempered. In combination, these built-in-stabilizers have played a key-role in the prompt reversal of recent recession.

13.7 Summary

Finally, we have discussed briefly over some of the important explanations of business cycles. Still it is not possible to determine which of these theories provides the most accurate and satisfactory explanation of business fluctuations. Every theory of business cycle fails to give complete answer to all the essential questions about business cycles, which have to be answered by a satisfactory business cycle theory. During the recent decades, the extensive use has been made of empirical data to explain this most complex economic phenomenon. The exploration in this direction must, however, continue.

13.8 Key Words

Business Cycle	:	A business cycles is cyclical fluctuation of demand and supply.
		Expansion and contraction of demand. Due to decrease in price of goods, the demand increases is called expansion of demand, contrary, if price increases demand decreases called construction of demand.
Bank Credit	:	Bank sanction loans for production and consumption activities that is called bank credit.
Investment	:	The part of capital which is used for reproduction activity is called investment.
Boom	:	When prices are rising, employment is rising, growth rate is rising and reducing.
Depression	:	When prices of commodities are reducing unemployment is going high, salaries are declining and demand is reducing.

13.9 Self Assessment Questions

1. What do you mean by business cycle? Explain Keynes Theory of business cycle.
2. Define business cycle. Explain different phases of business cycle.

13.10. Reference Books

- Rana and Verma: Macro Economic Analysis
- Agrawal M.D., Som Deo : Business Economics

Unit - 14 : Theory of Factor Pricing

Structure of Unit

14.0 Objectives

After completing this unit, you will be able to :

- Asses the importance and usefulness of theory of factor pricing.
- Need of separate study of factor pricing.
- Detail analysis of theories.

14.1 Introduction

Large number of goods and services are produced in each economy every year. Factors of production are used / needed to produce these goods and services. There are five factors of production like land, labour, capital and entrepreneur. The price which is paid to these factors is called factor price, e.g., rent to land, wages to labour, interest to capital, salary to employee and profit to entrepreneur. Thus, it can be said that theory of Factor pricing is related with the determination of prices of factors of production.

14.2 Definition

According to Lipsey and Stonier, "The theory of factor price is just a special case of the theory of price. We first develop a theory of the demand for factors then a theory of supply of the factors and combine them into a theory of determination of equilibrium price and quantities."

14.3 Need of Separate Study of Factor Pricing

In an economy, product prices are determined by theory of value. In the commodity market price are determined by the interaction of the forces of demand and supply. In the factor market prices of factors of production are also determined by the interaction of forces of demand and supply. In the both market prices are determined by interaction of buyer and sellers. The household and individuals are the buyers in product market and sellers in factor markets. Firms are sellers in product market but buyers in factor market. Thus it can be said that role of buyers and sellers are reversed. The theory of value is not applicable in determination of prices in factor market so there is need of separate theory for factor pricing. In other words we can say nature of demand and supply of factor services is different from nature of demand and supply in the commodity market.

14.4 Some Basic Concepts

Productivity of the Factor : Productivity of factor refers to the contribution of the factors to total output. It can be divided into two aspects :

(a) Marginal Productivity

(b) Average Productivity

(a) Marginal Productivity :

Marginal Productivity of a factor refers to additional product as a result of the employment of an additional unit of a factor, keeping the other factors constant. Additional product can be measured in terms of additional units of product and additional revenue. So here are three more concepts :

(i) Marginal Physical Productivity (MPP)

(ii) Marginal Revenue Productivity (MRP)

(iii) Value of Marginal Physical Productivity (VMP)

(i) Marginal Physical Productivity : When additional unit of commodity is produced it is known as Marginal Physical Productivity. Marginal Physical Productivity may be defined as addition to total production resulting from employment of one more unit of a factor of production, all other things being constant.

(ii) Marginal Revenue Productivity : Marginal Revenue Productivity is related to change in total revenue. Marginal Revenue Productivity may be defined as the additional revenue to total revenue resulting from employment of one more unit of a factor of production, all other things being constant.

(iii) Value of Marginal Physical Product - The value of the marginal product (VMP) of a variable factor can be calculated by marginal physical product multiplied by the market price of the commodity. In the other words VMP is equal to marginal productivity multiplied by commodity price. When a firm increases units of factor of production, value of marginal physical product also increases.

(b) Average Productivity :

Average productivity refers to per unit productivity of variable factor of production. The concept of average productivity by has two aspects :

(i) Average Physical Productivity (APP)

(ii) Average Revenue Productivity (ARP)

(i) Average Physical Productivity (APP) - Average physical productivity refers to per unit productivity of a variable factor. It can be calculated by dividing total physical product by the number of units of variable factor used.

(ii) Average Revenue Productivity (ARP) : Average revenue productivity may be defined as revenue generated per unit of variable factor. It is calculated by dividing total revenue product by the number of units of variable factor used.

Behaviour of ARP and MRP curves

According to the low of variable proportion ARP tends to increase, then stabilise and ultimate decrease as more or more of the variable factor is combined with fixed factors. So ARP curve is Ç - shaped curve. MRP curve is always left of ARP curve as shown in figure1.

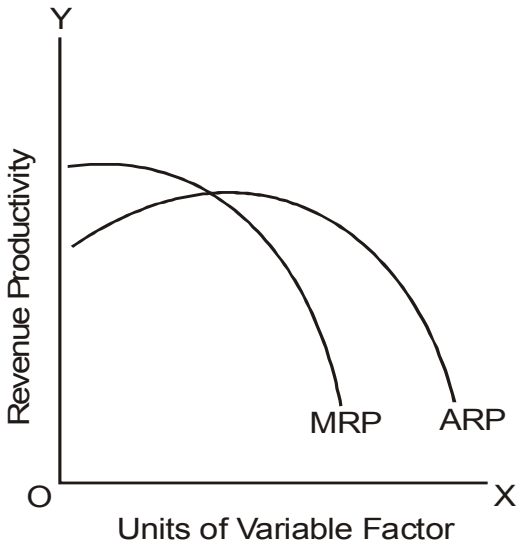


Figure - 1

Cost of the factor

Cost of the factor refers to the expenditure incurred on purchasing of the factor. Cost of factor has two aspects (i) Average Factor Cost (ii) Marginal Factor Cost. Average factor cost can be estimated by dividing total factor cost by units of factor used. While marginal factor cost is cost of purchasing or hiring one additional unit of factor.

Behaviour of AFC and MFC curves

Behaviour of AFC and MFC curves is different under different forms of markets. We study behaviour of AFC and MFC under perfect and imperfect competition.

Behaviour of AFC and MFC under perfect competition.

In perfect competition factor market price is determined by forces of market demand and market supply as shown in figure : 2

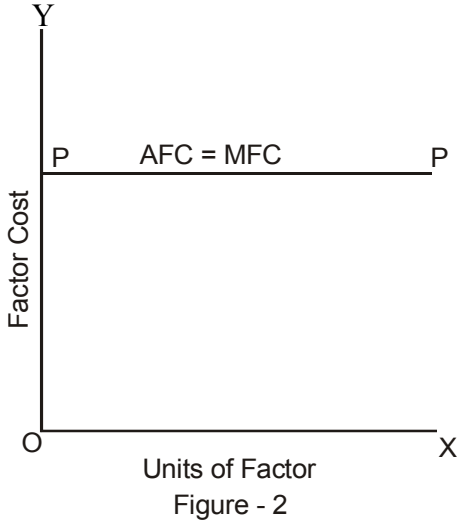


Figure - 2

Behaviour of AFC and MFC curves under imperfect competition.

In an imperfectly competitive market supply of a factor is not perfectly elastic to a firm. A firm can hire an additional unit by paying higher factor cost. In this market tendency of MFC and AFC curve is rising as shown in figure-3

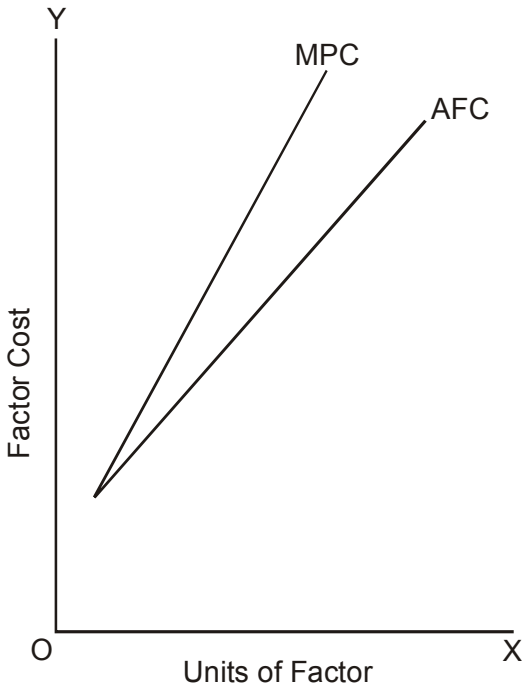


Figure - 3

14.5 Theory of Factor Pricing or Distribution

There are two principle theories related to factor pricing viz.

I. Marginal Productivity Theory of Distribution (or Factor Pricing)

II. Modern Theory of Factor Pricing

I. **Marginal Productivity Theory of Distribution (or Factor Pricing) -**

Marginal Productivity Theory of Distribution or Factor Pricing is the oldest and most significant theory. It was propounded by German economist T.H. Von Thunen. It was further developed by Austrian economists Karl Menger and Bohm Bawerk and French economist Walras, English economist Wickstead, Edgeworth and American economist Clark. The marginal productivity theory explains that under the perfect competition every factor of production gets a remuneration equal to its marginal revenue productivity.

According to Leibhafasky, "The marginal productivity theory of income distribution states that under perfect competition, factors of production would tend to receive a real rate of return which was exactly equal to their marginal productivity."

According to Mark Blaug, "The marginal productivity theory contends that in equilibrium each productive agent will be rewarded in accordance with its marginal productivity."

Assumption of the Theory :

Marginal Productivity Theory of factor pricing is based on the following assumptions :

1. Perfect competition in product market : It is assumed that there is perfect competition in the market where produced goods are sold. In this market condition average revenue is equal to market price.
2. Perfect competition in factor market : It is assumed that there is perfect competition in factor market. Each firm have to pay prevailing price of a factor which is decided by industry.
3. Another assumption is that the production can be increased by changing the factor ratio.
4. It is assumed that a factor can be a substitute of other factor.

5. Factors of production can be divided into small fractions.
6. Every firm wants to maximise its profit.
7. Technology remain constant during the production.
8. The firm can vary only one factor while other factors remain constant during the period considered.
9. There is full employment in the economy.
10. Law of variable proportions is also applicable in production.

Explanation of Theory

The theory solve two basic questions :

(i) It studies how the price of factor determined in industry.

(ii) It also studies how much factors will be employed in a firm.

Marginal Productivity Theory from the view Point of an industry.

In the theory we study the determination of price of factor under perfect competition. However it is assumed that there is the state of full employment in the economy. In this situation supply remains constant. Hence factor price is determined by its demand alone.

Industry's Demand for a factor

Industry demand curve for a factor is drawn with the help of demand curves of all firms for that particular factor. As we know marginal revenue productivity (MRP) curve of factor constitute its demand curve. A firm will employ those units of the factor at which their marginal revenue productivity is equal to the prevailing factor price or marginal factor cost for maximisation of profits. The firm's demand curve (MRP) when other outputs are not varied must slope downward. The demand for a factor of all firms constitute demand curve of industry. Industry's demand curve may not be horizontal because demand of factor is a derived demand. When marginal factor cost (MFC) of a factor falls all the firms in the industry will employ more units of factor. It will enhance out put and reduction in its price. The fall in the price of output will lead a decrease in marginal revenue productivity of the factor. So marginal revenue productivity curve will increase in employment of factor but less than on the previous price.

Factor Price Determination - Price of a factor always determined by intersection of industry demand curve with its supply curve. In the theory we have assumed that the supply of factor to be fixed. Factor price is determined by demand curve. In the figure 4 factor price are shown on OY axis and factor demand and supply on OX axis. DD is industry's demand and supply curve intersect each other at E point that determine the price of factor OW.

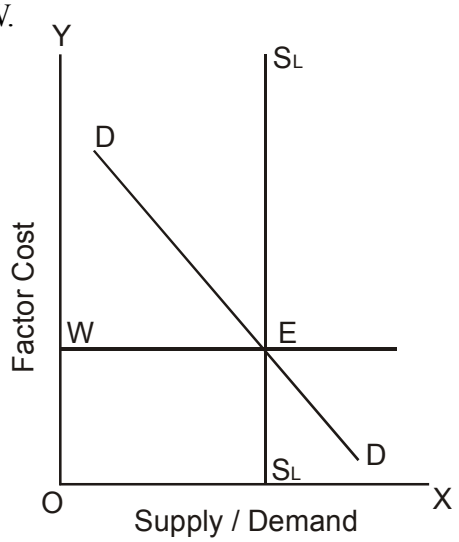


Figure - 4

Marginal Productivity Theory from the Point of View of a Firm

Under the perfect competition cost of factor is determined by industry, firm is only price taker but firm decides how much factor is to be employed. According marginal productivity theory firm employs that number of factors, whose marginal revenue productivity is equal to factor cost or value of its marginal factor cost (MFC = MRP or VMP). Other things remain same but firm employs more and more factors, their marginal physical productivity goes on diminishing. As the theory Average Revenue (AR) is equal to Marginal Revenue (MR) of the product in the perfect competition. When marginal physical productivity of the factor goes down than marginal revenue productivity (MRP x MR) will also go on diminishing. The firm will employ units of factors of production up to the point where their marginal revenue productivity (MRP) is equal to price of the factor.

There are three basic rules with respects to employment of a factor by a firm are as follows :

(a) If for a particular factor MRP > MFC the firm will employ more units of factor.

(b) If for a particular factor MRP<MFC the firm will reduce the employment of factor.

(c) The firm is in equilibrium when for a particular factor MRP=MFC.

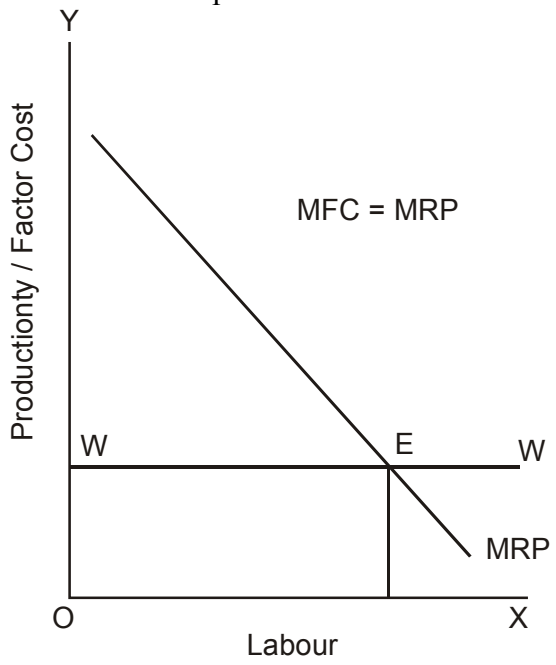


Figure - 5

The figure 5 presents diagrammatic representation of the theory of marginal productivity. In the diagram units of factor are shown on OX-axis and factor cost/productivity on OY-axis. MRP is marginal revenue productivity curve and WW line indicate the prevailing factor price. Under perfect competition factor price is given by industry. MRP curve is downward sloping because of law of diminishing returns. E point is equilibrium point where MRP curve cuts factor cost curve WW (MRP = Factor Cost).

It can be concluded with, A profit maximising competitive firm will employ units of a variable productive factor until the equilibrium point is reached where the marginal revenue productivity of the input is equal to input price.

In nutshell a perfectly competitive firm determines the quantity of a factor to hire by equating the marginal revenue product to the price of the factor.

Limitations

The theory of marginal revenue productivity is criticised by many modern economists like Hobson, Fraser, Keynes, Wieser etc. These criticism are as follows :

(a) **Unrealistic Assumptions :** Marginal productivity theory is based on many unrealistic assumptions, such as perfect competition, perfect mobility, full employment etc. While perfect competition is not found in the market and mobility of factors of production is also imperfect. In the most of the countries in the world full employment situation does not exist.

(b) **Heterogeneous Factor :** It is assumed that all units of factor of production are homogeneous. That is wrong assumption. In real world units of a given factor are heterogeneous. For example all labourers are not equally efficient and intelligent.

(c) **Indivisible Factors :** Marginal Productivity Theory explains that all the factor can be divided into small parts. It is not truth. Each and every factor cannot be divided into small parts. For example a labourer or a machine can not be divisible.

(d) **Problem in the measurement of Marginal Productivity :** Prof. Hobson criticised the theory and explained that marginal productivity of factor cannot be measured.

(e) **Lop Sided :** Marshall, Friedman, Blaug etc. criticised the theory and said that the theory is based on only demand and assumed supply to be constant. In short term supply may be constant so factor's price can be determined by demand or marginal productivity alone. But in long term supply of every factor is variable therefore in the long tern price of factor is determined by demand and supply of a factor.

(f) **Cause and Effect :** According to Clark, price of each factor is influenced by its productivity. But Webbs explained that the price of a factor also affects marginal productivity. By paying higher price to a factor the efficiency can be enhanced.

In nut shall, the marginal productivity theory of a factor pricing is a positive not a normative theory. It only explains how factor prices are determined in markets. The theory does not explain how factor price should be determined. The theory does not provide realistic explanation of short run factor pricing. But it provide good explanation over long run. Hence the theory offers a scientific solution of factor pricing.

II. Modern Theory of Factor Pricing

Modern theory explains that price of each factor is determined by its demand and supply. According to Lipsey and Stonier. "The theory of factor price is just a special case of the theory of price. In the theory of price we combine the theory of the demand for factor and the theory of the supply of the factors. The both theories determine equilibrium price and quantities of the factor.

Demand for the Factor

Demand for the factors is derived demand. Their demand depends upon the demand for the goods produced by them. Demand for workers in a oil mill depends upon the demand for oil. If the demand for oil is more then there will be more demand for oil workers. On the contrary, if the demand for oil is less then there will be less demand for oil workers. Thus it can be said that factors demand is derived demand. The marginal physical productivity and the market price of the commodity are two main factors which affects the demand of any factor. While employing a factor a firm considers its productivity. A firm demands a factor to earn profit. When we employ an additional unit of a factor to increase total revenue productivity (all other factors are constant), is called the marginal revenue productivity of that factor. A firm will make demand for a factor up to the point where its marginal factor cost is equal to its marginal revenue productivity. Thus, marginal revenue productivity curve constitute the demand curve of a competitive firm for a given factor.

Industry's demand curve of a factor represents the aggregate demand of all the firms. If due to demand curve for the factor will be horizontal summation of firm's factor demand curves. But in perfectly competitive market when the output of the industry increases, the product price will fall. A reduction in product price will shift MRP curve to the left. Consequently Industry's demand curve will not be the horizontal summation of the firm's original MRP curve. It is more inelastic than the demand curve that would be obtained if the product price were assumed to be unchanged. Normal factor demand curve is shown in figure 8. It is downward sloping from left to right i.e. at low price demand is more and at high price demand is less.

Supply of the Factors

The supply of the factors refers to the quantities of factors available at alternative prices. The problem related to the supply side of factors is somewhat complicated because the shape of the supply curve is likely to differ from one factor to another. The following figures show the shape of supply curves for factors in different situations :

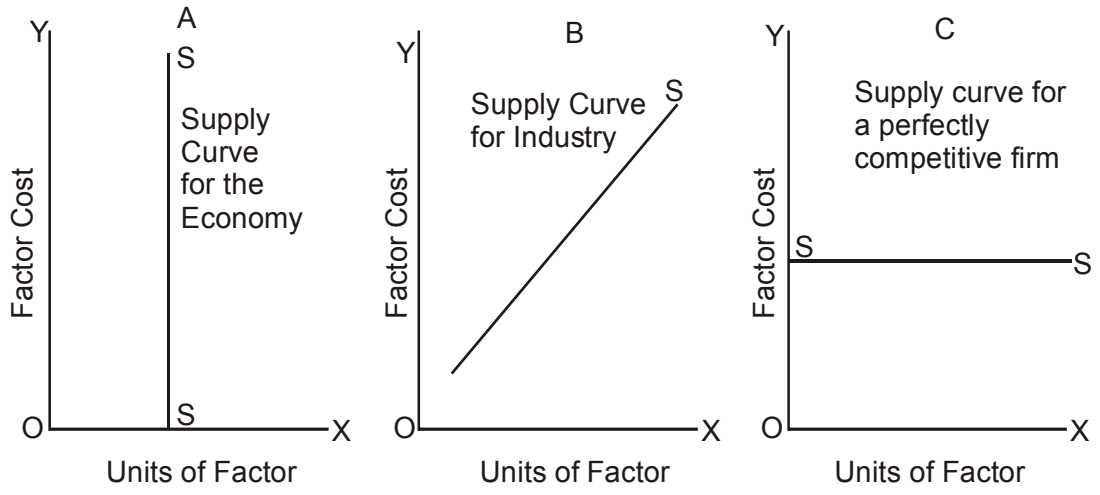


Figure - 6

(i) Fig.6(A) shows that the supply curve of a factor for an economy is vertical. It is because the supply of a factor for an economy or group of industries generally remains fixed.

(ii) Fig. 6(B) shows the supply curve of a factor for a particular industry. It is elastic and sloping upwards. It is because if an industry pays higher factor price, more units of a factor will shift to that industry from those industries where the factor price is comparatively low.

(iii) Fig. 6(C) shows the supply curve of a factor for perfectly competitive firm. It is horizontal straight line. It shows that a perfectly competitive firm can obtain as many units of factor as it likes to purchase at the prevailing factor price.

It may be noted, that the law of supply, in the context of goods, tells us that rise in the price of the good is followed by increase in its supply and fall in price is followed by decrease in supply. But this law of supply does not apply to all factors of production under all conditions. Supply of factors of production depends on different parameters.

1. Supply of Land

Supply of land, from the point of view of an economy is perfectly inelastic. It means that total supply of land in an economy cannot be increased. Supply of land is free for an economy, as it has no cost of production. Supply of land for an industry depends on its opportunity cost. If opportunity cost of land

increases in one industry compared to another industry then more of it will be used in the former industry than the latter.

Thus, supply curve of land for an industry will slope upward. It means supply of land will increase with rise in its price and decrease with fall in price. Supply of land is perfectly elastic so far as a competitive firm is concerned. It means at the price fixed by industry, a firm can use as much land as it requires.

2. Supply of Labour

Supply of labour refers to the number of days or hours for which a particular type of labour is willing to work at different wage rate. Thus, supply of labour means (i) number of labourers doing a particular job who willingly offer their services at different wage rates and (ii) the number of hours or days that each labourer is prepared to work at different rates of wages. Normally, there is a direct relation between the supply of labour and rate of wage. It means that at high rate of wage supply of labour is more and at lower rate of wage supply of labour is less.

Each labourer by selling his labour would like to earn that much of income which enables him to maintain his minimum standard of having. In this way, standard of living of the labourer determines the minimum limit of their wages. Supply of labourers depends upon economic, non-economic and psychological factors. Economic factors influencing supply of labour are : existing employment, desire to increase monetary income, bargaining power of the labourers, size of population, income distribution etc. Non-economic factors are : domestic environments, family affection, social conditions, religious views, education etc. Psychological factors which influence the supply of labour quite considerably. Because of psychological factors a labourer decids as to how much of his time he should devote to work and how much to leisure. Normally, supply curve of labour is an upward sloping curve from left to night but an account of psychological factors the supply curve as shown in Fig. can be backward sloping as well. It is so because as the wages exceed a particular limit, the labourer begins to prefer leisure to work. It means that at higher wage - rate supply of labour begins to diminish and the supply curve has a tendency to slope backward. A backward sloping can be seen from figure. 7

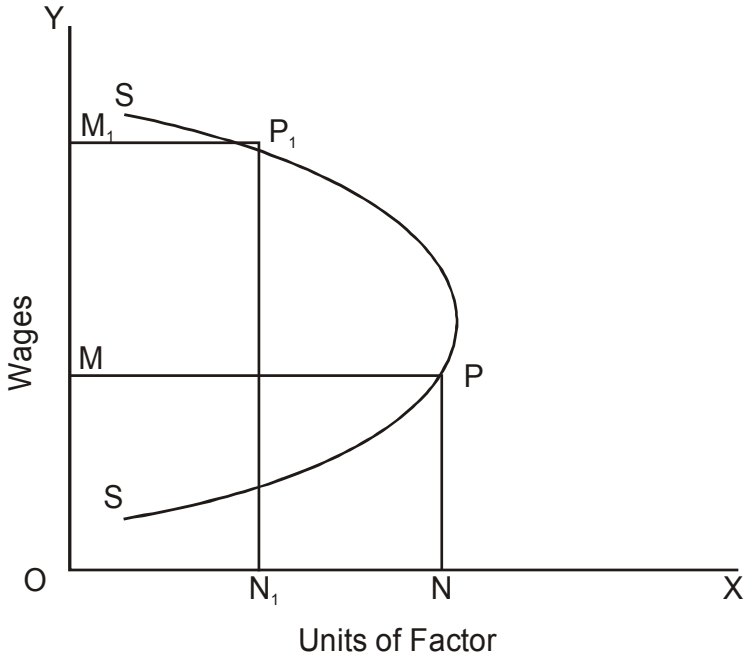


Figure - 7

3. Supply of Capital

Since capital goods are themselves output produced by firms, the quantity supplied responds to the price, in the same way as other outputs. Other things being equal more will be supplied at higher price than at a lower price. The price of capital generally takes the form of an interest payment. When interest payment for capital is higher, relative to the price of consumer goods, firms will use more resources to produce capital good and less to produce consumption goods. Hence, it is concluded that supply of capital is directly related to price of the capital.

4. Supply of Entrepreneurship

The supply of entrepreneurs is believed to be positive related to the expected returns from the enterprise. The higher the expected returns the more likely it is that a person will become an entrepreneur and the greater the quantity supplied of his resource will be. It should be clear that entrepreneurs are more likely to make a high and lasting profit in less competitive rather than more competitive markets. It follows that entrepreneurs will be more attracted to industries with oligopoly and monopoly characteristics than to those that approach monopolistic competition or pure competition. In addition, a country's patent, anti-trust and tax laws have an effect on the supply of entrepreneurs.

Determination of Factor Price in a Competitive Industry

According to modern theory of factor price determination, the price of a factor of production in a perfectly competitive market is determined by the equality of market demand and market supply. The equilibrium price and quantity demanded of the factors will be determined at the point of interaction of market demand and supply curves.

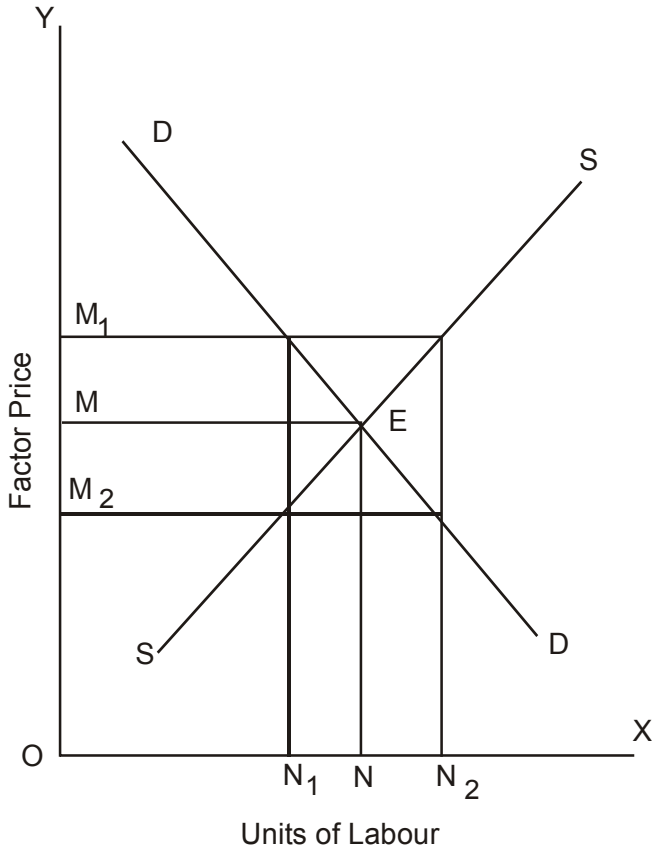


Figure - 8

Fig. 8 Shows industry's demand and supply curves of the factor. In this figure, units of factor are shown on OX-axis and factor price on OY-axis. DD is the demand curve of the factor and SS is its supply

curve. Demand curve DD cuts supply curve SS at point E. Thus, point E represents equilibrium of demand and supply. OM equilibrium factor price is determined. At OM factor price ON units of factor are employed. If factor price is increases to OM_1 then supply of unit of factor increases to ON_2 while demand decreases to ON_1. Supply of factor is more than its demand so factor price will fall and once again settle at OM. If factor price falls to OM_2 then demand for units of factor increases to ON_2 while is supply is less ON_1. As supply of factor is less and demand of factor is more so factor price will begin rise. Thus it can be said that the price of factors of production will be determined at equilibrium point of their demand and supply.

14.6 Summary

Theory of factor pricing deals with the prices paid for factor services and received by the sellers of factor services. It is also know as theory of distribution. These factors are also known as production services. Demand for factors of production is a derived demand that is derived from demand from the finished goods and services. Factors do not directly satisfy consumer's need but they are indirectly involved in producing goods and services. Factors demand is also depends upon their productivity. There are two theories of factor pricing i.e. marginal productivity theory of distribution and modern theory of factor pricing. In the marginal productivity theory factor price is determined by demand and supply of factors. While in an imperfect market factors suffer exploitation. In this market a factor gets less price then its marginal productivity. According to modern theory of factor price determination, the price of factor of production in a perfectly competitive market is determined by the equality of market demand and market supply. If supply of factor is less then it will get higher price. If supply of factor is more then demand it will get less price.

Activity A:

1 Calculate MRP and value of MPP under conditions of perfect competitions-

Units of labour	Total production in unit	MPP	Price AR=MR (Rs.)	MRP (MPPxMR)	Value of MPP (MPPx AR)
1	5	5	10	-	-
2	9	4	10	-	-
3	12	3	10	-	-
4	14	2	10	-	-
5	15	1	10	-	-

2 In a garment factory 100 T-Shirts are produced in a day and 10 workers are working with 100 units of capital. If 11 workers work along with 100 units of capital and will produce 110 T-shirts, what will be Marginal Physical Productivity of 11 workers.

3 In a garment factory 100 T-shirts are manufactured by 10 labours (along with 100 uits of capital) to earn a revenue of Rs. 20,000 (Each T-shirt being sold at Rs. 200/-) and if 110 T-shirts produced to earn revenue Rs. 22000/- Then what will be MRP of additional 10 T-shirts.

14.7. Key Words

Marginal Productivity (MP) : Marginal productivity is productivity of an additional unit of factor of production.

Average Productivity (AP)	:	Average productivity means productivity of a workers.
Marginal Physical Productivity (MPP):		Total production is increased by employing an additional unit is known as marginal physical productivity.
Marginal Revenue Productivity (MRP) :		Marginal revenue productivity refers to an addition to total revenue from employment of one more unit.
Value of Marginal Physical Product (VMP):		Value of marginal physical product of a factor measures the extra revenue the competitive firm can receive by selling the additional output generated when it increases employment of the factor by one unit.
Average Revenue Productivity (ARP) :		Average Revenue productivity defined as revenue generated per unit of the variable factor.

14.8 Self Assessment Questions

1. Write an essay on marginal productivity theory of distribution?
2. What are the assumptions of marginal productivity theory of distribution?
3. Discuss the modern theory of factor pricing and show how factor pricing takes place under perfect competition?

14.9 Reference Books

- Seth M.L. : Principles of Economics
- Rana and Verma: Macro Economic Analysis
- Agrawal M.D., Som Deo : Business Economics

Unit - 15 : Theories of Rent

Structure of Unit

15.0 Objectives

After completing this unit, you will be able to understand :

- The concept of rent;
- Types of rent; and
- Theories of rent

15.1 Introduction

Land is an important and basic factor of production, without which production can not take place. Conventionally, **rent is a reward of land factor**, but in modern terminology, it is a **reward of land element in a factor** of Production. In this unit, you will be exposed to understand the real meaning of rent and its various types. You will also come to know how rent is determined? Also classical and modern theory of rent will be explained in this unit.

15.2 Meaning & Definition of Rent

In ordinary sense, rent is the payment made for the use of a house, building, shop, equipment, machinery, land etc.. It is often taken to mean the payments received by the owner of the land and property. But in economics, its meaning is different. The term rent has been used in different ways. Classical and modern economists have given different definitions of rent as given below :

Classical Definitions of Rent

According to **David Ricardo**, " Rent is that portion of produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil"

Alfred Marshall has defined the rent as "the income derived from the ownership of the land and other free gifts of nature."

Modern Definitions of Rent

According to **Mrs Joan Robinson**, "The essence of the conception of rent is the conception of a surplus earned by a particular part of a factor of production over and above the minimum earnings necessary to induce to do its work."

According to **K.E. Boulding**, "Economic rent may be defined as any payment to a unit of any factor of production which is in excess over the minimum amount necessary to keep that factor in its present occupation."

Thus, classical economists have confined the rent only to the land factor, while modern economists are of the opinion that the rent may accrue to any factor of production the supply of which is inelastic; i.e. supply can not be adjusted as per demand. In modern economic theory, the term rent is used not only in the sense of reward for the use of land, but also in the sense of surplus earnings of a factor over its transfer earnings. Modern economists generally term the payment of using the land as **land rent** and surplus earnings over the transfer earnings of a factor as **economic rent**.

15.3 Types of Rent

Rent can be of following types :

1. **Gross Rent :** The common man in day-to-day language uses the term rent in this sense. It includes all those payments which are given for the use of land to the landlord. Gross rent includes the following :
   (i) Economic rent which is paid only for the use of land;
   (ii) Interest paid on capital expenditure incurred for making permanent improvement on land and also for maintaining and increasing the fertility of land;
   (iii) Reward for land management; and
   (iv) Reward for risks undertaken by the landlord pertaining to land reforms.

   Gross Rent = Economic rent + Interest on capital investment + Reward for risks + Reward for land management

2. **Economic Rent :** Economic rent is the payment only for the use of land. It does not include any other types of payments. According to **classical economists**, it is derived from the ownership of land and other free gifts of nature and their use. It is the difference between the yields of super-marginal lands and marginal land; while according to **modern economists**, it is a surplus present earnings over the opportunity cost of a factor of production or the difference between actual earnings and transfer earnings. Economists generally use the term rent in the sense of economic rent.

3. **Contract Rent :** It is that rent which is determined mutually by an agreement between the landlord and cultivator. Contract rent may be greater, lesser or equal to the economic rent depending upon the demand for and supply of land. In short-run, the demand for land has more roles in determining this type of rent. When the demand for land for cultivation purpose is too high, contract rent is extremely greater than the economic rent- this situation is termed as "**rack renting**". Generally, contract rent is greater than the economic rent.

4. **Quasi- Rent :** This concept was propounded by **Alfred Marshall**. According to him, "the additional payment for those agents of production, the supply of which, though alterable in long period, is fixed in short period, is technically known as quasi-rent." Thus, quasi-rent is a surplus earned by a machine or other man made appliances whose supply can not be changed in short –run, but alterable in long-run. This type of rent is available to only those capital equipments which are not permanently fixed like land, but which are fixed in short-run, and their supply is elastic in long-run. Quasi-rent disappears in long-run because of elastic supply conditions of capital equipments. The quasi-rent is only a temporary surplus which is enjoyed by the owner of the capital equipment in short-run due to increase in demand for it and will disappear in the long-run due to increase in supply as per market demand.

   According to modern economists, quasi-rent in a perfect competitive market situation is the excess of total revenue over the total variable costs of a firm. The formula for computing the quasi-rent is as follows :

   Quasi-Rent = Total Revenue – Total Variable Costs
   (QR) = (TR) – (TVC)

15.4 Ricardian Theory of Rent

This theory of rent is also known as **classical theory** of rent. It was propounded by the famous classical economist **David Ricardo** in his book "**Principles of Political Economy and Taxation"**. The definition of rent as given by Ricardo has already been given in this unit earlier.

Why rent is paid? : According to Ricardo rent is paid because of the following two reasons :

(i) Difference in quality of land in terms of fertility and location – the scarcity of superior grades of land will give rise to rent, which has been termed by Ricardo as **Differential Surplus**; and

(ii) If there is no difference in quality of land, the scarcity of land (supply is less than demand) will give rise to rent. Ricardo has termed it as **scarcity rent**.

In nutshell, according to this theory, rent arises due to niggardliness of nature. Nature has not given us land in abundance, nor given all lands of the same grade in terms of fertility and location.

Assumptions of the theory : Ricardian theory of rent is based on the following assumptions :

1. Land has certain original and indestructible powers, which are not found in other factors of production.
2. Rent accrues only to the land factor which is free gift of nature.
3. The most fertile land is first brought under cultivation and thereafter less fertile land is brought under cultivation. This is the order of doing agriculture.
4. The law of diminishing returns applies to the agriculture.
5. There exist a marginal land or no rent land.
6. The rent arises due to difference in fertility and situation of land.
7. Perfect competition exists both in commodity market and factor market.
8. The supply of land is fixed and it is perfectly inelastic.
9. The quality of produce of all lands is the same and price is uniform.
10. The price of agriculture produce is determined by the cost of production or quantity of produce of marginal land.
11. The theory provides long-term explanation of the rent.

Explanation of the theory : Ricardian theory of rent can be explained under following three headings :

1. **Rent under extensive cultivation**

Under extensive agriculture, we increase the size of land holdings in order to get more production. Ricardo has given an example of an in land and said that first of all A grade land will be brought under cultivation. But later on, due to increase in population and scarcity of A grade land, people will be forced to use B grade land. In this case, A grade land will get rent in the form of surplus of produce over the produce of B grade land. In this case, B grade land will be marginal land and A grade land will be super-marginal land. According to **Ricardo,** "Rent is the excess of the yield of a superior piece of land, i.e. super-marginal land over that of a marginal plot". This can be explained in a formula form as given below:

Rent = Produce of Super-marginal land–Produce of marginal land

How rent can be computed / determined has been shown in the following table with the help of an example :

Table 1

Rent in produce per hectare				Rent in Rupees per hectare			
1	2	3	4 (2-3)	5	6 (2?5)	7	8 (6-7)
Grades of land	**Total production (Qntls)**	**Cost of production (Qntls)**	**Rent (Qntls)**	**Price per Qntls (Rs.)**	**Total Revenue (Rs.)**	**Total Cost (Rs.)**	**Rent (Rs.)**
A	25	10	15	200	5000	2000	3000
B	20	10	10	200	4000	2000	2000
C	15	10	05	200	3000	2000	1000
D	10	10	00	200	2000	2000	0000

The analysis of above table reveals that the D grade land is marginal land as its cost of production and output is the same, hence it is no rent land. A, B and C grade lands are super-marginal land as their produce is higher than the produce of marginal land. Therefore, these lands get rent. The rent can be computed both in terms of produce and money. Rent under extensive cultivation has also been explained in Diagram No.1

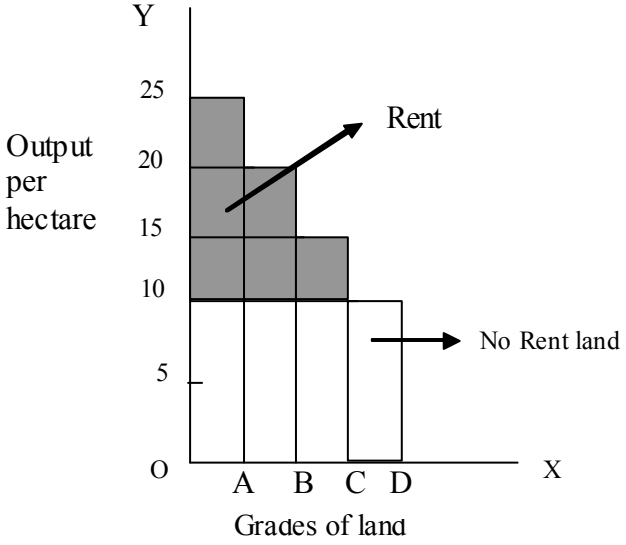


Diagram 1

2. Rent under intensive cultivation :

In case of intensive cultivation, we have to increase the labour and capital for getting more production from the same size of land. In this type of agriculture for determining the rent, we have to find out the difference between the produce of super- marginal units and marginal unit of labour and capital. **The formula is :**

Rent = Produce of super-marginal unit of labour & capital –
Produce of marginal unit of labour & capital

Rent under intensive cultivation can be explained with the help of the following table :

Table 2

1	2	3	4 (2-3)
Units of labour & capital	**Marginal production (Qtls)**	**Cost of production / production of Marginal unit (Qtls)**	**Rent (Qtls)**
1 Super marginal units	100	40	60
2	80	40	40
3	60	40	20
4 (Marginal units No rent unit)	40	40	00

The marginal unit is that unit, the produce and cost of production of which are equal to each other. It is also known as **no rent unit**. The rent under intensive cultivation has also been explained with the help of Diagram No.2

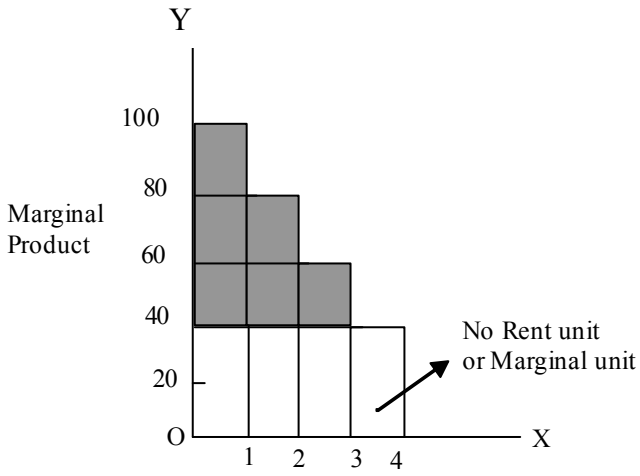


Diagram 2

3. Location of land and rent :

All lands are not the same from location point of view. Some lands are near to Mandi (market), while others are far away from Mandi. Those lands which are situated near Mandi enjoy rent over those which are situated away from Mandi because of difference in transportation cost of produce. For instance, A land is 10 kms away and B land is 20 kms away from the Mandi. The transportation cost of produce for carrying to the Mandi is Rs.100/- and Rs.200/- respectively. In this case, A land will get Rs.100/- rent (200-100). The rent which arises due to difference in situation of land is termed as **situation rent.** Thus, land situated near to cities / mandies get situational rent as compared to those lands situated away from cities / mandies.

Salient Features of Ricardian Theory

1. Rent is a reward of land factor of production.
2. Rent is unearned income.
3. Rent arises due to difference in fertility and location of land or application of the law of diminishing return.
4. Rent is a result of niggardliness of nature.
5. Rent is a differential surplus.
6. Rent does not determine the price, nor affect it. According to **Ricardo**, "corn is not high because rent is paid, but rent is paid because corn is high".
7. Rent is the surplus of the produce of super-marginal land over the produce of marginal land.

Criticism of the Ricardian theory : The following are the main criticism of the theory :

1. Rent may accrue to other factors of production - Infect, rent is not a reward of land only, but a reward of **land element** in a factor.
2. The assumption of the theory that the most fertile land is cultivated first is wrong. In practice, best land is not found easily and secondly, cultivation is done on the basis of convenience and availability of land rather than on the basis of fertility of land.
3. Original and industructive powers of soil are imaginary as fertility of land can be increased through various measures.
4. Rent arises due to scarcity of land, but not due difference in fertility and location of land.

5. No rent land (marginal land) does not exist in real life. Rent is paid on all grades of land.
6. Application of the law of diminishing returns can be postponed in agriculture also.
7. The assumption of perfect competition is unrealistic.
8. The theory fails to explain the rent in short-run.
9. Rent affects the price and also included in price of a product contrary to the belief of Ricardo.
10. There is no need of separate theory for determining the rent. It can be determined by the General Theory of Value.

CONCLUSION :

In spite of several deficiencies, the Ricardian theory of rent is still having important place in economic theory. Due to increasing population pressure, we have been forced to use inferior lands as the fear was expressed by this theory. This theory treats rent as an unearned income, therefore it provided a logical support to the socialist economists for their demand of nationalization of land. Land in private hands may create the situations of reck renting. Thus, the theory serves the basis of macro economics.

15.5 Modern Theory of Rent

According to modern theory, rent is not a reward of land factor of production, but a reward of "**land element**" (Scarcity element) found in a factor. Since the land element, in more or less degree, is found in all factors of production in short-period, therefore some degree of rent is found in the earnings of all factors in proportion of the existence of land element in them. Thus, rent may accrue to all factors of production in short-period, but in long-period, only land gets the rent. This theory postulates that in a remuneration of each factor there are two parts :

(i) Remuneration of that factor, such as wages of labour and interest of capital; and
(ii) Reward of land element found in that factor, i.e. rent.

On the basis of the above explanation, rent of a factor depends on the land element found in it. Accordingly, **higher the land element in a factor, higher will be the rent in its earnings and vice-versa**. The land element in land factor of production is also found in long-run, hence, it also gets rent in long-run. But in other factors of production, land element disappears in long-run, hence they do not get rent in long-run.

The main exponents and advocates of this theory are **Mrs Joan Robinson, K.E. Boulding** and **Benham**, who have given the scientific and complete explanation of the theory.

Meaning of Land Element

The land element found in a factor means the **specificity** found in a factor. The basis of modern theory is the category of factors of production as given by the Austrian **Prof**. **Bon Weiser**. He classified the factors into following two categories :

(i) Specific factors : Those factors which have only single use. In other words, they do not have any alternative use nor business mobility. The specific characteristic of a factor will be only when it is scarce or its supply is less than perfectly elastic.

(ii) Non-Specific factors : Those factors which have alternative uses and business mobility.

Indeed, no factor of production is perfectly specific nor perfectly non-specific. Generally each factor is partly specific and partly non-specific in a particular use. The land element in a factor depends on the degree of specificity exist in it. Thus, higher the specificity in a factor, higher will be the land element in it and obviously the higher rent also. Modern economists have used the stability of factors, scarcity, immobility, inertia and inelastic supply words as synonymous of land element in a factor.

Reasons for Rent : According to modern theory, rent arises due to specificity of a factor. A factor which is more specific, will get more rent and vice-versa; i.e. **higher the specificity, higher will be the rent and vice-versa**. If a factor is perfectly specific, its entire earnings will be rent and contrary to it, if a factor is perfectly non-specific, it will not get any rent. Thus, **rent of a factor depends on the degree of specificity** found in it.

Measurement of Land Element or Specificity: The measurement of specificity of a factor in a particular use is done on the basis of its **transfer income** or **alternative receipts** or **minimum supply** price or **opportunity cost** of that factor. Generally, factors have some alternative uses. How much maximum a factor can get in next best use is known as its transfer earnings. This much earnings is required for a factor to retain in its present use, otherwise it will go to alternative use/s. Thus, the more the present earnings over the transfer earnings of a factor in a particular use, the factor will be more specific in that use. Accordingly, its rent will be high.

Statement of the Theory : According to **A. Koutosoyiannis**, "Economic rent is the payment to a factor over and above what is required to keep the factor in its current employment".

The essence of modern definitions of rent is that economic rent is an excess of present earnings of a factor over its transfer earnings. In a formula form rent can be defined and computed as follows :

Economic Rent = Actual Earnings – Transfer Earnings

Explanation of Modern Theory : The theory can be explained with the help of following table by taking an imaginary illustration.

Table 3

Case	Earning of Labour		Degree of Specificity in Labour	Rent in total earnings	Wages in total earnings
	Actual Earning	Transfer Earning			
I	1500	00	Perfectly Specific	1500	00
II	1500	1500	Perfectly Non-Specific	00	1500
III	1500	1200	Partly Specific	300	1200
IV	1500	2000	In this situation, transfer earnings of labour is higher than actual earnings, hence he will move to its alternative use and therefore his actual earnings will be Rs.2000/- and transfer earnings will be Rs.1500/- and thus, he will get Rs.500/- rent.		

Explanation of the theory with the help of diagram : Modern theory of rent can be explained with the help of diagrams also. Economists view the specificity of a factor in reference to its degree of elasticity of supply. As explained earlier, rent is the result of specificity of a factor or its inelastic supply. From this point of view, following three situations are worth considering :

1. **Perfectly inelastic supply of a factor and rent :** When the supply of a factor is perfectly inelastic (given & fixed), the transfer earnings of the factor will be zero. Therefore, whatever income factor is earning is entirely the rent. Such a factor is perfectly specific, hence it can not be used elsewhere. Since factor does not have any alternative use. This has been explained in Diagram No.3

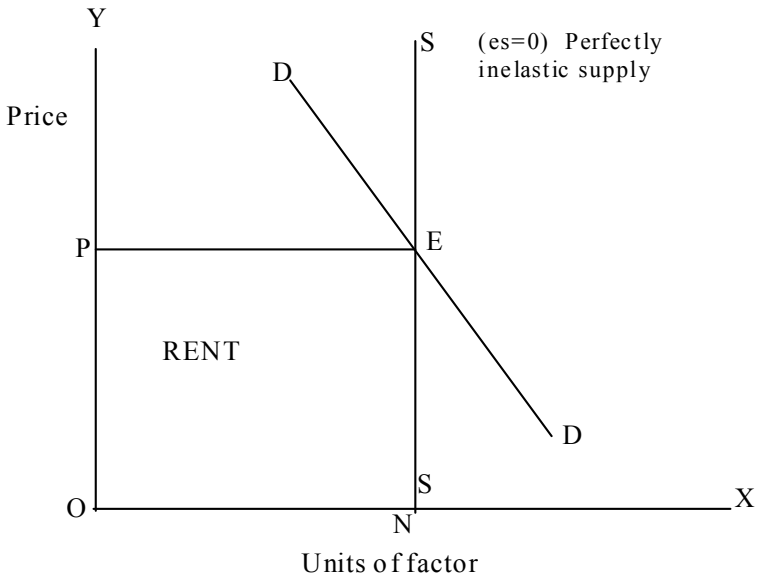


Diagram 3

In the above diagram, **E** is the equilibrium point and **OP** is the price of factor. The actual earnings of the factor is **OPEN,** while transfer earnings are zero. Therefore, entire income **OPEN** is the rent. This type of situation helps in understanding the **scarcity rent**.

2. **Perfectly elastic Supply of a factor and rent :** When the supply of a factor is perfectly elastic, it means that the supply of factor is unlimited at a given price. Such a factor is perfectly non-specific in it use. In other words, it can easily earn equal to the present earnings from its alternative uses. Thus, the difference between present and transfer earnings is zero, so the rent is zero. It is depicted in Diagram No. 4.

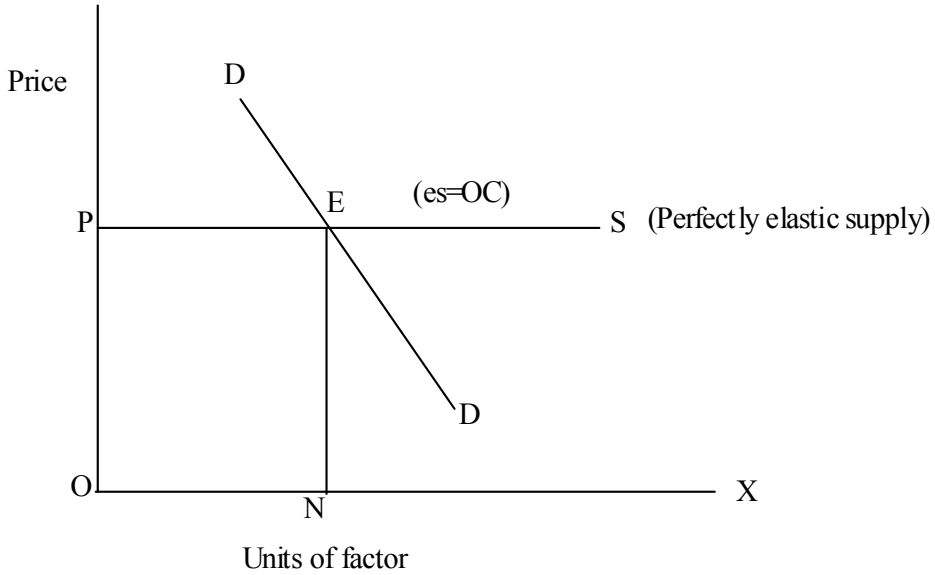


Diagram 4

In the above diagram, **E** is equilibrium point and **OP** is the price of factor. The actual earnings of the factor is **OPEN** and transfer earnings is also **OPEN**, hence factor is getting no rent / zero rent.

3. **Less than perfectly elastic supply and rent :** When the supply of a factor is less than perfectly elastic, then factor is partly specific and partly non-specific. The supply curve is upward sloping and factor's actual earnings are greater than its transfer earnings, hence such a factor enjoy surplus in the form of rent as depicted in Diagram No.-5.

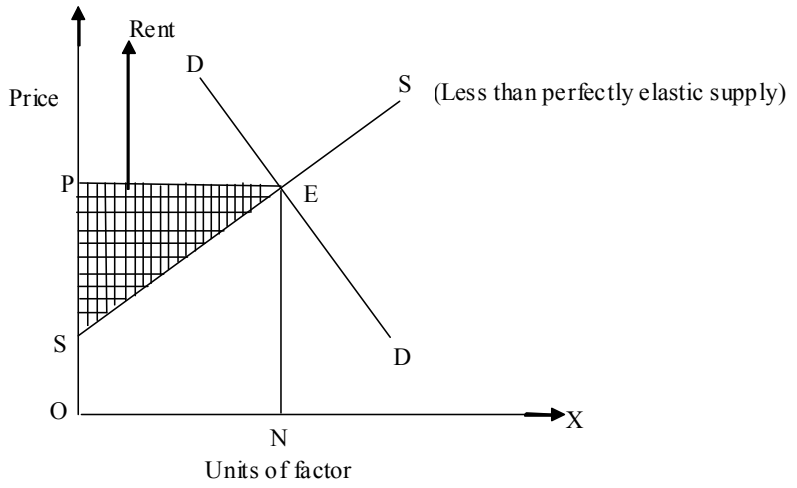


Diagram 5

In the above diagram, **E** is equilibrium point and **OP** is price. The upward sloping supply curve represents the less than perfectly elastic supply of the factor. In this situation, the actual earnings of the factor (**OPEN)** are greater than its transfer earnings (OSEN). Therefore, the factor is getting rent equal to **SPE**. According to diagram:

Actual Earnings – Transfer Earning = Economic Rent

(OPEN) – (OSEN) = SPE

Prof. Marshall has called this economic rent as **"Producer's Surplus"**. The quantum of economic rent depends basically on the inelastic supply of a factor, i.e. **greater the inelastic supply of a factor, higher will be the economic rent**.

The modern theory of rent is an application of the general theory of value in factor market, therefore price of a factor is determined on the basis of its demand and supply at their equilibrium price.

Difference between Ricardian and Modern theory of rent

	Ricardian theory	*Modern theory*
1.	Rent accrues only to the land.	Rent may accrue to any factor of production.
2.	Rent is a reward of **land factor** of production.	Rent is a reward of **land element** in a factor.
3.	Rent arisers due to difference in fertility and location of land and also of application of the law of diminishing returns.	Rent arises due to specificity or less than perfectly elastic supply of factors.
4.	Rent is a surplus of the produce of super-marginal land over the produce of marginal land.	Rent is a surplus of actual earnings over the transfer earnings of the factor.
5.	Rent is an unearned income.	Rent is an earned income.
6.	The theory basically explains the differential rent.	The theory basically explains the scarcity rent.
7.	It is a long-term theory.	It is a short-term theory.
8.	The theory is imaginary and unrealistic, hence not much useful.	The theory is comprehensive and general in nature, hence more realistic and useful.
9.	Rent does not affect the price, but is affected by the price.	Rent is a component of cost, therefore it influences the price.
10.	Rent can not be negative.	Rent can be negative under special circumstances when the supply of factor is perfectly inelastic and its demand is very low.

15.6 Summary

In conventional terminology, rent is a reward of **land factor** of production, but in modern terminology, rent is a reward of **land element** in a factor. According to **Ricardo** rent is a differential surplus of the produce of super-marginal land over the produce of marginal land. Modern economists are of the view that rent is the difference between the actual earnings and transfer earnings of a factor. Rent can be of following types :

(i) Gross Rent;
(ii) Economic rent;
(iii) Contractual rent; and
(iv) Quasi- rent.

According to **Ricardian** theory, rent arises due to difference in quality of land in terms of fertility and location, therefore superior grades of land and lands situated near mandi get rent as compared to marginal land and land situated far away form mandi. According to modern theory, rent arises due to specificity / scarcity / less than perfectly elastic supply of a factor. As per the modern theory, the price is determined by the demand for and supply of a factor in a free market economy. The elasticity of supply of a factor plays very important role in determining the nature and magnitude of rent. If supply of a factor is perfectly inelastic, its entire present income is rent and contrary to it, if supply of a factor is perfectly elastic, it will not get any rent. In case of less than perfectly elastic supply, factor gets rent as its actual earnings are greater than transfer earnings. This situation applies to all factors of production in short-run as they are partly specific and partly non-specific in their present use.

15.7 Key Words

Rent	:	It is a payment of land factor of production, according to classical economists; while it is a payment of land element in a factor of production according to modern economists.
Gross Rent	:	It is the total payment which land user has to pay to the landlord. It includes economic rent, interest on capital investment, reward for land management and reward for risks. Common man uses the rent in this sense.
Economic Rent	:	It is the payment only for the use of land. It does not include any other types of payments. Economists generally use the rent in this sense.
Contract Rent	:	It is the rent which is determined by mutual agreement between the land owner and its cultivator. Contract rent is widely prevalent in real life.
Quasi Rent:	:	According to Marshall it is a surplus earned by a machine or other man made appliances, the supply of which is fixed in short-run, but changeable in long-run. But modern economists generally define it as the surplus of total revenue over the total variable costs of a firm (TR>TVC) in a perfect competitive market.
Scarcity Rent	:	The rent which arises due to scarcity of land or other factors is termed as scarcity rent.
Extensive Cultivation	:	When we bring additional land under cultivation to get more agricultural produce, it is known as extensive agriculture.
Intensive Cultivation	:	When we get more production from the same size / piece of land by using more labour and capital, it is known as intensive agriculture.
Land	:	It does not mean only the soil / surface. It includes all free gifts of nature such as jungles, sea, rivers, mountains etc..

Land Element	:	It means the element of specificity found in a factor of production. Land is specific even in long run, but other factors are specific only in short-run as their supplies can be increased in long-run.
Specific Factor	:	That factor of production, which does not have any alternative use. Such factor has only one use, hence specific in nature.
Non-specific Factor	:	Those factors which can be put to various alternative uses are non-specific in nature.
Marginal Land	:	It is also known as no rent land. It is that land, the cost of production is equal to its output / produce.
Super-Marginal Land	:	It is that land, the produce of which is greater than the produce of marginal land or its cost of production.
Actual Earnings	:	Also known as present earnings – This is the income of a factor which it gets from its present use.
Transfer Earnings	:	Also known as opportunity cost – This is the income which a factor can get from its next best use.
Perfectly Elastic Supply	:	The supply is unlimited at the given price, hence supply curve is parallel to OX-axis or completley a flat line.
Perfectly Inelastic Supply	:	The supply is fixed and given and it is not influenced by the changes in price. In this situation, the supply curve is parallel to OY- axis or completely a vertical line.
Less than Perfectly Elastic Supply	:	When supply is influenced by price changes and due to that supply curve is upward sloping from left to right, the supply is less than perfectly elastic.

15.8 Self Assessment Questions

1. Examine critically the Ricardian theory of rent. Also explain its relevance in present day context.
2. Explain the modern theory of rent. Support your answer with suitable illustration and diagrams.
3. Explain how modern theory is superior over the Ricardian theory of rent ?
4. Distinguish between the Ricardian theory and modern theory of rent.
5. Distinguish between economic rent and contract rent.
6. What is Quasi-rent? How it is measured / determined ?
7. Write short-note on the following :
   (i) Rent under intensive agriculture
   (ii) Rent under extensive agriculture
   (iii) Location rent
   (iv) Rent and price

15.9 Reference Books

- Agrawal M.D. & Som Deo, Business Economics
- Choudhary C. M., Business Economics

Unit - 16 : Theories of Wages

Structure of Unit

16.0 Objectives

The study of this unit will enable you to :

- Understand the meaning of wages ;
- Know the reasons of wage differentials ;
- Understand the theories of wages ;
- Familiar with the concept of minimum wages ; and
- Know the influence of trade unions on wages.

16.1 Introduction

Labour is an essential / basic factor of production. No production can take place without the use of land and labour. Besides that, labour is an active factor of production. Wages being the payment of labour constitute an important component of cost of production. The quantity and quality of labour influence the size of wages, thereby cost of production and price of the product and also in turn the demand for the product. Therefore, study of wages becomes vital for the trade and industry. Labour, being a human factor, has other considerations also including the standard of living. The study of minimum wages and revision of wages are the other important related economic- socio issues. In this unit, you will be exposed to all these issues related to wages. You will also study in this unit, the important theories of wage determination besides the influence of trade unions on wages.

16.2 Meaning of Wages

In simple words, wages are the earned income of labour. Any payment for the use of mental and physical labour is called wages, hence a factor cost. In economics, the word wages is used in a comprehensive sense which includes all kinds of monetary and non-monetary payments made to labour in lieu of his services rendered during the production process of a product.

16.3 Types of Wages

Wages can be of following types :

1. **Money Wages :** The amount of money paid to labour for his work done is known as money wages or **nominal wages.** For instance, if a worker gets monthly payment of Rs.6000/-, it is his money wages. When the reward of work of labour is given in cash, it is known as money wages as illustrated above. This is a narrow and most popular form of wages.

2. **Real Wages** : It means money wages plus the other facilities given to the labour. According to **Prof. Thomas,** "Real wages refer to **net advantage** of the worker's remuneration; i.e. the amount of necessaries, comforts and luxuries of life which the worker can command in return for his services." Thus, real wages include not only money wages, but all kinds of other benefits. Indeed, it is a comprehensive form of wages.

Real Wages = Money wages + Other fringe benefits

Real wages depends on the following two factors, if it is taken to mean the purchasing power of money wages :

(i) Amount of money wages ; and

(ii) The price level

Thus, real wages can be measured as under :

$$R = W/P$$

Here : R = Real wages, W = Money wages and P = Price level.

It is also important to mention here that money and real wages do not move in the same direction. For instance, during the galloping inflation real wages decline in spite of rise in money wages because the purchasing power of money decline due to rising prices.

Real wages are also determined by the ratio of money wages to the cost of living. Real wages are expressed as under :

$$\text{Real Wages} = \frac{\text{Money wages}}{\text{Cost of living index}}$$

Real wages are more important than money wages as this determines the standard of living of workers.

Factors determining Real Wages

Following factors determine the real wages :

1. Money wages and its purchasing power ;
2. Fringe benefits such as free or concessional housing, medical, education, conveyance, phone facilities
3. Social prestige and recognition ;
4. Hours of work and holidays ;
5. Chances of promotion and pay hikes ;
6. Avenues for extra earnings ;
7. Working conditions ;
8. Nature of employment – permanent or temporary ;
9. Participation of workers in profit and management ;
10. Duration and cost of training and professional expenses ;
11. Freedom of work and responsibility ; and
12. Work to dependents or family members.

16.4 Methods of Wage Payment

There are following two methods of wage payment :

1. **Time Wages :** In this method of wage payment, wages are paid according to time of work done. For instance, wages are paid on per hour or per day or per month work basis. According to this method, same payment is made to all workers for the same duration of work based on the doctrine of same wages for same duration work inspite of whatever may be the difference in quantity and quality of work. Direct relationship is not found between the quantity & quality of work and the amount of wages. This is the most popular method of wage payments in present times.

2. **Piece Wages** : It is that method in which wages are paid according to the quantity and quality of work done by the workers. Direct relationship is found between the work performed and wages ; i.e. Higher and better the work, higher will the wages and vice-versa.

   This method is adopted generally in those types of works which are given on contract basis.

16.5 Theories of Wages

Following theories of wages have been propounded by different economists :

1. **Subsistence Theory of Wages** – Propounded by **Adam Smith.** This theory is also known as **"Iron Law of Wages"**. According to this theory, wages tends towards the minimum subsistence level in the long-run; i.e. the amount which is necessary to maintain the minimum level of living for a family of a worker.

2. **Standard of Living Theory of Wages** : According to this theory, the wages be determined on the basis of standard of living of workers. This theory is an improvement over the subsistence theory.

3. **The Wage Fund Theory** : Propounded by **J.S. Mill**. According to this theory, wage rate is determined by the ratio of wage fund and the population of workers, i.e.

$$\text{Wage Rate} = \frac{\text{Wage Fund}}{\text{No. of Worker}}$$

   According to this theory, wage rate can be increased either by increasing the wage fund or by decreasing the number of workers.

4. **Residual Claimant Theory of Wages**: Propounded by **F.A.Walkar**. According to this theory, total production of an industry is distributed among land, labour, capital and entrepreneur. After giving rent, interest and profit, whatever residual share is left goes to labour. Thus, wages is a residual share of total output after distributing the rent, interest and profit. For computing wages, following formula is used.

   Wages = Total output – (Rent + Interest + Profit)

5. **Marginal productivity theory of wages.**

6. **Modern theory of wages :** First four theories of wage determination suffer from severe drawbacks and modern economists do not attach any importance to them. In fact, they are of no practical use except the historical and academic importance. Therefore, we would confine our attention only on explaining the last two theories of wage determination in next pages.

16.6 Marginal Productivity Theory of Wages

Marginal productivity theory of distribution is a Central theory by which the remuneration of all factors of production can be determined. The application of this theory in determining the remuneration of labour is called as Marginal Productivity Theory of Wages. This is a neo-classical theory of wages –In propounding this theory, the contribution of **Prof. Marshall** and **J. B. Clark** is worth mentioning besides the others.

Assumptions of the theory : The theory is based on the following important assumptions :

1. Perfect competition exists in labour market. No single seller and buyer of labour can influence the wage rate. It is determined by the joint forces of demand for and supply of labour in labour market. The supply curve of employer firm is parallel to ox-axis; i.e. **supply curve is perfectly elastic** in nature.
2. Perfect competition exists in commodity market which is produced by the labour.
3. All labours are equally efficient and are perfect substitute of each other.
4. Labour is perfectly mobile.
5. Marginal productivity of labour is measurable.
6. Full employment exists in the economy.
7. law of diminishing returns applies in production process.
8. Labour is a variable factor in a combination of other factors.
9. Wages in long-run are equal to the marginal productivity of labour.

General Statement of the theory : According to this theory, wages are determined in labour market by the relative forces of demand for and supply of labour and wages in long-run are equal to the average and marginal productivity of labour. As per this theory, wages depends on the demand for labour and demand for labour depends on the marginal productivity of labour.

For sake of understanding, the statement of the theory can be explained as under:

1. Wages depends on the demand for labour as supply of labour is given;
2. The demand for labour depends on its marginal productivity. In other words, if marginal productivity is higher, wages will also be higher and vice-versa;
3. Wages in labour market is determined by the relative forces of demand for and supply of labour at their equilibrium point; and
4. Wages, in long-run are, equal to the average and marginal productivity of labour. It means, in short-run wages can be more or less than the average and marginal productivity of labour.

Equilibrium of employer firm : An employer firm will be in equilibrium at that level of employment in labour market where following two conditions satisfy :

(i) Marginal revenue productivity of labour must be equal to the marginal wages (MRP=MW); and

(ii) Marginal revenue productivity curve (MRP curve) should cut the marginal wages curve (MW curve) from above.

Determination of wages : As said earlier that according to this theory, wages are determined by the relative force of demand for and supply of labour in labour market at their equilibrium point. This is depicted in Diagram No.1.

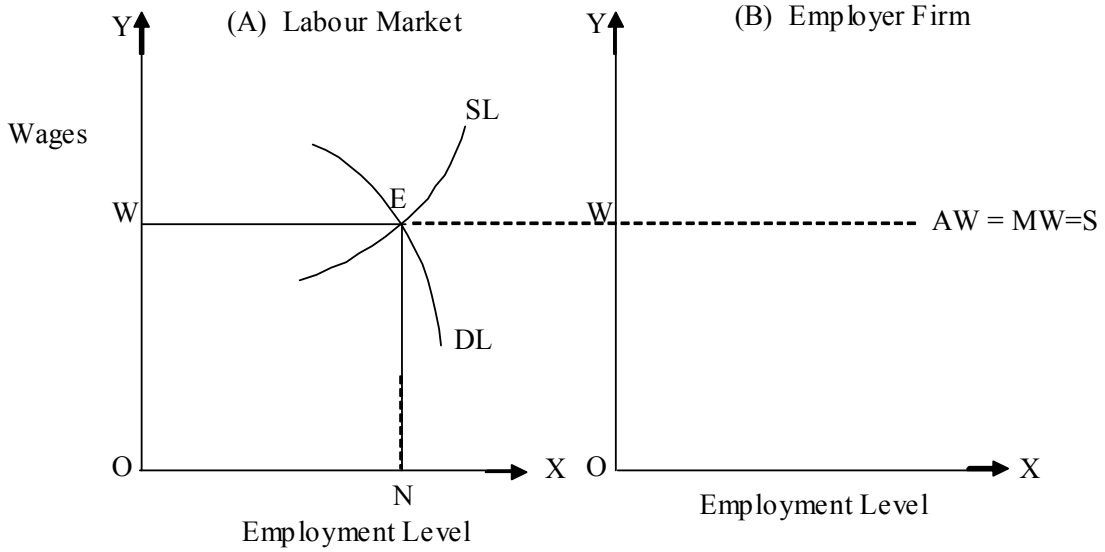


Diagram 1

In part (A) of above diagram, the demand for and supply of labour in labour market are equal to each other at point **E** and wages are **OW.** At this determined wage rate an employer firm can deploy any number of workers without increasing wages. Thus, OW wage rate is given to all firms and they can deploy desired number of workers without increasing wage rate. The supply curve of the firm is parallel to **OX- axis** and average wages are equal to marginal wages (AW=MW). In other words, the supply curve of labour for firm is perfectly elastic.

Equilibrium of Employer Firm in Short Period

According to marginal productivity theory of wages, equilibrium of an employer firm in short period can be in any of the following three situations :

1. **Situation of Super-normal profit :** This situation has been depicted in **Diagram No.2.** In this diagram, **E** is the equilibrium point of firm where MRP is equal to its MW (MRP=MW) and here MRP curve is cutting MW curve from above. The level of employment at equilibrium point is ON. In this situation, firm is getting supernormal profit as its ANRP is greater than AW. The situation of supernormal profit can be seen from diagram No. 2.

   At equilibrium point E:

   ANRP > AW = MW = MRP

   The firm is getting RE per unit supernormal profit and its total profit is **SWER.**

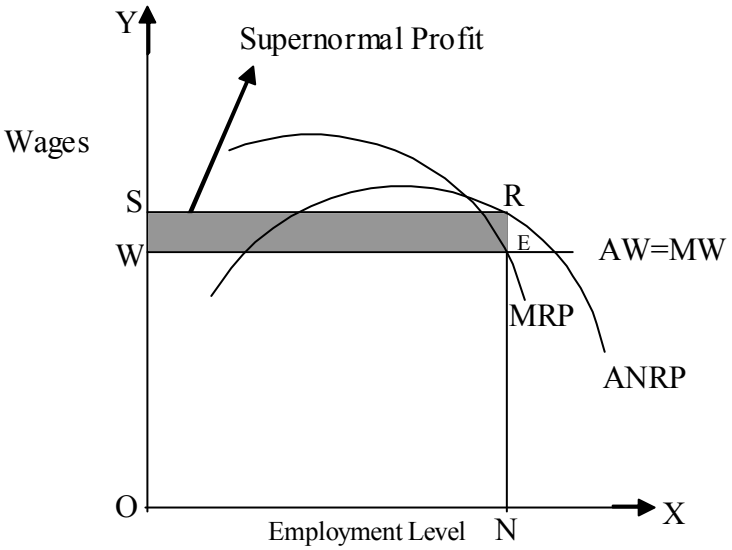


Diagram 2

2. **Situation of normal profit :** This situation has been depicted in **Diagram No.3.** In this diagram, **E** is the equilibrium point, where both conditions of equilibrium satisfy. At this point, the level of employment is **ON** and firm is operating only at normal profit as the ANRP of firm is equal to its AW**.** At the equilibrium point **E**.

$$ANRP = AW = MW = MRP$$

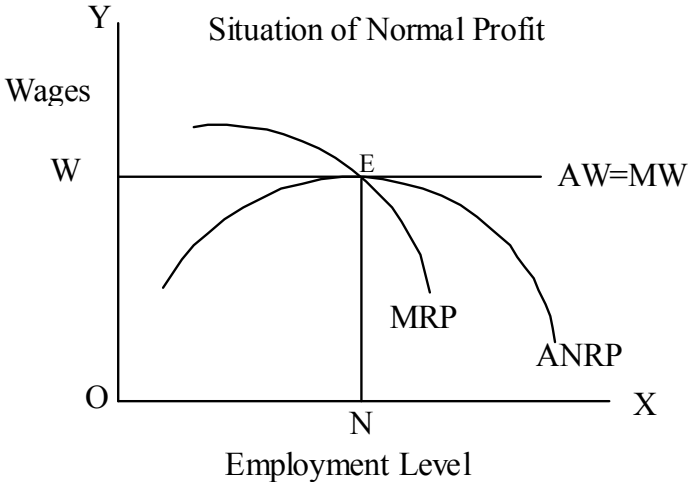


Diagram 3

3. **Situation of Loss:** In this situation, ANRP of firm is less than its average wages as depicted in **Diagram No.-4.** The equilibrium point of firm is **E** (MRP=MW) and the level of employment is **ON.** The firm is suffering RE loss per unit and its total loss is equal to **WSRE**. This situation of loss can be put in following equation form :

$$ANRP < AW = MW = MRP$$

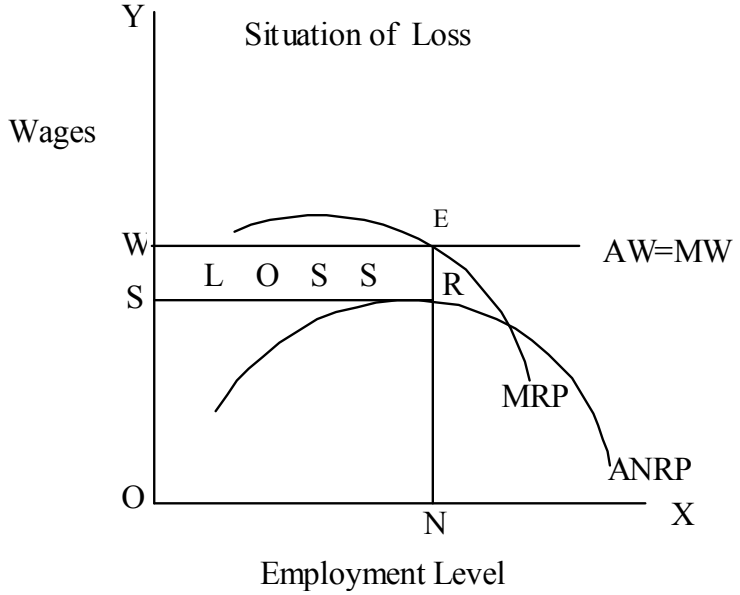


Diagram 4

Equilibrium of firm in long period : The employer firm gets only normal profit in long period because AW of the firm is necessarily equal to its ANRP. At the equilibrium point :

$$ANRP = AW = MW = MRP$$

This situation of equilibrium of firm in long period is exactly the same as that of normal profit in short period as depicted in **Diagram No.3.** In long period :

(i) The employer firm gets only normal profit;
(ii) There is no exploitation of labour; and
(iii) Marginal productivity of labour in its all uses is equal.

Criticism of the theory : The main criticism of the theory are as follows :

1. Marginal productivity of labour can not easily be measured separately as production is the collective efforts of different factors of production.
2. It is a one sided theory as it lays too much emphasis on the demand for labour (marginal productivity). While ignoring the supply of labour.
3. All units of labour are not homogeneous in terms of their efficiency.
4. Assumptions of perfect competition, full employment, perfect mobility of labour and perfect knowledge of market are unrealistic and imaginary.
5. The theory neglects the influence of other factors on wages such as social, political and economic factors.
6. The theory is a measure of the rate of wages, but not a determinate of it.
7. The wages can be determined by the general theory of value on the basis of demand for and supply of labour. Thus, there is no need of this theory.
8. The theory is applicable only in long period and fails to determine wages in short period, hence of no practical use. In the long-run, we all are dead as rightly said by **Lord Keynes.**

16.7 Modern Theory of Wages

The modern theory of wages is also known as **demand and supply theory** of wages. According to this theory, wage is the price of productive labour, therefore, it can be determined by the joint forces of demand for and supply of labour just like the price of a commodity is determined by its demand and supply at their equilibrium point. Indeed, **modern theory of wages is an extension and a special case of general theory of value in factor market.** Since, labour has its own peculiar characteristics, which differentiate it from a commodity, therefore the general theory of value can not be applied as it is for determining the wages. Besides that, there are certain differences between the demand and supply of a factor of production and the demand and supply of a commodity. For instance, the demand for a commodity is **direct demand**, while the demand for a factor is **derived demand**. Likewise, there exist a direct relationship between the price of a commodity and its supply, but this relationship may not be found between the price of a factor (labour) and its supply. Now, let us understand the demand for and supply of labour.

Demand for labour : The demand for labour refers to the amount of labour that will be employed by a productive firm at a particular wage rate per unit of time. The demand for labour is a **derived demand** and it depends upon the demand for a product which is being produced with the help of labour. In fact, the demand for labour depends on several factors.

Determinants of demand for labour

1. **Marginal productivity of labour :** The demand for labour depends on its **marginal productivity** (MP). If MP of labour is higher, obviously its demand will be higher and vice-versa. MP of labour is measured in terms of marginal revenue productivity of labour (MRP_L) and it is calculated as follows :

$$MRP_L = MP_L \times P\ (AR)$$

An inverse relationship is found between the demand for labour and its MP on account of the

operation of the law of diminishing returns. With increase in units of labour, MP starts diminishing after some time, therefore MRP_L curve is downward sloping from left to right.

The wage rate of labour depends on its MP and the maximum wage rate of labour can be equal to its MP (W=MPL). This is the **demand price** of labour as no employer will give more wages than the MPL. Thus, an employer firm will demand the labour till the MPL becomes equal to wages and will stop employing additional labour at that point where W= MPL.

2. **State of technology** : If **labour intensive techniques** are used in production process, the demand for labour will be more. Contrary to it, **if capital intensive techniques** are used, the demand for labour will be less comparatively. In the modern age of machines, the demand for labour has gone down for producing the same amount of output.

3. **Prices of substitute factors :** If the price of substitute factors in a productive process are high, then their demand will be less, obviously the demand for labour will be high as substitute factors will be replaced by the labour being a cheap factor.

4. **Degree of Substitutability of factors :** If labour can be replaced easily by other factors, then with decline in the prices of other factors, the demand for labour will decline rapidly and vice-versa will also be true.

Thus, the demand for labour mainly depends on the money wages and marginal productivity of labour. An inverse relationship is found between the wage rate and the demand for labour. In other words, **the demand for labour will be more at lower wage rate and less at higher wage rate**. Because of this fact, the demand curve of labour is downward sloping from left to right as depicted in Diagram No.5

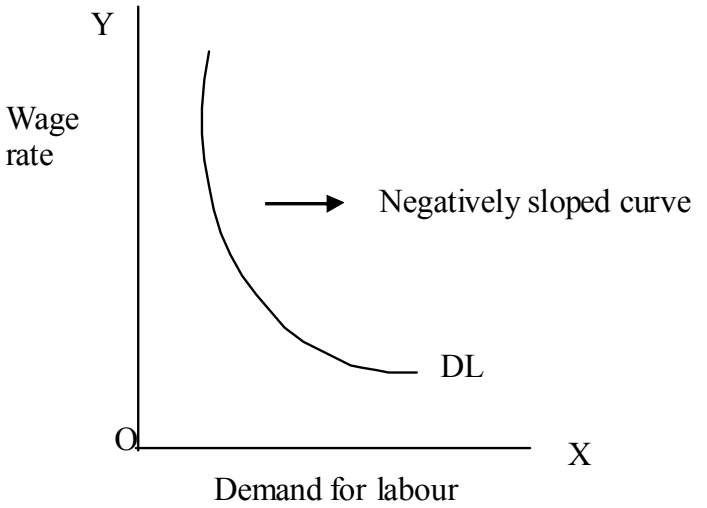


Diagram 5

Supply of labour : Supply of labour refers to the number of workers (hours of work) which will be offered per unit of time for doing work at different wage rates. Usually up to a limit, **direct and positive relationship** is found between the wage rate and supply of labour. In other words, with increase in wage rates, the supply curve of labour is generally sloping upward from left to right representing the positive relationship between the wage rate and supply of labour. But due to **negative income** effect, the supply curve of labour, beyond a limit, becomes **backward sloping** to the left. This has been depicted in Diagram No.6.

Backward Sloping Supply Curve

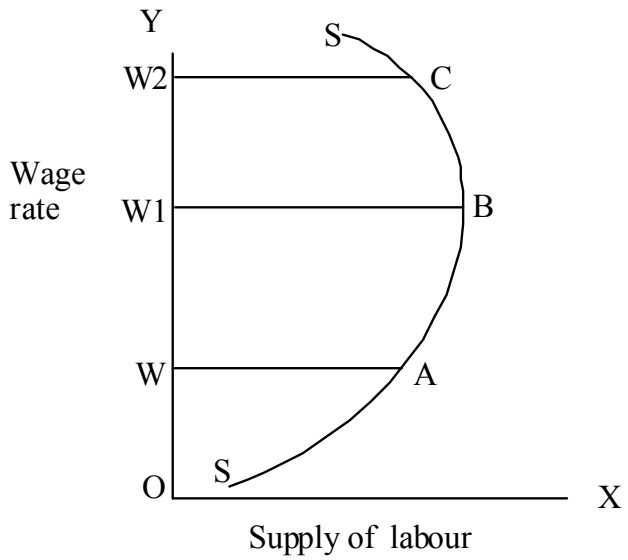


Diagram 6

According to diagram, at **OW** wage rate the supply of labour is **WA.** If wage rate increases to **OW1,** the supply of labour also increases to W_1B. Here the relationship between wage rate and supply of labour is positive due to **positive substitution effect** as workers are willing to work more at higher wage rate and prefer to work more in place of leisure. But if wage rate further increases to OW_2, the supply of labour declines to W_2C because of **negative income effect** and therefore supply curve of labour is backward sloping to the left. At higher wage rate, beyond a limit, labour prefers leisure in place of work.

Factors influencing the supply of labour : Besides the **wage rate**, following factors also influence the supply of labour.

1. **Occupational mobility :** If occupational mobility of labour is high between industries, the supply of labour to a particular industry will be more as higher wages will attract a large number of workers from other industries.
2. **Work leisure ratio :** If workers prefer work in place of leisure, the supply of labour will increase at higher wage rate because of positive substitution effect and contrary to it, if workers prefer leisure in place of work, then supply of labour will decline even at higher wages. This has been depicted in diagram no.6.
3. **Efficiency of labour :** If a particular type of labour is more efficient than others, its supply will be less. The supply of such labour can be increased by providing appropriate education and training and also by improving the techniques of production.
4. **Size of population :** If the size of population of a country is large, obviously the supply of labour will be more and vice-versa, India is a good example of it.
5. **Others :** Human resource development, participation of workers, transfer earnings of labour, geographical and occupational distribution of labour, mobility of labour etc. are other factors which also influence the supply of labour.

Determination of wages :

As stated earlier, the wage rate is determined by the joint forces of demand for and supply of labour at their equilibrium point. This has been depicted in Diagram no. 7

Wage Determination

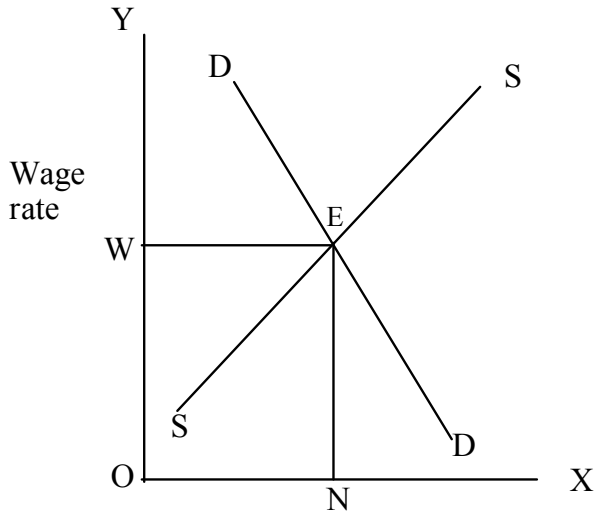


Diagram 7

As per the above diagram, **E** is the equilibrium point where demand and supply of labour are equal to each other (ON) and equilibrium wage rate is **OW**

Wage determination under perfect competition

Perfect competition exists both in commodity market and labour market. Equilibrium wage rate will be determined at a point where the demand for and supply of labour in a labour market are equal to each other. This has been shown in Diagram No.8.

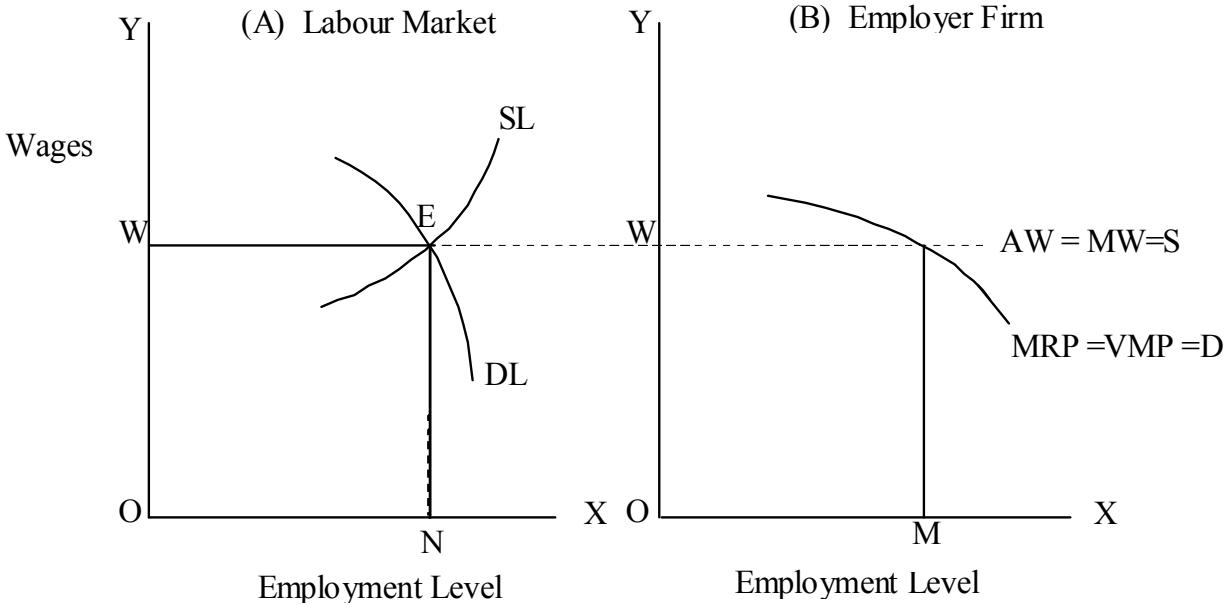


Diagram 8

According to this diagram, **E** is the intersection Point of demand and supply curve of labour. At this poi**nt equilibrium wage rate is OW and demand and supply of labour is ON**. Thus determined wage rate (OW) is given to all firms. In other words, **industry (labour market) is the wage determinator and the firm is wage acceptor / taker**. The supply curve of labour for a firm is perfectly elastic as shown in diagram. Owing to perfectly elastic supply curve of labour for a firm, the average wages and marginal wages curves are one and the same (AW = MW) and parallel to **OX**-axis. This implies that a firm can deploy any amount of labour at the wage rate determined by the industry.

Equilibrium of an employer firm : An employer firm has to determine how much labour has to deploy at the given wage rate by the industry ? This is decided by the conditions of equilibrium. The equilibrium of an employer firm will be at that point where :

(i) Marginal Revenue Productivity and marginal wages are equal to each other (MRP=MW); and

(ii) MRP curve must cut MW curve from above and should be falling towards the right side.

Equilibrium of employer firm in short-run : The employer firm in short-run may be in equilibrium in any of the following three situations:

(i) **Situation of excess profit :** In this situation, average wages of labour is less than its average net revenue productivity. This is the situation of supernormal profit from the firm's point of view and exploitation from the labour point of view. This has been depicted in **Diagram no.9.** According to diagram, **E** is equilibrium point and **ON** is employment level. At this level of employment, the wage rate is NE (OW) and ANRP is NR. Thus labour is getting average wages less than its ANRP which is its exploitation of labour and firm's profit equal to RE per unit and total profit is **ERSW.**

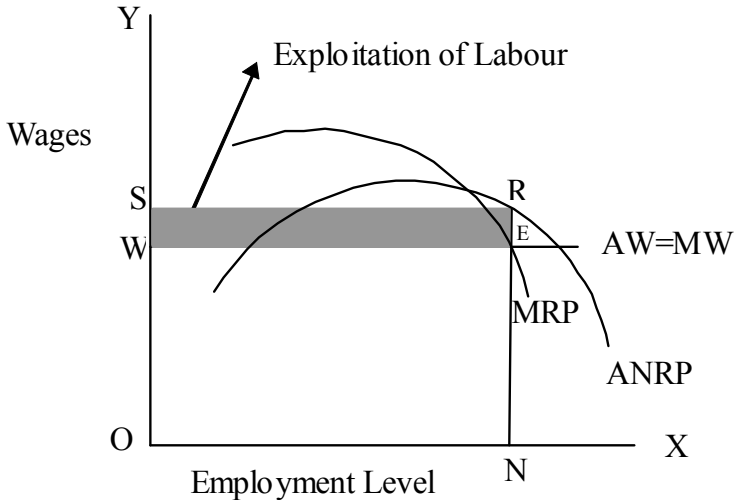


Diagram 9

(iii) Situation of normal profit : When ANRP of labour is equal to its AW (ANRP = AW), the employer firm gets only normal profit. This situation has been depicted in **Diagram No.-10.** According to this diagram, **E** is the equilibrium point because here MRP is equal to MW (MRP = MW) and the level of employment is ON. At this level of employment, ANRP is equal to AW, therefore firm gets only normal profit. The situation of normal profit can be put in following equation form :

ANRP = AW = MW = MRP

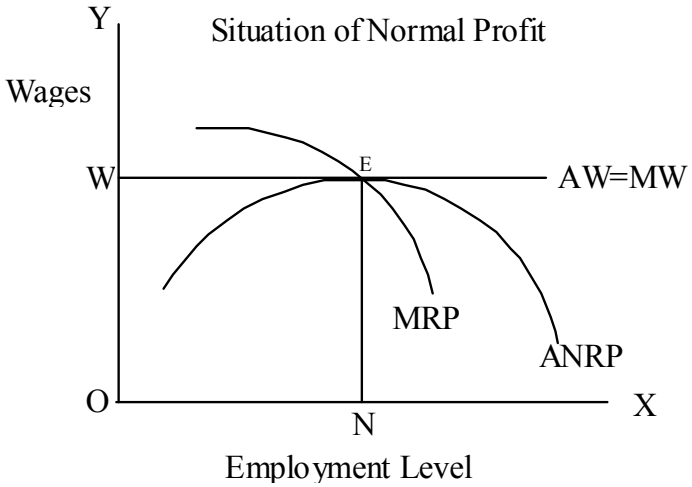


Diagram 10

(iii) **Situation of loss :** This situation has been depicted in **Diagram No.11.** As per the diagram, equilibrium point of firm is **E** where MRP= MW and employment level is ON. At this employment level, firm is suffering loss equal to RE per unit as ANRP of labour is lower than its AW. The total loss of the firm is WSRE. The situation of loss can be put in following equation form :

$$ANRP < AW = MW = MRP$$

NR < NE = NE = NE (As per diagram)

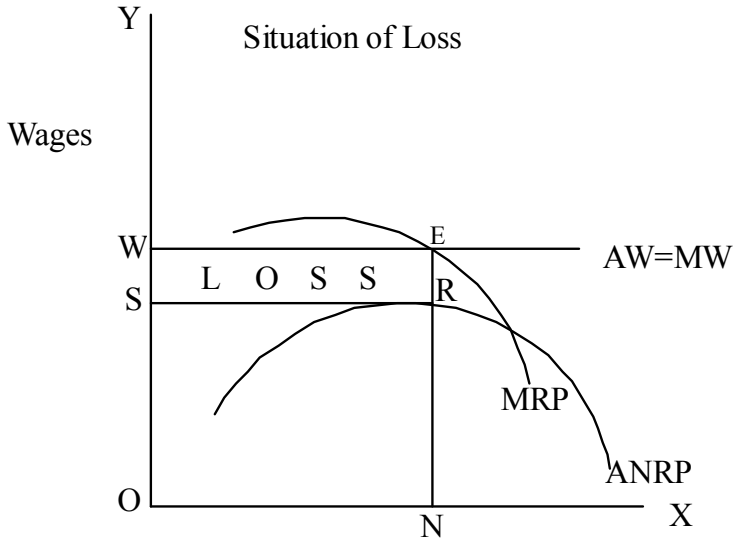


Diagram 11

Equilibrium of employer firm in long period : Under perfect competition in long run an employer firm operates only at normal profit as ANRP of firm is equal to its AW. The equilibrium situation of firm in long run can be put in following equation form:

$$MRP = MW = AW = ANRP$$

The situation of normal profit has already been explained through the **Diagram No.10.**

Determination of Wages under Imperfect Competition under imperfect competition, free supply of labour is not possible due to trade unions. We also do not find the perfect mobility of labour in this market due to so many reasons. Labour market in real life is imperfect because of monopoly of producer's organizations and monopoly of trade unions. Therefore, the role of producer's organization and trade unions can not be neglected.

Under imperfect competition, the supply of labour can be increased only by increasing the wages and due to this, the **AW curve and MW curve are not only different, but sloping upward from left to right**. Like perfect competition an employer firm can not deploy desired number of labour at the same wage rate. If firm needs more labour, it has to pay more, In other words, the **supply curve of labour is upward sloping from left to right**.

Wage determination under imperfect competition, has been depicted in **Diagram No.12.** In this diagram **E** is equilibrium point where MRP of labour is equal to its MW (NE = NE) and the level of employment is **ON.** In this situation of equilibrium, employer firm is getting super normal profit as ANRP is greater than AW (NE > NF). The total profit of the firm is WFES, which is exploitation of labour. The firm is paying AW less than the ANRP of labour (ANRP > AW). In other words, the contribution of labour is more than what is being paid to him. **Karl Marx** has called it **"Surplus Value".** According to **Mrs. Joan Robinson,** the reason of exploitation of labour is the existence of imperfect competition both in commodity market and labour market.

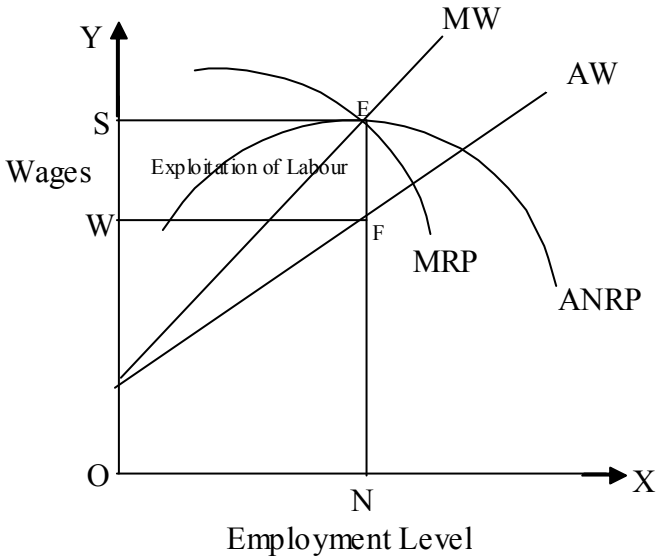


Diagram 12

16.8 Concept of Minimum Wages

Minimum wages is that amount which is necessary to give to a labourer as remuneration for maintaining a certain level of his living. This wages is slightly higher than the cost of subsistence. The minimum wages must be able to cover not only the bare necessary of labour, but it should be able to provide the minimum facilities (education, health, entertainment etc.) to them for maintaining as well as increasing their efficiency. Minimum wages is a dynamic and changing concept. Minimum wages must be changed from time to time due to rising cost of living and improved standard of living.

Objectives of minimum wages : Following are the objectives of minimum wages :

1. To protect the workers from possible economic exploitation of employers;
2. To maintain the minimum standard of living of workers and to protect any decline in it;
3. To raise the wages to an adequate level in those occupations where wages are very low due to market imperfections; and
4. To find out the solutions of labour disputes and not allow them to occur.

Minimum wages also helps in increasing the employment opportunities for labour by increasing the efficiency and MRP of labour. It also helps in increasing the derived demand for labour. Due to assured minimum wages, the worker works whole heartedly with ferver and zeal and leaves no stone unturned.

Many times, minimum wages may reduce the employment opportunities for workers. The cost of production and price of products may increase and producers may also replace the labour by machines.

16.9 Summary

Any payment for the use of mental and physical labour is called wages. It is a factor cost and remuneration of labour. Wages may be in form of money wages and real wages. Money wages means the amount paid in cash to labour for his work. Real wages means money wages plus other fringe benefits. There are two methods of wage payment. One is time wages and another is piece wages. Wage differentials may be on account of several reasons including the difference in work, qualities of labour, market imperfections etc.. Economists have propounded several theories of wages, but only last two theories are important. According to marginal productivity theory, wages in long run tend to be equal to the average and marginal productivity of labour. According to modern theory, wages are determined by the joint forces of demand for and supply of labour at their equilibrium point.

16.10 Key Words

Wage	:	wage is the price / remuneration of labour for doing physical and mental work. It is a factor cost of production.
Money Wages	:	Wages paid in terms of money / cash are known as nominal wages.
Real Wages	:	Purchasing power of money wages and other fringe benefits together constitute the real wages. It includes so many free / concessional facilities provided to workers.
Time Wages	:	It is one of the most popular method of wage payment. According to this method, wages are paid on the basis of time duration of work performed irrespective of the quantity and quality of work.
Piece Wages	:	This is another method of wage payment. In this method, wages are paid on the basis of quantity and quality of work done by a labour.
Marginal Productivity of Labour	:	It refers to the changes in total physical productivity due to one unit change in labour. It denotes changes in total production due to one unit change in variable factor labour.
Marginal Revenue Productivity	:	When we multiply the marginal physical productivity of labour by the market price of the product, we get marginal revenue productivity. It is an expression of MPP in to money. (MPP ´ P = MRP).
Demand for Labour	:	It refers to the number of workers (hours of work) which will be deployed by an employer at the given wage rate during the specified period of time. The demand for labour mainly depends on the wage rate and marginal productivity of labour.- $D_L = f(W,MP)$.
Supply of Labour	:	It refers to the number of workers willing to work at a particular market wage rate during a period of time. Supply of labour mainly depends on the wage rate.
Backward Sloping Supply Curve of Labour	:	Generally, the supply curve of labour is upward sloping from left to right because of direct and positive relationship between wages and supply of labour. But beyond a point, the supply curve of labour slopes down towards the left side due to negative relationship between wages and supply of labour. It is because of negative income effect. In other words, labour prefers leisure in place of work at a very high wage rate.
Minimum Wages	:	That amount of wages which is required to meet the cost of living of a worker for satisfying the necessaries of life.

16.11 Self Assessment Questions

1. Which factors are responsible for wage differentials ?
2. How does work- leisure ratio affect the supply of labour? Explain with the help of an illustration and diagram.
3. Distinguish between money and real wages. Also explain the factors which influence the real wages.
4. Critically examine the marginal productivity theory of wages.
5. Discuss the modern theory of wages.
6. How wage is determined under perfect competition ? Explain with the help of suitable diagrams.
7. Explain the wage determination under imperfect competition.
8. "Under perfect competition wage of a labour can not be more than his marginal productivity". Discuss.
9. "Wage is determined by the demand for and supply of labour". Explain.
10. Explain the concept of minimum wages. What are its merits and demerits.

16.12 Reference Books

- Agrawal M.D. & Som Deo : Business Economics
- Choudhary C. M., Business Economics

Unit - 17 : Theories of Interest

Structure of Unit

17.0 Objectives

After studying this unit, you should be able:

- To understand the concept of interest
- To differentiate various kinds of interest rates
- To know the reasons of difference in interest rates
- To grasp the various theories of interest rate determination

17.1 Introduction

Interest, being the cost of capital, is an integral part of total cost of production and obviously of price also. Price, in its own turn, influences the demand for the product of a firm and thereby its revenues. Thus, the rate of interest influences directly the cost and availability of capital on the one hand, while on the other hand, it influences the demand and revenues (via price) of the firm. In nut-shell, it can be said that the rate of interest influences the profitability of business organization directly and indirectly, therefore, the knowledge of the concept of interest and theories of interest rate determination is of vital importance from the business point of view. The rate of interest also influences the saving and investment behavior of individuals and business entities thereby also influences the pace and pattern of economic growth and development of a country. In this unit, you will be exposed to the concept of interest and various theories of interest rate determination.

17.2 Concept of Interest

The concept of interest has been explained in different ways by different economists. According to **Marshall**, "the payment made by a borrower for the use of loan is called interest". Prof. **Meyers** has defined it on similar lines. According to him, "Interest is the price paid for the use of the loanable funds". **Lord J.M. Keynes** has viewed the interest in a different way by calling it the reward for parting with liquidity. In his own words, "Interest is the reward for parting with liquidity for a specified period". **J.S. Mill** has defined it as the remuneration for mere abstinence. In brief, interest is the cost of capital and user of capital has to pay it to the owner of capital.

Gross and net interest

In common parlance, the term interest is used in the sense of gross interest. It is the excess **payment over the principal amount charged** by the lender from the borrower in lieu of using capital for a specified period of time. Gross interest includes many types of payments including the payment of exclusive use of capital.

Components of gross interest: Following are the components of gross interest:

(i) **Net interest:** It is also known as **economic interest.** It is the payment made only for the use of capital or it is the income of capital. It does not include any kind of other payments except the payment of exclusive use of capital by the borrower. It is the **risk free interest**.

(ii) **Reward for risk:** Lending money is not risk free. It always involves various risks, therefore some compensation for taking risk is included in the gross interest. According to **Marshall** following two types of risks are involved in lending money:

a. Personal risk: It relates to **borrower's integrity and character**. The borrower may refuse to make payment of the loan, hence causes inconvenience to the borrowers.

b. Business risk: It relates to the business conditions. The business, in which loan amount is invested, may suffer losses or may close down. In such a situation, the creditor is unable to get back his amount. Obviously, he wants some remuneration in lieu of taking such risk. Thus**, higher the risk**, **higher the rate of interest**.

(iii) **Reward for inconveniences:** For lending money, a person must have surplus money/saving and saving is not possible without restriction on consumption. Obviously restriction on consumption causes inconvenience. Not only this, many times borrower does not return money on time, hence the lender is deprived of the use of money in other alternatives uses. Obviously, the lender would like some reward in lieu of bearing such kind of inconveniences.

(iv) **Reward for not using the capital**: When the lender lends money to some one, he is deprived of using the capital for his own purposes for specified period of time. Therefore, lender wants some reward for his inconveniences.

(v) **Reward for loan management:** The lender has to spend some money, time and energy on the management of loan. For instance, he has to manage funds, keep books of accounts, calculate risk and interest & collects money. Besides these, he has to complete many legal formalities in obtaining licence for money lending and filing litigation in the court in case of non-recovery of loan.

Gross interest = net interest + reward for risk + reward for inconveniences + reward for not using the capital + reward for loan management

Activity A :

1 List out the components of gross interest in the space given below :

Can interest rate be zero or negative?

According to **Classical economists, interest rate can be zero or negative**. This is possible when:

- Economy is static and there is no demand for capital;
- Savings are zero;
- Supply of capital, due to higher level of growth, is greater than the demand for capital; and
- Due to lack of peace and security, people have to make payment for safety of funds

According to **Fisher** and **Lord Keynes**, practically, the **rate of interest can not be zero or negative**. They have advanced the following reasons in support of their point of view:

- Interest is the reward for a factor of production capital, hence it can not be zero or negative except the reward of an entrepreneur.
- Marginal productivity of capital can not be zero or negative, hence the rate of interest can not be zero or negative.

- Due to **liquidity trap,** the rate of interest can not go below a minimum positive rate of interest.
- The demand for capital in modern dynamic economies always remain because of ever increasing human wants, changes in production techniques and other factors.
- A lender has to sacrifice something necessarily in saving money, hence he would definitely like to be compensated in the form of interest.
- There are always certain risks involved in lending money, hence some safety net as interest is required.

In nut-shell, we can say that in real business life, generally the rate of interest can not be zero or negative except under certain special circumstances.

17.3 Theories of Interest Rate Determination

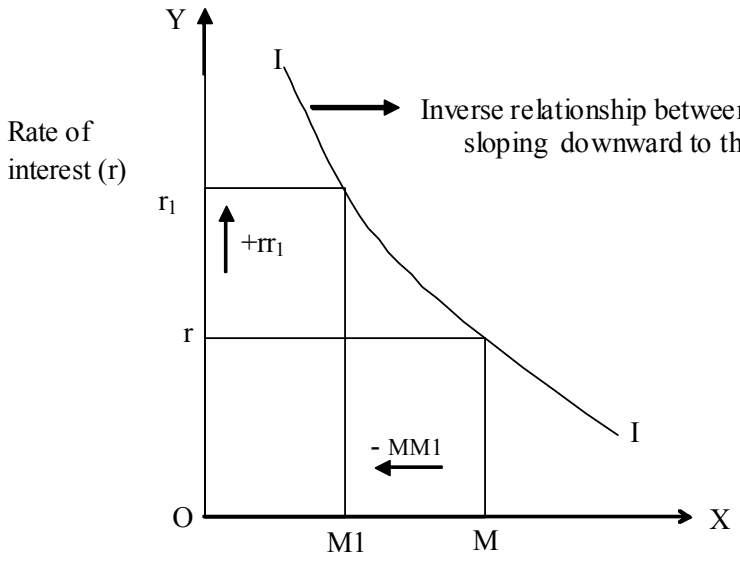
Monetarists and economists have different opinions about the factors responsible for determining the rate of interest. Some economists believe that interest is a **result of real factors**; while other believe that interest is a **result of monetary factors.** So many theories of interest have been propounded by different economists, but only some important theories are being discussed here.

(I) Classical Theory of Interest

This theory of interest is also known as the **Demand and Supply Theory/Saving and Investment Theory /Real Theory of Interest**. This theory was basically developed by the classical economists- Among them the noteworthy names are **Marshall**, **Pigou**, **Walras** and **Knight**. According to this theory, **the rate of interest is determined by the demand for capital (investment) and supply of capital (savings) at their equilibrium point**. In other words, the equilibrium rate of interest is determined at that point where the investment and savings are equal to each other.

Demand for capital: The demand for capital is made by producers for **investment**. Due the application of the law of diminishing returns, the **marginal productivity (MP)** of capital is diminishing, therefore, the producer will make the investment of capital till the diminishing MP of capital becomes equal to the rate of interest. In other words, the producers demand less amount of capital at higher rate of interest and more at lower rate of interest; i.e., **higher the rate of interest, lower will be the demand for capital and vice-versa**. Thus**, inverse relationship** is found between the rate of interest and demand for capital (investment). This is depicted in following diagram:

Demand Curve for Capital



Demand for Capital (I)

Diagram 1

Supply of capital: The supply of capital depends on savings, i.e., higher the savings, higher will be the supply of capital and vice-versa. Savings are made by the individual households, firms and government. The supply of capital depends on the will to save, power to save and facility to save and also on the role of government in promoting savings. Savings can not take place without sacrifice of consumption – either to cut consumption or to postpone consumption. Thus, in order to induce people to save and refrain from consumption, they must be compensated/rewarded suitably by offering them adequate rate of interest as an incentive. Classical economists were of the view that **savings basically depend on the rate of interest**. It can be written as follows in a equation form:

$$S = f(r)$$

Further, there exist **a direct/positive** relationship between the rate of interest and savings; i.e., **higher the rate of interest**, **higher will be the amount of savings and vice-versa**. This can be seen in the following diagram:

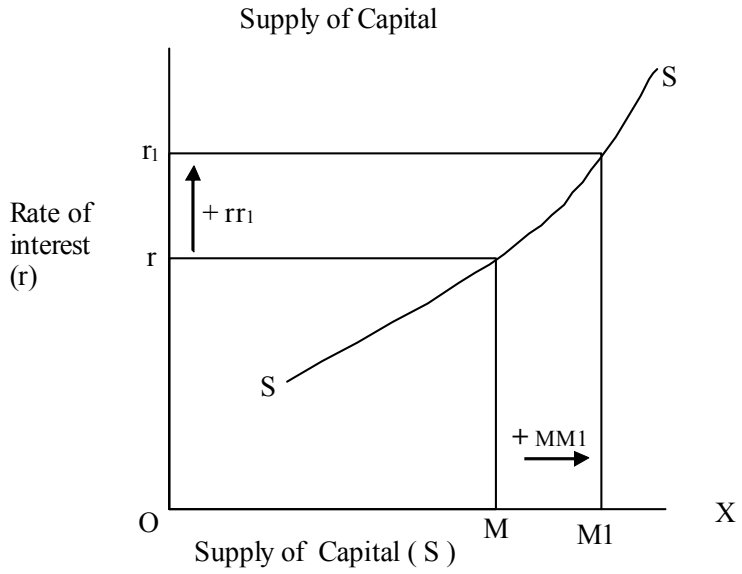


Diagram 2

Determination of interest rate

As said earlier, the rate of interest is determined by the joint forces of demand for capital (I) and supply of capital (s) at their equilibrium point. In equation form, it can be written as follows:

$r = f(I,S)$

Diagrammatically, where the demand curve of capital (I) and supply curve of capital (S) intersect each other, that's the point of equilibrium rate of interest. This is shown in the following diagram:

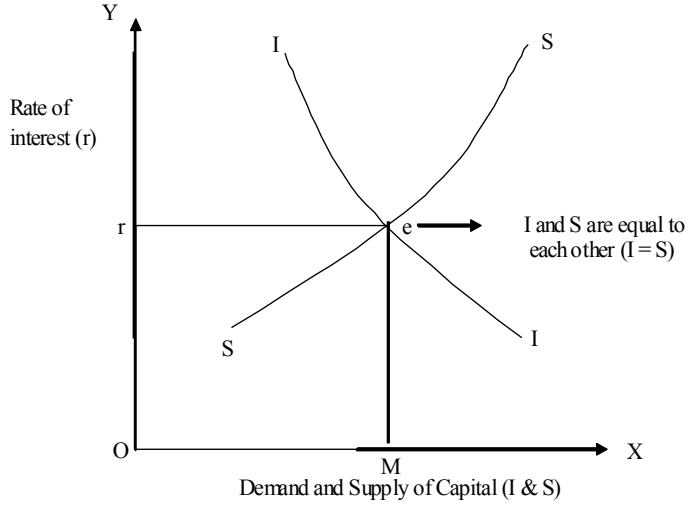


Diagram 3

At point **e** in above diagram, I and S are equal to each other, therefore, **or is** the equilibrium rate of interest.

Criticism of the theory

The theory has been criticized mainly by the **Lord Keynes** on following grounds :

(i) **Inverse relationship does not exist between the rate of interest and investment :** The demand for investment is influenced more by the **marginal efficiency of capital** (MEC) rather than the rate of interest. Therefore, **investment may be more at higher rate** of interest. Thus, rate of interest and investment may move in the same direction contrary to the belief of this theory. This theory believes that an inverse relationship exists between the rate of interest and the demand for investment.

(ii) **Neglects the other sources of supply of capital:** The theory says that the only source of capital is savings; while other sources of supply of capital are **hoardings** (past savings**), disinvestment** and **bank credit**. Thus, the theory provides incomplete explanation of the supply of capital.

(iii) **Neglects monetary factors:** According to this theory, the rate of interest is determined by the real factors (investment and savings), but according to **Keynes**, monetary factors (demand and supply of money) determine the rate of interest.

(iv) The theory is based on the **unrealistic assumption of full employment**.

(v) **Direct relationship does not exist between the rate of interest and savings** as assumed by the theory. According to modern economists, at higher rate of interest investment declines, therefore, income, employment and savings also decline.

(vi) **According to Keynes, savings basically depends on the level of income :** According to this theory the equilibrium between investment and savings is established **through the changes in rate of interest;** while according to **Keynes**, the equilibrium between these two is established **through the changes in income**.

(vii) The critics argue that according to this theory, the **rate of interest** is **indeterminate** as savings, income and rate of interest are dependent on each other. For instance, without knowing the level of income, we can not ascertain the amount of savings and without knowing the interest rate, the level of income can not be ascertained.

The essence of the theory is that **real factors** (investment and savings) **determine the rate of interest.**

(II) The Loanable Fund Theory of Interest

This theory is also known as **'Neo-Classical Theory of Interest'**. This theory was propounded and developed mainly by Swedish economists **Kunt Wicksell**, **Bertil Ohlin**, **Gunnar Myrdal**, **Lindahl**, **Viner etc.**. **Robertson** and **Pigou** also made their contribution in improving and making it a complete theory. According to this theory, the **rate of interest is determined by the joint forces of demand for and supply of loanable funds at their equilibrium point**.

Demand for loanable funds (DLFs)

The demand for loanable funds is made by the following three parties:

(i) Individual Consumers: They demand funds for **hoarding and dissavings purposes**. Consumers have general tendency to keep certain amount of cash (hoarding) with themselves. Many times, they spend more than their income (dissavings). Thus, the demand of individual consumers for loanable funds can be summed up as follows:

(H + Ds)

Here, H = Hoarding, and DS = Dissavings

The demand for loanable funds for above purposes is **interest elastic**.

(ii) **Business Community:** This community demands loanable funds mainly for **investment purpose**. The demand for investment is also **interest elastic**; i.e., at higher rate of interest, the demand of funds for investment diminishes and vice-versa is also true.
The demand for loanable funds by the business community can be captioned as I (investment).

(iii) **Government:** It demands funds for public welfare activities, development works and peace & security purposes. The demand of govt. for loanable funds can be equated with demand for investment.

In brief, the **demand for loanable funds** is made for **dissavings**, **hoarding and investment purposes**. This can be put in equation form as given below:

$$DLF_S = (D_S + H + I)$$

Here: DLF_S = Demand for Loanable Funds, D_S = Dissavings, H= Hoarding, and I = Investment

The important point to be remembered here is that the demand for loanable funds depends on the rate of interest. In other words, the demand for loanable funds is **interest elastic,** i.e.; $DLF_S = f(r)$ and there exist an **inverse relationship between the rate of interest and demand for loanable funds**; i.e., at higher interest rate, DLF_S is lower and at lower interest rate, DLF_S is higher.

Due to inverse relationship between **r** and **DLF_S**, the DS, H, I, and DLF_S curves are sloping downward to the right as depicted in the following diagram :

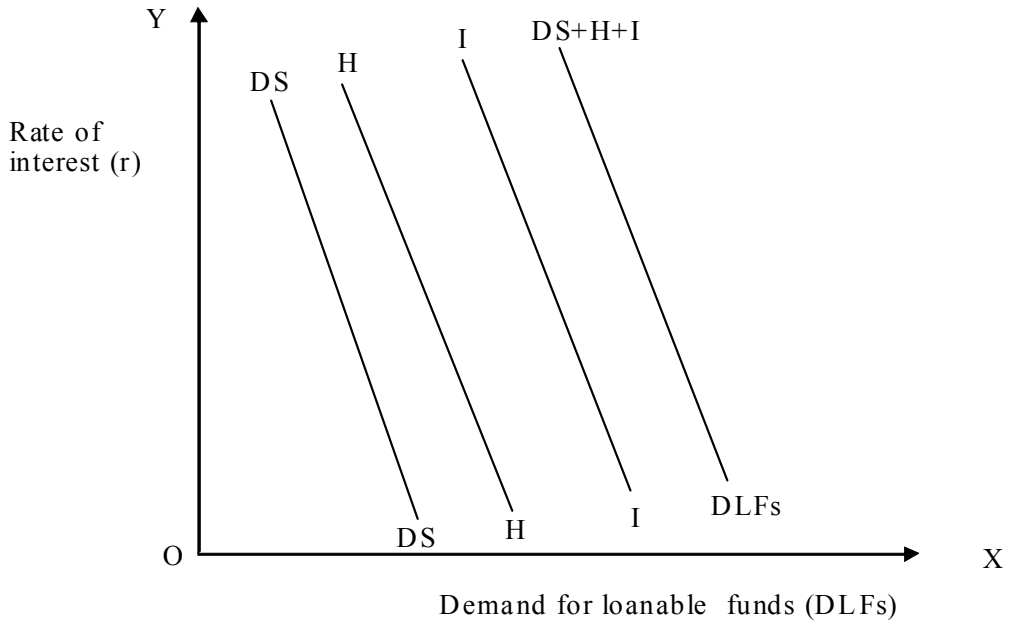


Diagram 4

Supply of loanable funds

There are three main sources of supply of loanable funds:

(i) **Savers**: They are the first source of supply of loanable funds. They include individuals and firms. They supply funds out of their **present earnings** (**savings**) as well as from **dishoarding of past savings**. Savings (S) and dishoarding (DH) both are **interest elastic**. **Positive relationship** is found between the rate of interest(r) and savings & dishoarding (S & DH), therefore, **both curves slope upward from left to the right**.

(ii) **Banks**: The another important source of supply of loanable funds is banks. They supply funds through **money loans**. Money loans are also **interest elastic**, hence with increase in interest rate, banks supply more funds and vice-versa. **M curve is also upward sloping** from left to the right because of **direct relationship between r and M**.

(iii) **Firms:** They supply funds through **disinvestments** (DI). When firms are afraid of falling profits in future, they use their depreciation reserves and other funds for lending purposes. Disinvestments (DI) are also **interest elastic**, therefore they are also influenced by the changes in interest rate in the same way as that of S, DH, and M.

In brief, the **total supply of loanable funds** can be explained with the help of following **equation**:

$$SLF_S = (S + DH + M + DI)$$

Here:

SLF_S = Supply of Loanable Funds, S = Savings, DH = Dishoarding,

M = Money Loans, and DI = Disinvestment

The point to be remembered here is that **SLFs is interest elastic**, i.e., $\mathbf{SLF_S = f(r)}$ and there exist **direct relationship between r and SLF_S**, hence SLF_S curve is upward sloping from left to the right as shown in the diagram given below:

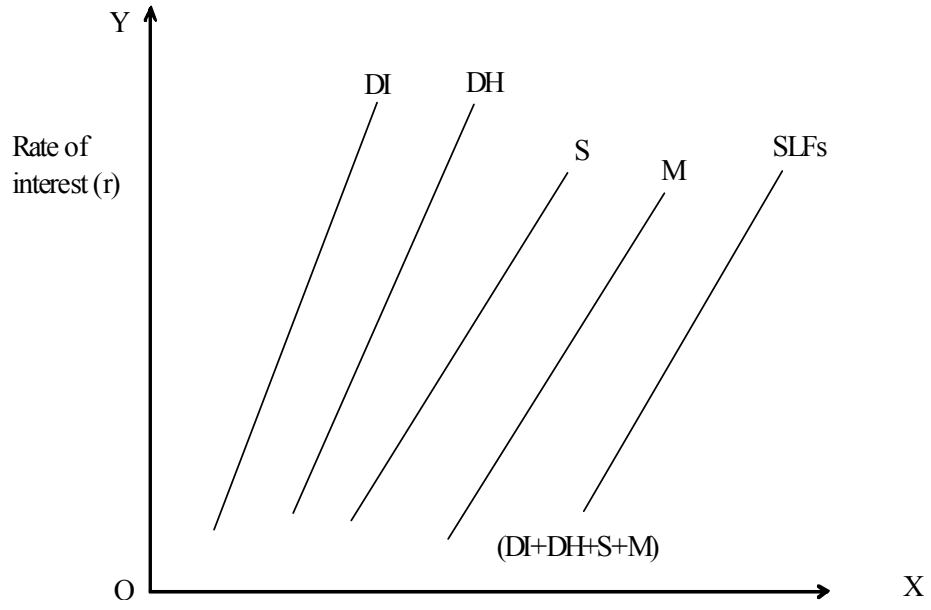


Diagram 5

Determination of rate of interest

As said earlier, the **rate of interest is determined through the interaction of demand** for **and supply of loanable funds at their equilibrium point**. At this rate of interest, the demand for and supply of loanable funds are exactly equal to each other. This is depicted in the diagram given below at point **e** where DLF_S and SLF_S are equal (OQ) to each other and the rate of interest is **or.** According to classical theory, the rate of interest is or_1 where I & S are equal to each other at point $\mathbf{e_1}$.

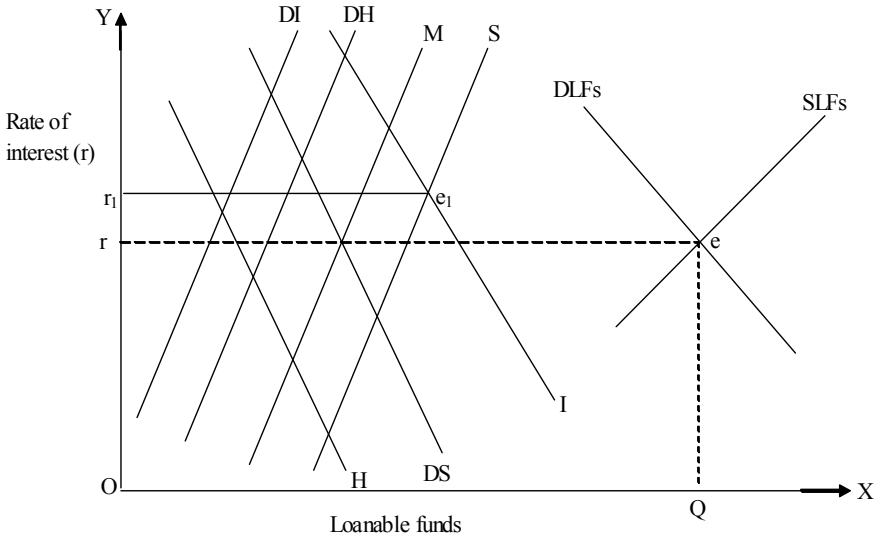


Diagram 6

Activity : B

1 Capture the components of demand for and supply of loanable funds and jot down in the space given below :

Criticism of the theory

Although this theory is an improvement over the classical theory of interest and assumes the rate of interest a result of both real and monetary factors, even than it suffers from so many drawbacks. Among them few important are as follows:

(i) **Neglects the role of changes in income level**: This theory, like the classical theory, assumes that the level of income is given and saving depends on the rate of interest. According to this theory, the equilibrium between savings and investment is established through the changes in interest rate; while **Lord Keynes** is of the opinion that the equilibrium between savings and investment is established through the changes in the level of income.

(ii) **Wrong explanation of interest rate influence on savings**: This theory believes that there exist direct relationship between the interest rate and savings, but infect, inverse relationship is also found between them. When interest rate is high, investment declines and owing to that the employment, level of income and savings also decline. Thus, according to **Keynes**, **savings basically depends on the level of income**, hence **interest inelastic** in nature.

(iii) **Full of inconsistencies**: According to critics, the theory has combined **real factors** (I &S) with **monetary factors** (M & DH), which is logically wrong. This theory has also wrongly combined the **stock concepts** (M and H) with **flow concepts** (I & S).

(iv) **Interest rate is indeterminate**: According to this theory, the most important component of supply of loanable funds is savings. On the one hand, savings influences the level of income, level of income influences the investment and investment influences the interest rate and on the other hand, savings influences the interest rate, interest rate influences the investment, investment influences the level of income and level of income influences the savings. All these factors influence each other, hence one can not be ascertained unless the other is known. Thus, the rate of interest remains indeterminate. The **circular reasoning**, which is responsible for interest rate indetermination, has been explained with the help of **following chart** :

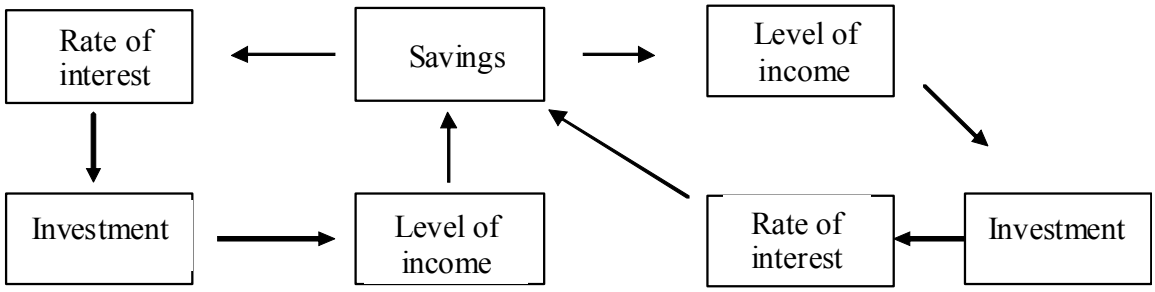


Chart - 1

(v) **Unstable equilibrium**: According to this theory, savings and investment are not equal at equilibrium rate of interest, therefore, the equilibrium rate is not stable. For instance, in the last diagram, the equilibrium interest rate is **or**; while I and S are equal at **or_1** interest rate. Critics say that stable equilibrium is possible only when I and S are equal and they are equal at natural rate of interest.

(vi) **Wrong assumption about the role of cash balances**: This theory believes that cash balances are very flexible and can easily influence the loanable funds. But they are not so flexible as assumed by this theory. According to **Keynes**, the supply of money in short period remains fixed; while **Prof. Halm** attaches more importance to the **Velocity of money** in place of cash balances.

(III) Liquidity Preference Theory of Interest

This theory was propounded by **Prof. J.M. Keynes** in his famous book '**The General Theory of Employment, Interest and Money'** which was published in 1936. According to this theory, **interest is a purely monetary phenomenon**, hence this theory is also known as **monetary theory of interest**. The theory emphasis that the "**interest is the reward for parting with liquidity for a specified period of time**". Interest is an incentive for a saver to relinguish his desire to keep savings in liquid form. Therefore, interest is the price for sacrificing liquidity for a certain period of time.

Liquidity preference denotes the desire of a person to keep a certain part of his income in cash. A part of income is saved by all of us, which can be used either for keeping cash (demand for money) or for lending to some one (parting with liquidity). The decision of an individual pertaining to this fact depends upon his liquidity preference, i.e.; **higher the liquidity preference, higher will be the desire to hold cash and vice-versa**.

According to this theory, the **rate of interest is determined by the demand for and supply of money**, therefore, it becomes essential to understand the meaning of demand and supply of money.

Demand for money

The demand for money means the **liquidity preference of people** – the desire to hold cash. According to **Keynes**, the **demand for money depends on the liquidity preference** of people; i.e., higher the liquidity preference (L), higher is the demand for money and vice-versa. According to **Keynes**, there are following **three motives** for liquidity preference:

1. **Transaction motive (Mdt)**: It is related to the requirement of cash for day- to-day transactions for personal and business life. The transaction motive can further be classified into following two parts:

   (i) Income motive: It is related to consumers. Consumers get income after certain time interval and in the mean time they require cash for meeting their day to day needs. Therefore, they always keep a part of their income in liquid form. The amount of **liquidity (cash) depends on the size and**

period of payment of income of the people. If they get adequate amount of income at small time interval, obviously they need less liquidity.

(ii) Business motive: This motive is related to the people from business community. Businessmen, like consumers, require liquid funds for meeting their day-to-day expenses (working capital) so that they are able to make payments on time and able to maintain their paying capacity. The need of liquidity for working capital requirement **depends on the size of business transactions and level of income**.

According to Keynes, the demand for money for transactions motive remains fixed in short-period and not affected by interest rate changes; i.e., **interest inelastic.** Basically it **depends on the level of income** and can be written in equation form as:

$$\mathbf{Mdt = f(Y)}$$

2. **Precautionary motive (Mdp)**: Both individuals and businessmen always keep certain amount of cash for meeting out their unforeseen, contingent and emergency needs. The **cash kept for rainy days** is a fine example of demand for money for precautionary motive. The demand for this motive depends on the level of income, business activities, opportunities for gains and approach towards life. The demand of money for precautionary motive remains fixed in short-period and is not influenced by the changes in interest rate, i.e., **interest inelastic** in nature. According to **Keynes**, the demand of money for precautionary motive depends **mainly on the level of income**, and this can be written as follows:

$$\mathbf{Mdp = f(Y)}$$

Keynes has termed L_1 as the demand for transactions and precautionary motive, therefore, it can be written as:

$$\mathbf{L_1 = (Mdt + Mdp)}$$

Since Mdt and Mdp both depends on the level of income, therefore, it can also be expressed as:

$$\mathbf{L_1 = f(Y)}$$

3. **Speculative motive:** This is the **most important motive** for liquidity preference. According to **Keynes**, speculative motive is an object for some people. They are able to foresee and forecast future better than others, hence earn more profit. The cash kept for this motive is **used for making speculative gains** (making profit out of the fluctuations in the prices of bonds and other securities) by dealing in bonds/securities.

Some people wants to gain from the uncertainty in interest rates. If there is more possibility of increase in interest rate, people will have more liquidity preference in present and vice-versa is the case.

Generally, **inverse relationship is found between the rate of interest and market price of bonds**. The reason for this is that the interest rate on bonds is fixed and predetermined, therefore, when market interest rate increases, the market value of bonds declines or they become cheap. Under this situation, people purchase bonds and due to this their liquidity preference declines and vice-versa is the case.

According to Keynes, there exists an **inverse relationship between the rate of interest (r) and demand of money for speculative motive (Mds)**. At higher interest rate, the liquidity preference for speculative motive is less and at lower rate of interest, it is comparative more. Thus, the **liquidity preference for speculative motive is interest elastic.**

In equation form, it is expressed as :

$$\mathbf{Mds = f(r)}$$

Lord Keynes has used L_2 for Mds, hence the above equation can also be expressed as :

$$\mathbf{L_2 = f(r)}$$

In brief, **the demand for money can be explained as follows** :

(i) Md = L (Total demand for money / liquidity preference)

(ii) $L = L_1 + L_2$

(iii) L_1 = Mdt + Mdp (L_1 represents the demand for transaction motive and precautionary motive)

(iv) L_2 = Mds (L_2 represents the demand for speculative motive)

(v) $L_1 = f(y)$: (L_1 depends on the level of income)

(vi) $L_2 = f(r)$: (L_2 depends on the rate of interest)

(vii) L=f (y,r) : (L depends on the level of income and the rate of interest)

As the size of L_1 remains constant in short–run because of fixed level of income, therefore, size of L virtually depends on the size of L_2, which in its own turn, depends on the rate of interest (r). As a result of it, L depends on r as it is fluctuating in short-run and can be expressed as :

$$\mathbf{L=f(r)}$$

Lord Keynes held this view that an **inverse relationship** exist between the rate of interest (r) and liquidity preference (L); i.e.; at **higher rate of interest**, **liquidity preference is low and vice-versa** as depicted in the following diagram :

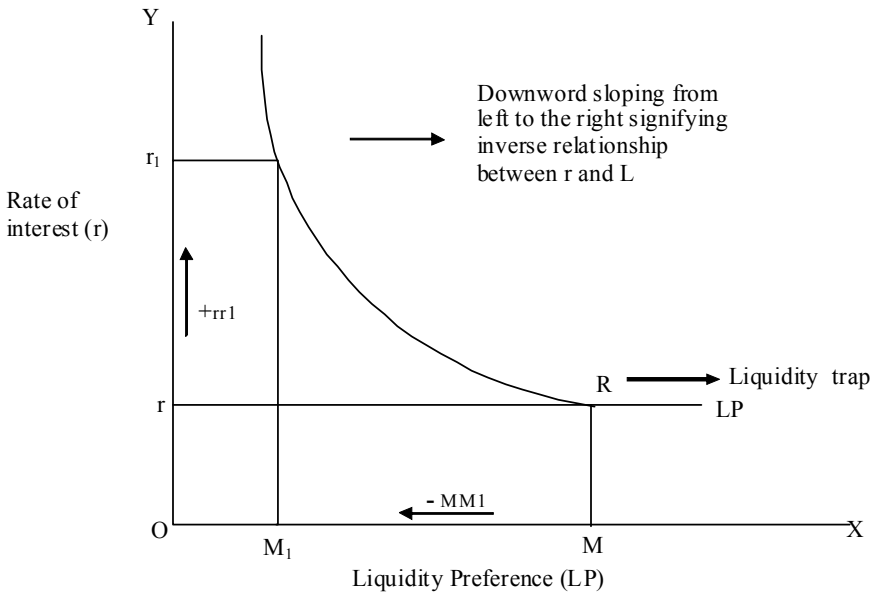


Diagram 7

Liquidity trap : Lord Keynes said that the rate of interest can not be zero or negative because of liquidity trap. **At a particular minimum rate of interest** (**or** in above diagram) the **liquidity preference becomes infinite** as depicted at point R in the same diagram. Here the LP curve becomes completely a flat line (parallel to ox-axis). At **or** rate of interest, the demand for money is unlimited. In other words, the rate of interest is inadequate in comparison to the risk of lending, therefore, savers are not willing to part with their liquidity. **Lord Keynes** has called this situation as **liquidity trap.** The rate of interest can not go below the **or** level due to liquidity trap.

Supply of Money : According to **Lord Keynes**, total money supply(M) is an aggregate of M1 and M2. The total money supply can be expressed as

M= M1+ M2

M1 is active and circulating money; while M2 is passive and idle money.

According to Keynes, the total supply of money in an economy is given and fixed in short period as it is issued and controlled by the monetary authority / government. The money supply is **perfectly interest inelastic.** In other words, it is not affected by the changes in interest rate. This is depicted in the following diagram :

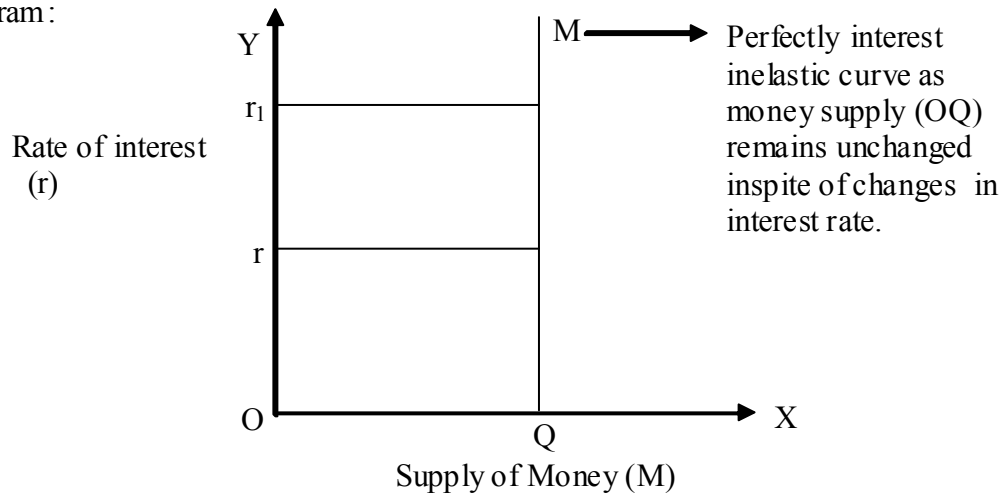


Diagram 8

According to this theory, the demand of money for transaction and precautionary motive (L_1) is met by the active money (M1) and the demand of money for speculative motive (L_2) is met by the idle money (M2). This can be explained as under :

(Md=L) = (M)

or

(Mdt + Mdp + Mds) = (M1 + M2)

or

(L_1 + L_2) = (M1 + M2)

Determination of rate of interest

According to liquidity preference theory, the rate of interest is determined by **the joint forces of demand for and supply of money at their equilibrium point**. In the diagram given **below, e** is the equilibrium point where M curve intersects the LP curve and the rate of interest is **or**.

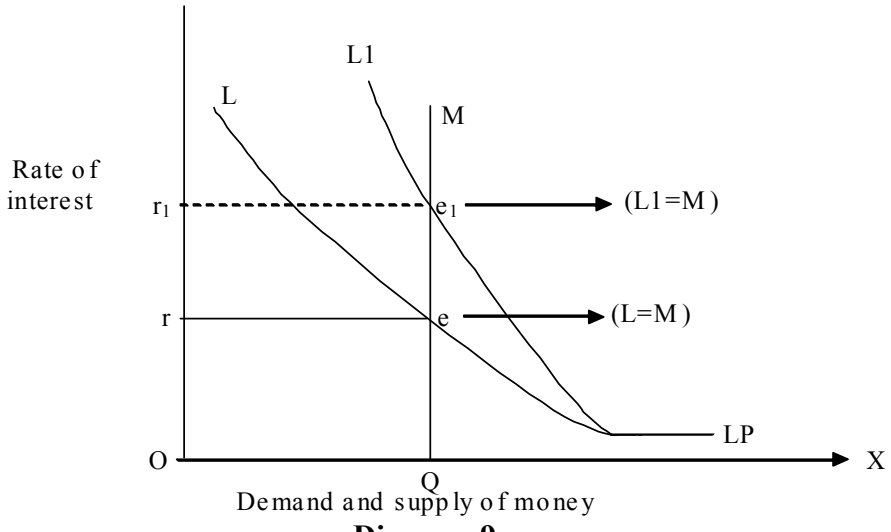


Diagram 9

Changes in interest rate : Interest rate in **short-run may change due to change in demand of money for speculative motive** (L_2) as money supply remains constant in this period. For instance, if liquidity preference increases, the rate of interest also increases and vice-versa is also true. In the above diagram, L_1 represents increased preference for liquidity. $\mathbf{e_1}$ is now new equilibrium point and $\mathbf{or_1}$ is new and higher rate of interest.

In long-run money supply may also change – In that situation the **changes in money supply may cause changes in** interest rate. With increase in money supply, LP remaining the same, interest rate will decline and vice-versa. In the diagram given below, the original equilibrium point **is e** and the rate of interest **is or**. With increase in money supply (represented by M1), the rate of interest has gone down to $\mathbf{or_1}$.

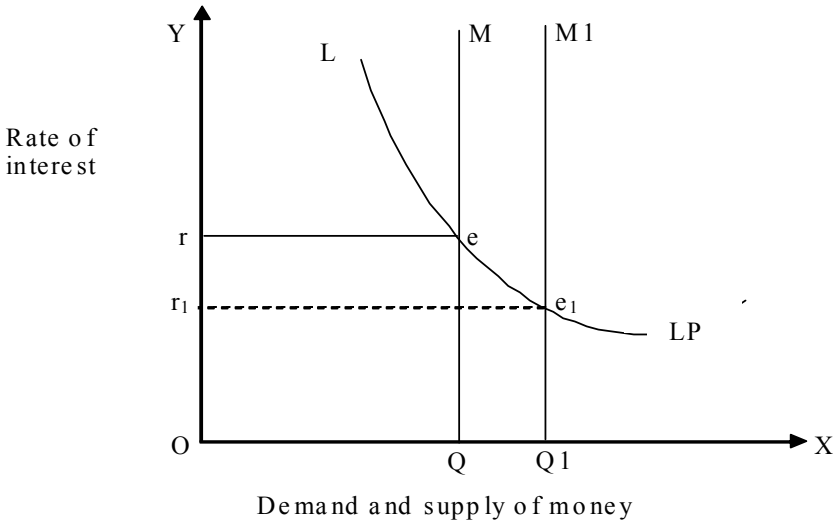


Diagram 10

Criticism of the theory

The following are the main criticism of the theory :

(i) **Parting with liquidity not essential for interest : Prof. Hazlitt** criticized the Keynesian theory on this ground that parting with liquidity is not necessary for earning interest. According to him, **interest can be earned on demand deposits, treasury bills and other short-term bills without sacrificing liquidity**. On such instruments, a person can get interest as well as he can enjoy liquidity.

(ii) **Neglects the importance of savings : Prof. Jacob Viner** pointed out that without savings, there will be no liquidity to sacrifice. Infect, the rate of **interest is the reward for savings without liquidity** instead of parting with liquidity.

(iii) **Neglects the store of value function of money :** According to Lord Keynes rate of interest is a result of demand of money for speculative motive, thereby making the store of value function of money secondary. According to **Prof. Hutt,** money like other assets, is also productive, hence its store of value function can not be ignored.

(iv) **One-sided theory :** According to **Prof. Hazlitt** liquidity preference theory appears to be one-sided as it **ignores real factors** such as investment and savings (productivity and time preference). Besides that, this theory **lays too much emphasis on liquidity preference**, while assuming the supply of money constant and idle. Thus, it is incomplete and one-sided theory.

(v) **Indeterminate theory : Prof. Hansen** is of the view that Keynesian theory is indeterminate as it did not provide the explanation of mutual relationship between interest rate and liquidity preference in context of varying / alternative levels of income. We can not know the level of income without knowing the rate of interest and also we can not know the interest rate without knowing the level of income – Thus, we are **caught in the net of circular reasoning**. Besides that, this theory assumes the level of income fixed, which is not correct.

(vi) **Short-term analysis** : The theory provides only short-term explanation of the interest rate determination and ignores the long-term explanation. It presents only '**instantaneous photographic picture'** of interest rate determination, while ignores the '**cinematographic picture'.**

(vii) **Inconsistent theory :**The theory does not provide adequate explanation of interest rate during the times of economic fluctuations. For instance, during the depression, the rate of interest should be very high according to this theory, but contrary to it, interest rate is minimum.

(viii) **Incomplete theory :** This theory explains only **monetary equilibrium** of an economy, while ignoring the real equilibrium.

The essence of the theory is that **monetary factors play an important role** in determination of interest rate.

Activity : C

1 Recollect the motives of liquidity preference as stated by Lord Keynes and briefly explain them here.

IV) Modern Theory of Interest - IS – LM Model

Modern Theory of interest is also known as **'Neo-Keynesian Theory of Interest'**. In developing this theory, the main contribution was of **Prof. J. R. Hicks** and **Alvin Hansen**, therefore this theory is also known as **'Hicks-Hansen Theory of Interest'**. According to this theory, following **five factors together** determine the rate of interest:
(i) Investment (I); (ii) Savings (S); (iii) Supply of money (M);
(iv) Liquidity preference (L); and (v) Level of income (Y).

Out of these, **first two factors have been taken from classical theory / loanable fund theory and third & fourth factor have been taken from Keynesian theory**. This theory not only co-ordinates both the theories by integrating the four factors at alternative levels of income, but also becomes itself a comprehensive and integrate form of both.

Investment **(I)** and Saving **(S)** are **real factors**. They are related to **real or commodity sector** of the economy, therefore, **real equilibrium of economy** could be established by them.

Liquidity preference **(L)** and Supply of money **(M)** are **monetary factors / variables** and they are related to **monetary sector** of the economy, hence **monetary equilibrium** could be established by them. Thus, this theory by dividing the entire economy into real and monetary sectors, first of all establishes the equilibrium of economy of these sectors separately at alternative levels of income and interest rates and thereafter. It establishes the general equilibrium of the economy.

First of all, **investment and saving schedule** (IS-Schedule) is constructed for establishing equilibrium in the real sector of the economy in the manner as illustrated/explained below. On the basis of this schedule, we can draw the IS curve.

Table 1

Investment-Saving Schedule (IS Schedule)

I		II		III		
Investment function I = f (r)		Saving function S= f (Y)		Investment Saving Schedule I f (r) = S (Y)		
Rate of interest (r) (%)	Investment (I) (Crore Rs.)	Level of income (Y) (Crore Rs.)	Saving (S) (Crore Rs.)	Rate of interest (r) (%)	Level of income (Y) (Crore Rs.)	I = S (Crore Rs.)
5	30	100	30	5	100	30
4	60	150	60	4	150	60
3	90	200	90	3	200	90
2	120	250	120	2	250	120
1	150	300	150	1	300	150

IS Schedule is divided into three parts. **First part shows investment function**. According to it, **investment depends on the rate of interest**, i.e., **I=f(r)** and **inverse relationship exists between the rate of interest (r) and investment (I)**. In other words, with fall in r, I increases in the above schedule.

The **second part of schedule** depicts **saving function**. According to it, **saving depends on the level of income**, i.e.; **S=f(Y)** and **direction relationship** exists between the level of income (Y) and savings (S). In other words, with increase in Y, S increases and vice-versa is true as illustrated in the above schedule. In this illustration, it has been assumed that **marginal propensity to consume (MPC) is 0.4**. In other words, people spent 40% of their increased income on consumption and thus, they save 60%.

The **third part of schedule** shows the **equilibrium of investment and saving (I=S) at alternative rates of interest and levels of income**. This is a symbol of **equilibrium** in the **real sector / commodity sector** of the economy.

Investment and saving curve (IS curve)

On the basis of IS schedule, we can draw IS curve. It shows that at the given rate of interest, investment and savings increases with increase in the levels of income and vice-versa. The negative slope of IS curve is an indication of this fact that **investment increases with fall in interest rates** and due to this the level of income increases. Beside this, IS curve also shows an **inverse relationship between the level of income and rate of interest**, i.e.; with increase in level of income the rate of interest falls and vice-versa is also the case. At each point of IS curve, the investment is equal to the intended saving. This curve also explains the flow variables of loanable funds. Derivation of IS curve is shown in the diagram given below

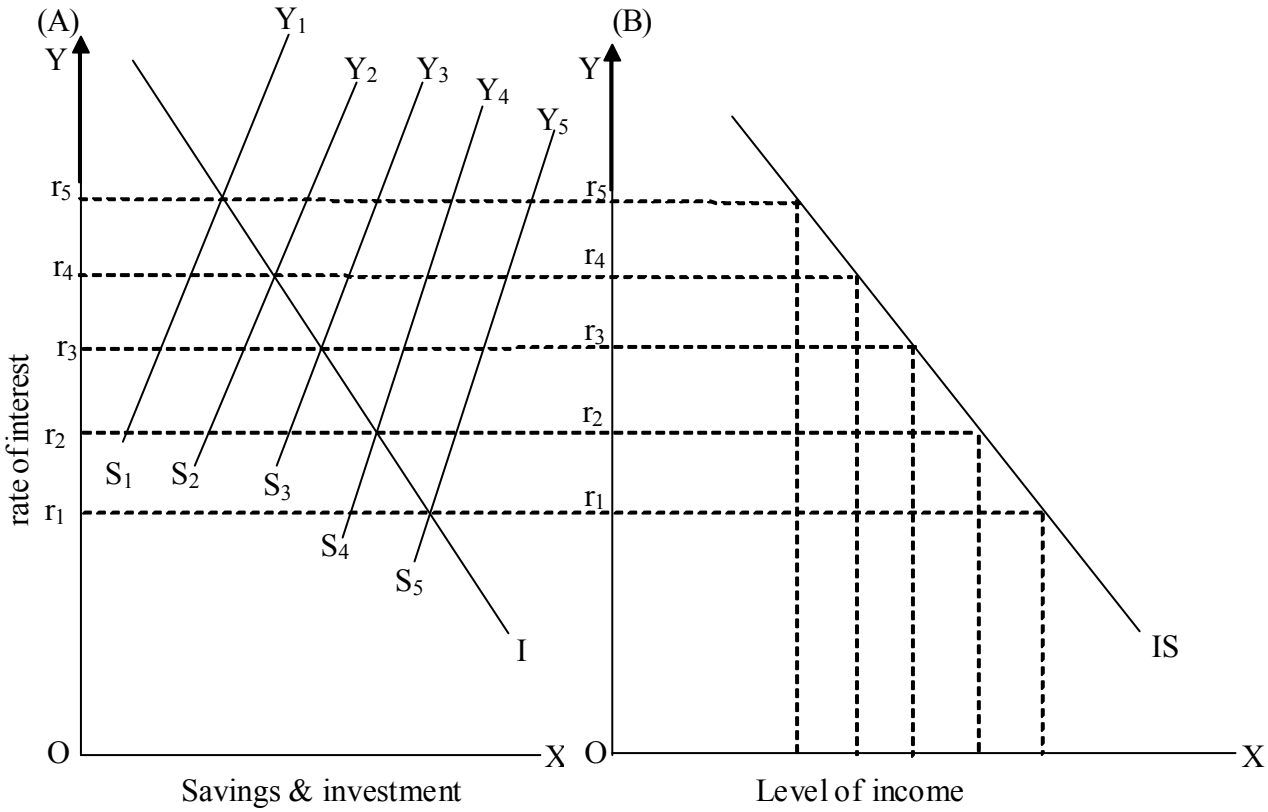


Diagram 11

For establishing equilibrium in monetary sector of the economy Liquidity Preference –Money Supply Schedule (LM Schedule) is to be constructed in the manner as illustrated below. In fact, this provides the basis for derivation of LM curve.

Table 2

Liquidity Preference -Money Supply Schedule (LM Schedule)

I		II		III		IV		
Demand of money for speculative motive (L_2) $L_2=f(r)$		Demand of money for transaction & precautionary motive (L_1) $L_1=f(Y)$		Equilibrium of total demand & supply of money MD=MS or $L=(M_1+M_2)$		LM Schedule		
Rate of interest (r) (%)	Mds (L_2) (Crore Rs.)	Level of income (Y) (Crore Rs.)	Mdt+Mdp (L_1) (Crore Rs.)	Total demand for Money (L)	Total supply of money (M)	Rate of interest (r)	Level of income (Y) (Crore Rs.)	L=M
1	80	100	40	120	120	1	100	120
2	60	150	60	120	120	2	150	120
3	40	200	80	120	120	3	200	120
4	20	250	100	120	120	4	250	120
5	00	300	120	120	120	5	300	120

LM Schedule has **four parts**. **Part I** pertains to the demand of money for Speculative motive (L_2). It depends on the rate of interest (r), i.e.; **L_2 = f(r). Inverse relationship** exists between the rate of interest **(r)** and demand of money for Speculative motive **(L_2)**. In other words, the demand of money for this purpose declines with increase in interest rate and vice-versa.

The **part II** of schedule relates to the demand of money for **transaction and precautionary motive (L_1)**. It depends on the level of income, i.e.; **$L_1 = f(Y)$**. In other words, with increase in level of income (Y), L_1 also increases and vice-versa.

The **part III** of schedule shows the equilibrium between the total demand for money (L) and total supply of money (M). The total demand for money remains equal to the total supply of money (L = M). The supply of money remains fixed and given as it is determined by the monetary authority of the country.

The **part IV** of schedule shows the parity between the total demand for money (L) and total supply of money (M) at alternative interest rates and levels of income. At each level of income and interest rate the total demand for and total supply of money are equal to each other(L=M).This situation is an **indication of equilibrium in monetary sector** of the economy.

Liquidity Preference – Money Supply Curve (LM Curve)

On the basis of LM Schedule, LM Curve can be drawn. This curve shows equilibrium between demand for money (L) and supply of money (M) at alternative levels of income and interest rates. Generally **LM Curve is elastic and its slope is positive**. Given the fixed supply of money the liquidity preference increases with the increase in levels of income and thereby increase in interest rates and vice-versa is also true case. At very high level of income LM Curve becomes perfectly inelastic. LM Curve explains the stock variables of loanable funds. Derivation of LM Curve is shown in the diagram given below.

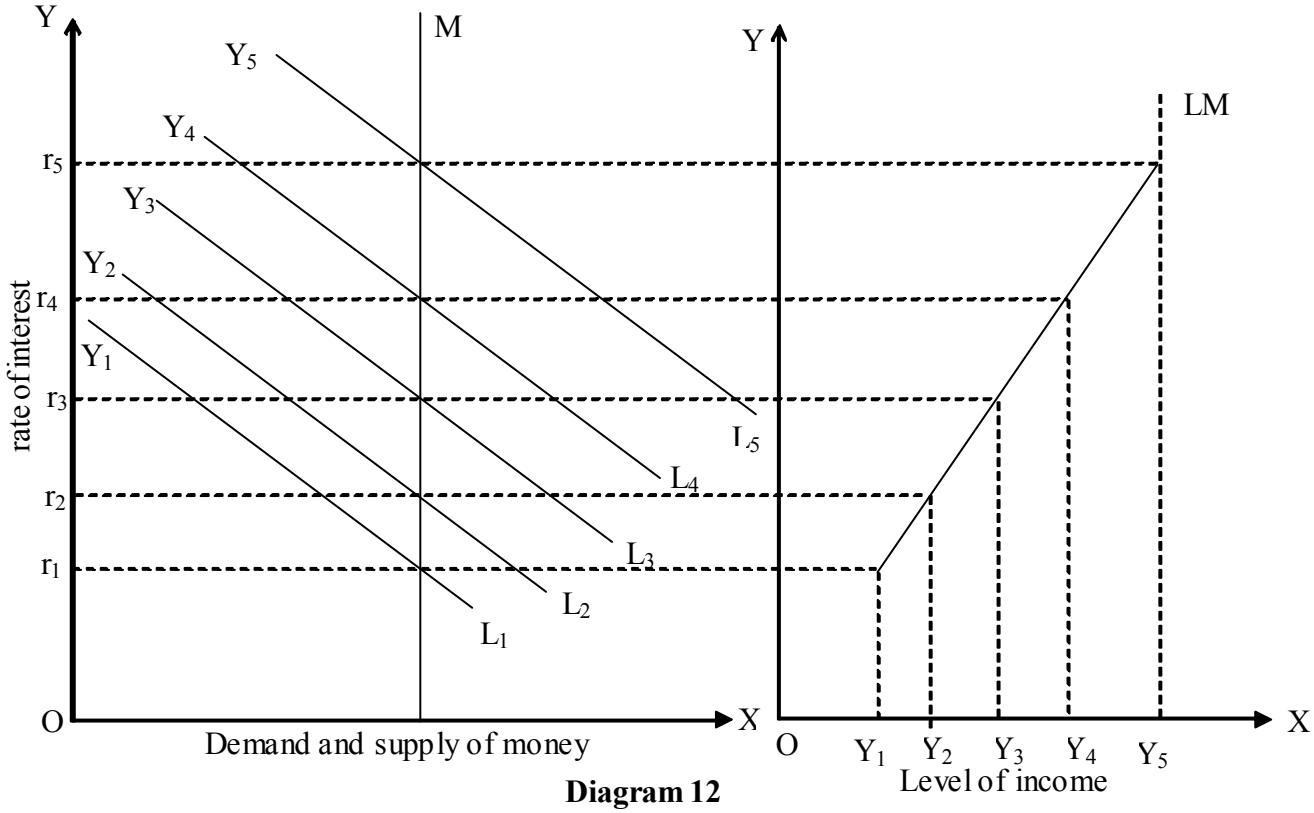


Diagram 12

Determination of rate of interest

According to modern theory, the rate of interest is determined through the **intersection of IS and LM Curves at their equilibrium point**. This is depicted in the diagram given below. At **point e** in the above diagram, **or** is the **equilibrium rate of interest** at which investment (I) & Savings (S) and demand for money (L) & supply of money (M) are in equilibrium at the same level of income (OY). At **or interest rate** and **OY level of income**, the economy is in equilibrium in both the sectors – real sector (Commodity market) as well as monetary sector (money market).

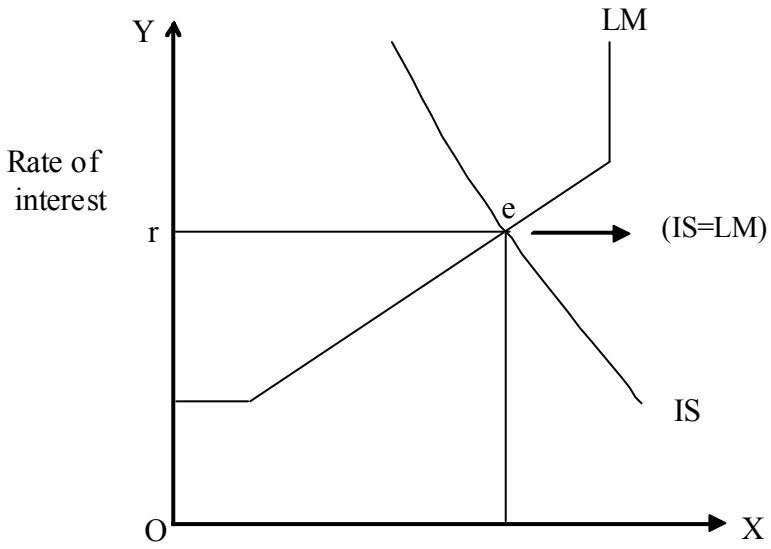


Diagram 13

17.4 Summary

Interest is the price/cost paid by the borrower for the use of funds for a specified period of time. Gross interest is the excess payment over the principal amount paid by the borrower/charged by the lender of funds. It includes the net interest, reward for risk, inconveniences and management of loans. But net interest is the payment only of exclusive use of capital. It does not include any kind of other payments. According to classical economists, interest rate can be zero/negative, but according to Keynes, it can not be zero/negative.

According to **classical theory** of interest, the rate of interest is determined by the demand for and supply of capital (I and S – real factors) at their equilibrium point. **Loanable fund theory** believes that interest rate is influenced by both real as well as monetary factors. According to this theory, the interest rate is determined by the joint forces of demand for and supply of loanable funds at their equilibrium point. Contrary to these theories, **Lord Keynes** emphasized that interest is a purely monetary phenomenon, hence, it is the reward for parting with liquidity. According to **liquidity preference theory**, the rate of interest is determined by the demand for money (L) and supply of money (M) at their equilibrium point. In his theory Keynes attaches too much importance to demand for money/liquidity preference. According to him there are three motives for liquidity preference viz. transaction motive, precautionary motive and speculative motive – among these, the last one is most important. According to modern theory, the rate of interest is determined by the intersection of IS Curve and LM Curve.

17.5 Key Words

Interest	:	It is the price paid by the borrower for the use of capital. Thus, it is the cost of capital and user of capital has to pay it to the owner of capital.
Gross interest	:	It is the excess payment over the principal amount made by the borrower to the lender of capital in lieu of using funds. Gross interest includes the reward for risk, reward for not using the capital and inconveniences, and reward for loan management, beside the net interest.

Net interest	:	Also known as economic interest. It is the payment made only for the use of capital. It does not include any other type of payments Interest on government securities is a fine example of it.
Real factors	:	Savings and investment are the real factors which influence/ determine the rate of interest.
Monetary factors	:	Demand for and supply of money (L and M) also influence/ determine the rate of interest. They are known as monetary factors.
Loanable Funds funds.	:	Funds which are used for taking and giving loans are known as loanable
Hoarding (H)	:	It means keeping certain amount of cash balances by the individual consumers.
Dissavings (DS)	:	It means negative savings- spending more than income out of borrowings.
Dishoarding (DH)	:	It means making past savings available for lending purpose.
Money loans	:	These are the loans made available by banks, i.e.; credit extended by banks to the people.
Disinvestment (DI)	:	These are the reserve funds of firms made available for lending purpose.
Investment (I)	:	Demand/Use of funds by firms for productive purposes is known as investment.
Saving (S)	:	Excess of income over consumption is known as saving/s.
Liquidity preference	:	It is the desire to hold cash out of the present income. It is that part of income which people prefer to keep in cash for various motives/reasons.
Liquidity trap	:	It is that situation in which demand for money becomes infinite/unlimited at a particular minimum rate of interest. Due to this LP Curve becomes completely a flat line parallel to ox-axis.
Transaction motive	:	It pertains to demand of money for day-to-day transactions of a person and business.
Precautionary motive	:	It is related to the demand of cash for rainy days or for unforeseen, contingent and emergency needs.
Speculative motive	:	It is related to the demand of money for making gains out of the fluctuations/ margins in the prices of bonds and securities. It is influenced by the rate of interest.

17.6 Self Assessment Questions

1. Examine critically the liquidity preference theory of interest.
2. Explain the loanable fund theory of interest. How is it superior over the classical theory of interest.
3. Discuss the modern theory of interest.

4. "The rate of interest is determined by the demand for and supply of money at their equilibrium point". Elucidate that this statement.

5. Distinguish between gross and net interest. Can rate of interest be zero or negative?

6. Explain the classical theory of interest. What are its drawbacks?

17.7 Reference Books

- Agarwal M.D. & Som Deo: Business Economics, Ramesh Book Depot, Jaipur
- Misra & Puri: Business Economics, Himalaya Publishing House, Mumbai
- Mathur N.D.: Business Economics, Kailash Book Depot, Jaipur
- Mithani D.M.: Managerial Economics, Himalaya Publishing House, Mumbai
- Dwivedi D.N.: Managerial Economics, Vikas Publishing House, New Delhi

Unit - 18 : Theories of Profit

Structure of Unit

18.0 Objectives

After studying this unit, you should be able to:

- Understand the concepts of profit,
- Grasp the characteristics of profit,
- Classify various types of profit, and
- Discuss the various theories of profit

18.1 Introduction

The concept of profit has so many Connotations. **Frank knight** has rightly mentioned that in economics there is no other word except the profit which has so many different meanings. There is no doubt about this fact that profit may arise due to so many reasons, therefore different economists have given different reasons for profit generation. When a graduate student wanted to know the answer of this question from text books – Profit is a reward of which factors"- He got fourteen answers – as mentioned by **Prof. Paul Samuelson**. This highlights the need for understanding clearing the concept of profit in its right perspective.

Besides being others, profit is one of the most important objectives of the business firm. A business firm may have so many objectives to pursue simultaneously, but it can not survive and grow without profit. Some firms pursue the objective of **profit maximization**, while others may have the **satisfying approach of profit** and/or **optimization of profit**.

Whatever may be the objectives of a firm, but it has to earn minimum profit for its existence and expansion. As we know very well that so many business organizations, howsoever may be the big, have become bankrupt because of their inability to earn profits in recent recession of 2008. In this unit, we would try to know the concept of profit, its various types and important theories of profit.

18.2 Concept and Characteristics of Profit

Different economists have defined profit in their own way. **Francis L. Walker** has defined profit as the rent for the ability of an entrepreneur. **Taussig and Davenport** have defined profit as entrepreneur's wages, while **Clark** has defined it as a reward of market imperfections. **Prof. Hawley and Knight** calls it as a reward for risk taking and uncertainty bearing. On the contrary to it, **Karl Marx** and his disciples – **Veblen**, **Hobson** etc. – believe that profit is a result of exploitation of labour by the entrepreneurs, hence it is an 'uncertain income' and **'legal robbery'**.

According to **Taussig**, profit is a **mixed and vexed income**. On the one hand, it is a mixed income as it arises due to so many factors and on the other hand, it is a vexed income as there is no unanimity about the number and comparative importance of the factors responsible for generation of profit. Conceptually, profit is a **'functional income'** as a remuneration of managerial skills of an entrepreneur, but practically, due to innovations, risks and uncertainties and changes in dynamic economic world, profit is also a **'non functional income'**- the more the competition in market, the more will be the non-functional income and vice-versa.

Modern economists believe the profit is a result and reward of more than one factor or so many factors. **Henry Grason** has called the profit as a result and reward of individual or any combination of the following factors:

- Innovation,
- Risks and uncertainty bearing, and
- Imperfections in market structures

Characteristics of profit: On the basis of various definitions of profit as given above, we can derive the following characteristics of profit:

- Profit is a **reward of an entrepreneur** – one of the factors of production
- It is a **residual income** – the income which is left over after making the payment to all other factors of production.
- It is an **uncertain income** as there may be heavy fluctuations in it.
- It is a **non-contractual income** as it is not due to a result of any contract. Thus, it is different than the income of other factors of production, as their income is contractual.
- Being residual, uncertain and non-contractual income, profit can be **positive, zero and negative** depending upon the business conditions/circumstances.
- Profit has no relation with the marginal productivity of an entrepreneur.
- Profit is a **factor cost**.

Activity A:

1 Mention the important characteristics of profit in the space given below :

18.3 Classification /Types of Profit

Gross profit and net profit : Gross profit is also known as **total profit**. After deducting total explicit costs from total revenue, the residual amount is called gross profit. The **formula** for calculating total profit is as given below:

Gross Profit / Total profit = Total Revenue -Total explicit costs

Constituents of gross profit

- Net profit or economic profit
- Remuneration of entrepreneur's own resources or implicit costs,
- Environmental profit or windfall gain,
- Profit caused by monopolistic situation, and
- Some explicit costs such as depreciation and insurance charges

Net profit: It is the most important constituent of gross profit and also known as **economic profit** or **minimum supply price** of an entrepreneur. It is the reward for the services of an entrepreneur for risk taking, uncertainty bearing, innovation, co-ordination and making appropriate combination of factors of production. Net profit can be calculated from the following **formula**:

Net profit = Total Revenue - (Total explicit costs +Total implicit costs)

or

Net Profit = Gross profit – Total implicit costs

Activity B :

1 List out the constituents of gross profit in the space given below :

Accounting Profit and economic profit : Accounting profit is that profit which is calculated by accountants with the help of books of accounts and it is also known as **business profit**. It can be calculated by the following **formula**:

Accounting profit=Total Revenue–(Contractual payments + Book costs + Depreciation + Stock)

Economic profit is that profit which is calculated by economists with the help of economic costs (implicit costs). The **formula** for calculating economic profit is:

Economic profit =Total revenue – (Total explicit costs + Total implicit costs)

Or

Economic profit = Accounting profit - Total implicit costs

Here, the important point is that economic profit could be negative even if accounting profit is positive.

Normal profit and subnormal profit : The concept of normal profit was propounded by **Alfred Marshall**. Profit is a part of cost of production like the rent, wages and interest. In other words, it is the **cost of production**. Being the reward of services of an entrepreneur, it is the **wages of management**. It is also called as the **minimum supply price** of an entrepreneur in a particular business/industry. Normal profit is that level of minimum profit which is necessary to retain an entrepreneur in any business. If entrepreneur does not get this much of profit, then he will leave the present business and will go to some other business. Thus, normal profit is **transfer earning** or **opportunity cost** of an entrepreneur. According to **Mrs. Joan Robinson**, it is a that level of profit at which the entry and exit of firms/entrepreneurs stop. In another meaning, it is the profit of a **representative firm/ optimum firm**.

Normal profit is determined by the relative forces of demand and supply of entrepreneurs and at it total costs and total revenue are equal to each other. Generally, super normal profit is the surplus over normal profit, hence also known as **surplus profit**. But any amount of profit in short-run which is greater and less than normal profit is also termed as super normal profit. From this point of view, **subnormal profit (loss)** can also be termed as super normal profit. According to **Prof. Knight** super normal profit is the reward of unknown risks. It arises due to fluctuations in market price of a product as a result of changes in its demand.

As you have already studied in the chapter of price and output determination under **perfect competition** that a firm may get **supernormal profit in short-run**. In this situation, a firm will be in following situation:

$$P = AR = MR = MC > AC$$

Similarly, you have also studied this fact that a firm operating under **monopoly and monopolistic competition** may also earn **supernormal profit in short-run**. Under both market conditions, a firm may be in following situation:

$$MC = MR < AC < AR = P$$

The important point here to be noted is that under perfect competition, no firm gets super normal profit in long-run because of free entry and exit of firms into industry. But monopoly firm generally gets supernormal profit in long-run because of absence of competition. The firm operating under monopolistic competition, generally gets normal profit in long-run. Some time few firms may get super normal profit when entry of firm into industry is restricted.

18.4 Theories of Profit

Due to difference in opinion on the nature and causes of profit, various theories have been propounded by economists from time to time. These theories are:

- Rent theory of profit
- Wage theory of profit
- Socialistic theory of profit
- Marginal productivity theory of profit
- Dynamic theory of profit
- Innovation theory of profit
- Risk theory of profit
- Uncertainty bearing theory of profit
- Modern theory of profit

Although the first five theories of profit, as listed above, have some element of truth and logic in them, even than they are unable to furnish correct and comprehensive explanation of the nature and causes of profit. Hence a brief description of them will be given here.

1. Rent Theory of Profit

The credit for developing this theory goes mainly to American economist **Francis L. Walker**. According to him, **profit** is the **rent of the ability of entrepreneur**. The basis of this theory is grounded in the **Ricardian theory of rent**. According to **Ricardo** rent is a differential surplus-excess of the produce of super marginal land over the produce of marginal land. Similarly, profit is also a **differential surplus**- a surplus of total revenue of super marginal entrepreneurs over the total revenue of marginal entrepreneur.

This theory believes that profit is a result of the market price of a commodity, but not the cause of it. The market price is determined by the cost of marginal entrepreneur, hence, profit is not included in the price of the commodity. In nut-shell, net profit is a special reward like rent.

Criticism of the theory

The theory suffers from so many drawbacks. Out of them, few important are given below:

- Profit and rent can not be similar as profit can be negative, but not the rent.
- Profit is **not the reward of entrepreneur's ability alone** – It is affected by several other factors such as economic exploitation, unexpected opportunities, monopoly and monopolistic competitive market conditions etc.
- Does not throw light on the basic nature and reasons of profit and also unable to explain the high profits of joint stock companies.
- Profit can not be separated from the cost of production of a commodity and its price. In fact, profit influences the cost and price of the commodity contrary to the belief of this theory.
- Assumption of marginal entrepreneur is wrong as such entrepreneur is not found in real world.

The essence of this theory lies in this hard truth that **entrepreneur's ability** definitely **influences** the **nature and magnitude of profit**.

2. Wage Theory of Profit :

This theory was propounded by American economist **Prof. Taussig** and supported by **Davenport.** According to this theory, entrepreneur is a special kind of labour and his reward profit is a special form of wages. Taussig has called profit as **wage for entrepreneur's ability**.

Criticism of the theory

- Wages cannot be zero or negative, but profit can be.
- Theory does not make difference between a worker and an entrepreneur. The nature of work of both factors is altogether different. The main task of an entrepreneur is to take risk and bear uncertainty, while labor does not take any kind of risk.
- Fails to explain the profits of joint stock companies- Shareholders get the profit as a reward of capital investment rather than any special kind of labour.
- Profit and wage move in opposite direction. Profit, being a residual income, decreases with increase in wages and vice-versa.

The essence of the theory is that **an entrepreneur possesses special mental qualities and personality traits** than the labour, therefore, profit is a reward of such qualities.

3. Socialistic Theory of Profit :

This theory was propounded by **Karl Marx -** the founder of scientific socialism. According to him, profit is a kind of **legal robbery** and arises from exploitation of labour. It is a **surplus value** (difference between the value of output of a worker and wages given to him). The wages given to workers are always lower than the value of the work performed by them. This difference, which Marx termed as surplus value, is pick- pocketed by the employers.

Criticism of the theory

- Profit is not the reward only of exploitation of labour. It is also the reward of the ability of an entrepreneur to take risks and bear uncertainty, doing innovation and using different factors of production optimally.
- Role of entrepreneur in production is totally neglected by the theory. Value addition is not possible through the labour alone- like land and capital, entrepreneur also plays important role.
- The theory does not apply even in socialistic countries as government in these countries are also earning business profits. Basically, this theory is not a theory of profit and merely lays emphasis on distribution of profit.

The essence of this theory lies in this fact that **profits are maximized by exploiting the labour** and wages are always lower than marginal productivity of labor (W<MPL).

4. Marginal Productivity Theory of Profit :

The main exponents and supporters of this theory are **Prof. Edgeworth**, **Chapman, Stiglar** and **Stonier and Hague**. This theory is basically an **extension of marginal productivity theory of distribution in the field of profit**. According to this theory, the **ability of an entrepreneur is a factor of production** like labour and capital, therefore, **remuneration profit is determined by its marginal revenue productivity** (MRP) of entrepreneurs. If MRP is higher, profit will also be higher and vice-versa. The theory further explains that inverse relationship is found between the number of entrepreneurs

in an industry and their MRP. Hence, with increase in number of entrepreneurs, MRP decreases and also the level of profit in industry and vice versa. This is the precise reason of diminishing MRP curve to the right as shown in diagram given below. It is to be remembered here that the **demand for entrepreneurs depends on their MRP**

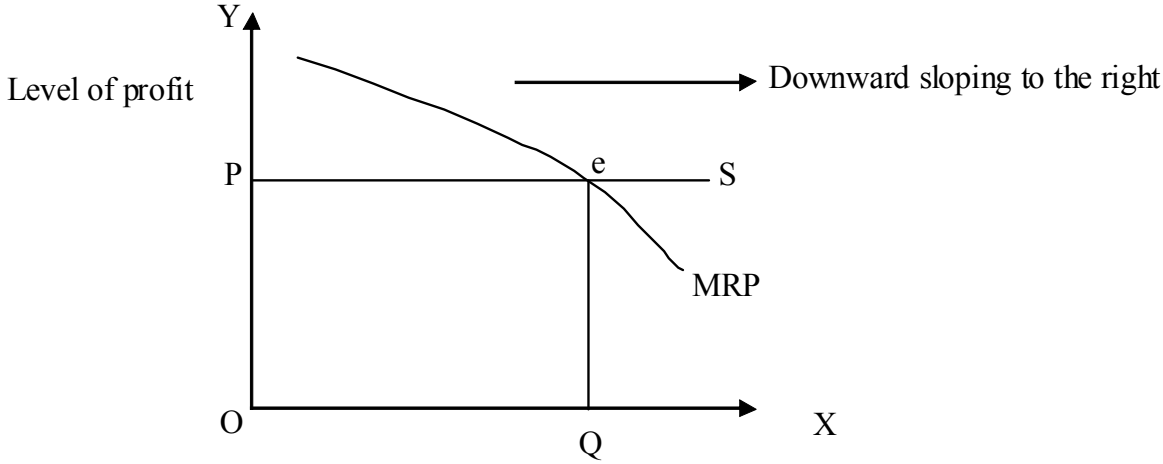


Diagram 1

According to this theory, at a minimum level of given profit, the supply of entrepreneurs is unlimited, therefore, **supply curve** of entrepreneurs **is parallel to ox-axis** as shown in the above diagram. **e** is equilibrium point in diagram, where the supply curve intersects the demand curve of entrepreneurs. Entrepreneurs get normal profit at this point of equilibrium.

Criticism of the theory

Following are the main criticism of the theory:

- Correct and accurate measurement of MRP is not possible and without which determination of profit is also not possible.
- Ability of all entrepreneurs is not the same, hence MRP curve cannot be the same for all entrepreneurs. Thus, the theory neglects the rent of ability of entrepreneurs.
- Net profit is a residual, uncertain and indeterminate income, therefore, it can not be equal to the MRP of entrepreneur.
- The theory is unable to explain the windfall and monopoly profits which have no relation with MRP of entrepreneurs.
- The theory is static in nature, while we are living in a dynamic world.
- The theory is lopsided in the sense that it lays too much emphasis on the demand for entrepreneurs and neglects their supply
- The theory is based on unrealistic assumption of perfect competition.

5. Dynamic Theory of Profit

This theory was propounded by American economist **J. B. Clark**. According to him, profit is a **difference between the price and cost of a product** and it is a **result of dynamic changes**. Profit is available only in dynamic and changing economy. In a static economy where there is a lack of changes, entrepreneurs do not get net profit. They simply get normal profit. According to Clark, economies are not static and perfectly competitive, but they are dynamic and imperfectly competitive, hence entrepreneurs definitely get profit. According to **Clark**, **following five factors** continuously influence the entire economy in a normal way and keep it dynamic:

- Changes in size of population;
- Changes in supply of capital;
- Changes in techniques of production;
- Changes in taste, habits, fashion and scale of preference of consumers; and
- Changes in organizational form of industrial units.

The changes in any of the above five factors is like the invention or innovation. Profit is a result of such changes. Owing to the changes in any of the above mentioned factors, entrepreneurs are unable to foresee and predict the future clearly. Therefore, they make necessary adjustments in their production process according to changed economic conditions and get profit. Those entrepreneurs who are able to change their production process as early as possible, they earn more profit accordingly in comparison to others. With increase in competition, net profit disappear. The attraction and incentive of profit, always keep the economy dynamic.

Criticism of the theory

The main critics of the theory are **Prof. Knight and Taussig**. They have criticized the theory on following grounds :

- All dynamic changes do not create profit- known changes do not create profit. Only unknown factors create profit.
- The theory neglects other determinants of profit such as risk taking and uncertainty bearing.
- This theory artificially differentiate Between profit and wages for management. As per this theory, normal profit in a static economy is wages for management, while profit in a dynamic economy is net profit. But this difference is not right.
- The theory undermines the role of entrepreneur by treating profit only a result of dynamic changes / factors.

In nut-shell, we can conclude by saying that **supernormal profit is available only in dynamic economies**.

6. Innovation Theory of Profit :

This theory was propounded by Prof**. J.A. Schumpeter** in his book '**The Theory of Economic Development**' published in 1912. According to this theory, **profit is a reward for innovation**. According to Schumpeter, innovation is possible only in a dynamic economy and it is the main function of an entrepreneur. Schumpeter was of the opinion that entrepreneur neither takes risk of production nor arranges financial resources for innovation. Both these functions are performed by shareholders, debenture holders and bankers. Entrepreneur gives only directions for the use of innovation and for that he gets unexpected and supernormal profit.

According to **Schumpeter**, innovation leads to dynamic changes. According to him, innovation does not mean only inventions. It is a **comprehensive concept** and it can be in many forms as given below:

- Any new and economic method of production;
- Use of new machine;
- Search of new sources of raw material/s;
- Improvement in the quality of output;
- Search of new market for sales;
- Changes in internal structure of firm due to its reorganization;
- Launching of new product/s; and

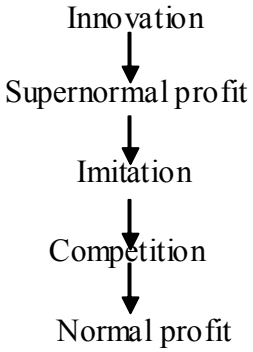
- Changes and improvement in methods of sales or in sales promotion measures.

According to **Schumpeter**, any innovation has following **these stages**:

- To plan for innovation;
- To arrange finance and other resources for innovation; and
- To implement innovation.

Due to any kind of innovation either cost of production declines or demand for the product and/or price increases. This results into supernormal profit to the entrepreneurs. According to Schumpeter, **so long innovation remains secret**, **entrepreneur gets supernormal profit,** but when it is disclosed to other entrepreneurs, they copy it and as a result of it competition intensifies. Thus, supernormal profit disappear. In the mean time, some other innovation takes place as a result of dynamic nature of economic world. Thus, in a dynamic economy profits caused by innovation always remain because in such economy a series of innovations always continue in sequential form.

Prof. Schumpeter viewed **innovation as a cause and result of profit**. The attraction of profit motivates entrepreneurs to do innovations, which in its own turn, leads to profit. When other competitors follow suit, supernormal profit disappear and all entrepreneurs get only normal profit. Thus, "**profits are caused by innovation and disappear by imitation" - Schumpeter**. This is explained with the help of **following schematic chart**:



(In the mean time, some innovation takes place and this process always continue in a dynamic economy)

Criticism of the theory

According to the critics, the theory suffers from so many drawbacks as given under:

- The theory lays too much emphasis on innovation. It is only one of the determinants of profit.
- Innovation is not a main function of entrepreneur. The main function of entrepreneur is risk taking and uncertainty bearing. The theory neglects this function of entrepreneur.
- All entrepreneurs don't do innovations, even than they get profit.
- Innovations is done by technocrats and specialists, but not by entrepreneurs.
- With the help of this theory, we can not determine the amount of profit, i.e, which innovation will cause how much profit?

The essence of this theory is that **innovation is responsible for profit generation.**

7. The Risk Theory of Profit :

This theory was propounded by American economist **F.B. Hawley** in 1907 in his work entitled "**Enterprise and the Productive Processes"**. According to Hawley, the main function of an entrepreneur is risk taking, therefore**, "profit is a reward for risk taking".** Prof. Hawley has used the term profit in the sense of supernormal profit/net profit which is in excess of normal profit and residual income.

According to **Hawley**, an entrepreneur faces following **four types of risks**:

- Risk of replacement and depreciation;
- Risk related to sale of produced product – it is the main risk;
- Risk arises due to uncertainties of economic and business world; and
- Oldness of tools, equipment and machinery.

According to **Hawley**, all entrepreneurs do not take same risk, hence there is difference in their profits depending upon their risk taking capacities, i.e., **higher the risk, higher is the possibility of profit.**

Criticism of the theory

- Profit is **not the reward only for risk taking**. It is created by uncertainty bearing, innovation, difference in ability of entrepreneurs, monopolistic market situation etc.
- **Profit is a reward for risk reduction** instead of risk taking as rightly said by **Prof. Carver**.
- All risks do not generate profit. According to **Prof. Knight**. only uncertain / incalculable risks create profit.
- There is no direct relation between risk and profit, otherwise all entrepreneurs could have earned positive profits. Many of them suffer losses in real business life.

8. Uncertainty Bearing Theory of Profit :

This theory was propounded by American economist **Prof. F.H. Knight** in 1921 in his book **'Risk, uncertainty and profit'.** According to him, **Profit is the reward for uncertainty bearing.** Only those risks which are uncertain in nature create profit. On this basis, he pointed out the difference between risk and uncertainty and said "**all uncertainties have risk, but all risks do not have uncertainty**." According to **Knight,** risks can be classified into following two categories:

1. **Insurable risks :** These are the risks which **can be estimated and calculated easily**. Their statistical measurement is possible, hence they are certain in nature and can be insured against. These are the known risks and arise on account of fire, theft, accident, death etc- against these insurable risks entrepreneurs do not get profit.

2. **Non-Insurable risks :** These are the risks which **cannot be predicted nor calculated statistically**. They are uncertain in nature, hence incalculable and non- insurable. For instance, the risk of changes in demand, supply & price of the commodity, purchasing power of consumers, fashion, price-level, sources of raw materials, technique of production, competition, population, govt. policies, economic fluctuations etc. These risks are unknown and entrepreneurs do not get insurance cover for them. Therefore, entrepreneurs get profit against bearing uncertainty. Without possibility of profit, entrepreneurs would not like to bear uncertainties. According to **Knight**, profit is a residual income and left over surplus after making contractual payments to other factors of production from the total revenue and this income can be positive as well as negative.

Criticism of the theory

- Profit is not the reward only of bearing uncertainties. Other factors are also responsible for generating profit such as organizing & co-ordination of factors of production and innovation.
- Uncertainty bearing is not a separate factor of production as assumed by Prof. Knight.
- Exact measurement of uncertainty is not possible, hence profit cannot be measured accurately.
- Theory fails to explain the nature and extent of monopoly/monopolistic profit.
- The theory does not apply on the profits of joint stock companies as management bears the uncertainty, while shareholders get profit because of divorce between ownership and management.
- The theory lacks originality as it is an extension of risk taking theory of Prof. Hawley.

Activity : C

1 Make out the difference between risk and uncertainty by giving suitable examples.

9. Modern Theory of Profit :

This theory is also known as the **demand and supply theory** of profit. This theory is merely **an extension of the general theory of factor pricing in the field of profit determination**. According to this theory**, profit is determined by the relative forces of demand and supply of entrepreneurs at their equilibrium point**-just like the remuneration of any factor is determined by the joint forces of demand and supply of it. This theory is different than the earlier theories of profit as **it is basically the theory of normal profit**, **while others are the theories of supernormal profit, net profit and unexpected profit**. Though, this theory also explains the supernormal profit under imperfect market conditions. The credit of propounding this theory goes to the collective efforts of modern economists.

Demand for entrepreneurs: The demand for entrepreneurs is made by the entire industry and depends on marginal revenue productivity (MRP). Generally, with increase in number of entrepreneurs, the MRP declines. Therefore, **MRP curve of entrepreneurs slopes downward from left to the right** signifying negative relationship between the number of entrepreneurs and the rate of profit. This is depicted in the **following diagram**:

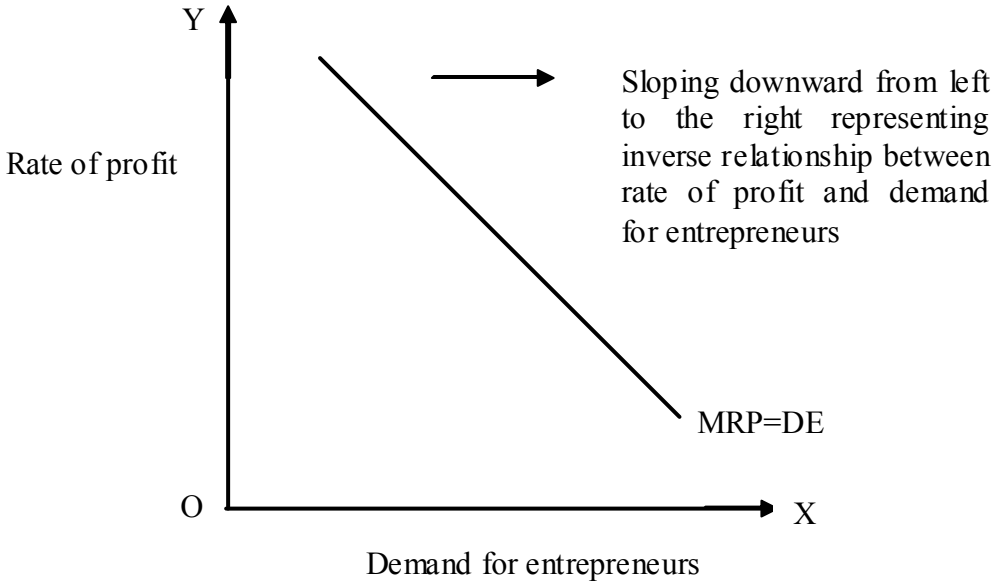


Diagram 2

Factors influencing the demand for entrepreneurs

- Economic and political structure of the economy;
- Level of industrial and economic growth;
- Organisation and scale of production;
- Level of scientific and technical progress;
- Industrial risks and uncertainties; and
- Marginal Revenue Productivity (MRP) of entrepreneurs.

The total demand of entrepreneurs in an economy represents that how many entrepreneurs would be demanded at a given rate of profit during the specific period of time.

Supply of entrepreneurs: Profit is the supply price of entrepreneur. Supply of entrepreneurs increases with increase in the rate of profit and vice-versa. Therefore, **supply curve of entrepreneurs slopes upward from left to the right** as depicted in the following diagram:

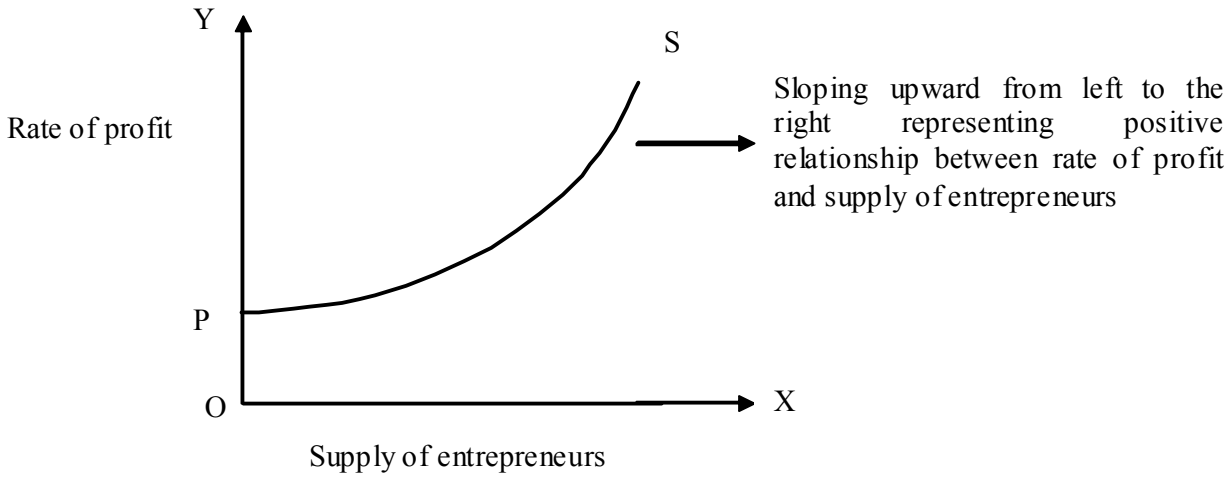


Diagram 3

Factors affecting the supply of entrepreneurs

- Availability of capital;
- Size and qualitative aspects of population;
- Proportion of entrepreneurs in total population;
- Industrial risks & uncertainties and inequality of opportunity;
- Government policies; and
- Possibility of higher profits

The total supply of entrepreneurs in an economy represents the number of entrepreneurs who are willing to offer their services at a given rate of profit

In the above diagram **OP** profit is the **minimum supply price** of entrepreneurs. If the rate of profit goes below this level, the supply of entrepreneurs will be zero. The supply of entrepreneurs increases with increase in the rate of profit and vice-versa.

Determination of profit under perfect competition : Under perfect competitive market conditions, **equilibrium rate of profit is determined at that point where the demand and supply curves of entrepreneurs intersect each other**. The rate of profit is **determined by the total demand and total supply of entrepreneurs in** an economy and thus determined rate of profit is given to all industries as depicted in the following diagrams :

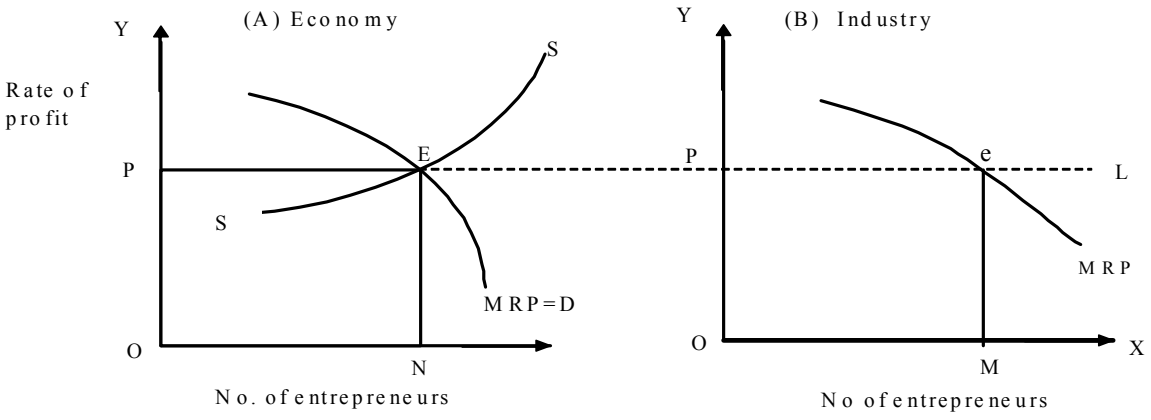


Diagram 4

In **long-run, entrepreneurs get only normal profit** under perfect competition because of free entry and exit of firms into the industry.

Determination of profit under imperfect competition : Under imperfect competitive market conditions **entrepreneurs in an industry may earn super normal profit**. The supply curve of entrepreneurs in an industry is upward sloping from left to the right (RS in the diagram given below) as compared to the perfect competition where supply curve for the industry is parallel to ox-axis (PL in the above diagram of industry). In the diagram, OR is minimum supply price (normal profit) of entrepreneur. If profit goes down below OR, no entrepreneur will be ready to work. In equilibrium situation, entrepreneur will get REP supernormal profit, which is in excess of real income over transfer earning of entrepreneur.

Supernormal profit = Real Earning – Transfer Earning

PER = OPEQ – OREQ

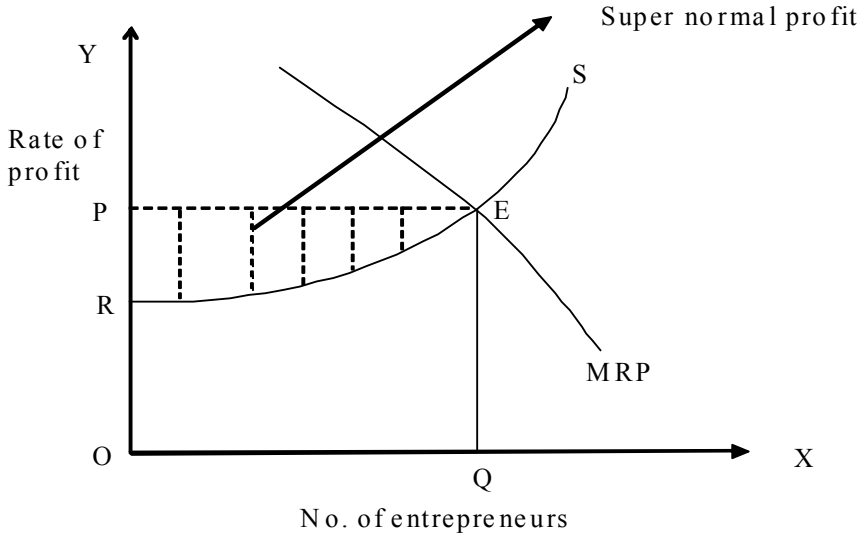


Diagram 5

18.5 Summary

Profit is a mixed and vexed income as it is a result of so many factors a reward of risk, uncertainty bearing, innovation, ability of entrepreneur, imperfections in market structure etc. Profit can be defined as functional and non-functional income and also as residual non-contractual income. Profit can be classified as gross profit and net profit, accounting profit and economic profit, supernormal profit and normal profit. Different entrepreneurs get different levels of profit depending upon their abilities, degree of competition, cost structures, business risks etc. Many theories have been propounded by different economists as per their perception about profit. Among them, the risk theory, uncertainty bearing theory, innovation theory and modern theory of profit are important.

18.6 Key Words

Profit	:	Profit is the excess of total revenue over total costs. It is the reward of the services of an entrepreneur for risk taking and uncertainty bearing.
Gross Profit	:	It is also known as total profit. It is the difference between total revenue and total explicit costs. It includes net profit,

		environmental profit, monopolistic profit, remuneration of owner's own resources etc….
Net Profit	:	It is also known as economic profit. It is the difference between total revenue and total explicit and implicit costs. It is the reward only for the services of entrepreneur.
Accounting Profit/Business Profit:		This profit is calculated by accountants with the help of books of accounts. After deducting contractual payments, book costs, depreciation & stock from total revenue, the residual left is known as accounting profit.
Economic Profit	:	Also known as net profit or reward for the services of an entrepreneur. By subtracting implicit costs from accounting profit, we can obtain the economic profit
Supernormal profit	:	Also known as surplus profit. It arises when total revenue of a firm is greater than total cost (TR > TC).
Normal Profit	:	Also known as minimum supply price of an entrepreneur. At this profit, the firm is in break-even situation (no profit no loss situation).
Insurable Risks:		Any risk which is known, calculable and certain in nature is known as insurable risks as these can be insured.
Non-Insurable Risks	:	Such risks are unknown, incalculable and uncertain in nature, hence cannot be insured.

18.7 Self Assessment Questions

1. "Profits are caused by innovation and disappear by imitation". Elucidate this statement.
2. Explain the modern theory of profit with the help of suitable diagrams.
3. Distinguish between risk theory and uncertainty bearing theory of profit. In your opinion which one is better and why ?

18.8 Reference books

- Agarwal M.D. & Som Deo: Business Economics, Ramesh Book Depot, Jaipur
- Misra & Puri: Business Economics, Himalaya Publishing House, Mumbai
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