



BCM (N)-302

BUSINESS ECONOMICS



**COMMERCE DEPARTMENT
SCHOOL OF MANAGEMENT STUDIES AND COMMERCE
UTTARAKHAND OPEN UNIVERSITY**

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UTTARAKHAND OPEN UNIVERSITY

**University Road, Teenpani By-pass, Behind Transport Nagar,
Haldwani-263139**

Toll Free No.: 18001804025

**Fax No.: (05946)-264232, e-mail: info@uou.ac.in,
som@uou.ac.in**

<http://www.uou.ac.in>

www.blogsomcuou.wordpress.com

Board of Studies

Professor Nageshwar Rao
Vice-Chancellor,
Uttarakhand Open University
Haldwani

Professor R.C Mishra (Convenor)
Director, School of Management
Studies and Commerce, Uttarakhand
Open University, Haldwani

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Haldwani

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Haldwani

Dr. Sumit Prasad
Department of Management Studies,
Uttarakhand Open University,
Haldwani

Programme Coordinator

*Prof. Gagan Singh, Department of Commerce, Uttarakhand Open University,
Haldwani*

Units Written By

No.	Unit
Prof. S.P Singh , Faculty of Management Studies, Gurukul Kangri University, Haridwar.	1-5
Prof. Gagan Singh , Department of Commerce, Uttarakhand Open University, Haldwani.	6-9
Prof. G. C. Pandey (Retired) , Department of Commerce, Kumaun University, Nainital.	10
Dr. Anjini Malviya , Allahabad.	11-14
Dr. Ira Deep Kaur , Department of Economics, S.C.D. College, Ludhiana.	15-18

Editing

Prof. Gagan Singh
Department of Commerce,
Uttarakhand Open University, Haldwani

Dr. Geetanjali Bhatt Sharma
Department of Commerce,
Uttarakhand Open University, Haldwani

Translation

Prof. R. C. Mishra , Uttarakhand Open University, Haldwani.	1-2
Dr. Dharmanath Oraon , Department of Economics, University of Allahabad, Allahabad.	3
Dr. Subodh Kumar , S.R.T. Campus, H.N.B. Garhwal University, Tehri Garhwal.	4
Dr. Shreesh Kumar Tiwari , Allahabad Degree College, Allahabad.	5-8

Dr. Om Shankar Gupta , G.D. Binani College, Mirzapur.	9-10
Dr. Payal Sharma , Alpine Institute of Technology, Ujjain, Madhya Pradesh.	11-14
Dr. Sonia Rajput , SATI Institute, Vidisha, Madhya Pradesh.	15-18

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BCM(N)-302 BUSINESS ECONOMICS

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UNIT 1-MEANING, NATURE AND SUBJECT MATTER OF ECONOMICS

Unit structure

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OBJECTIVES

After studying this unit, you will be able to:

- Explain the definition proposed by Marshall.
- Explain the wealth-related definition of Economics.
- Describe the nature, scope, and utility of Economics.
- Define Economics as an art and as a science.
- Describe positive and normative Economics.

1.1 INTRODUCTION

Economists are far from unanimous about the definition of their subject. Here are some definitions of economics from contemporary principles of economics Krugman and Wells defined, 'Economics is the study of economies, at both the level of individuals and of society as a whole.

Colander defined, 'Economics is the study of how human beings coordinate their wants and desires, given the decision-making mechanisms, social customs, and political realities of the society to Mankiw Economics is the study of how society manages its scarce resources for Bade and Parkin, 'Economics is the social science that studies the choices that individuals, businesses, governments, and entire societies make as they cope with scarcity' Gwartney, Stroup, Sobel, and MacPherson defined, 'Economics as the study of human behavior, with a particular focus on human decision-making.

Thus, economics is apparently the study of the economy, the study of the coordination process, the study of the effects of scarcity, the science of choice, and the study of human behavior.

One possible conclusion to draw from this lack of agreement is that the definition of economics does not really matter. All, these definitions are quite similar in many ways. However, the subject of economics is too broad to be usefully summed up in a short definition. Richard Lipsey, for example, refused to define the subject in his widely used textbook, *An Introduction to Positive Economics* (1963), but instead gave a series of examples of economic problems, thereby suggesting a broader discipline than could be encompassed in any singular definition. Jacob Viner reflected this spirit in his oft-quoted statement: "Economics is what economists do."

Economics is potentially very broad; indeed, it has become increasingly broad over the past 200 years. Attempts to pin down the subject in a few words are thus almost certainly doomed to failure. Viner suggests that actions are more important than definitions. However, we also believe that definitions of economics *are* important. Definitions of economics have often

helped to convey what economists see as legitimate problems for economic analysis, as well as the methods of analysis, approach, and techniques they consider appropriate for doing economics. As these have evolved over time, it is not surprising that the definition of economics has also changed.

1.2 DEFINITIONS OF ECONOMICS

One of the most controversial topics in economics is the definition of economics. At present, there are number of definitions of economics. A critical analysis of these definitions will make it evident that the growth of economics as a science has been most irregular and haphazard. For the purposes of simplicity, the various definitions of economics have been studied under the following categories.

1. 'Wealth' Definitions
2. 'Welfare' Definitions
3. 'Scarcity' Definitions, and
4. 'Growth' Definitions

1.2.1 WEALTH DEFINITIONS

For the classical economists, political economy was about national wealth and economic growth. The Greek writer Xenophon had invented the term "economics" 222 *Journal of Economic Perspectives* in the fourth century BCE. He referred to the art of household management, a meaning of the word "economy" that is still active today. Adding the word "political" reflected a sense that this problem could be extended to the level of nations.

Smith argued that the wealth of a nation did not lie in gold and silver but determined by the goods and services-whether produced at home or abroad-available to the people for consumption and accumulation. Further, Smith discussed that a free exchange market economy would harness self-interest as a creative force. Since one moves ahead in a market economy by helping others in exchange for income, people seeking their own gain will provide valuable goods and services to others. If legal restrictions that retard productive activity and exchange were removed, the invisible hand of the market prices would direct individuals and resources into areas where their productivity was the maximum. Coordination, order and efficiency would result, despite the absence of a central authority that planned and directed the economy. Smith believed that this process provided the key to production and the wealth of nations.

Adam Smith directed his enquiries into the factors determining the growth, prosperity and wealth of a nation. He was mainly interest in analyzing those factors that determine the wealth of a nation, i.e. growth of the volume of production. According to Smith, the wealth of a nation largely depends on the production of labor and the proportion of productive labor in

the total labor force. The wealth and riches of a country cannot increase without any appropriate and effective utilization of its human and material resources. Smith emphasized the creation and expansion of society's wealth as the subject matter of economics.

Adam Smith defined economics as 'an enquiry into the nature and causes of wealth'. J.B.Say, the follower of Adam Smith, regarded economics as 'the practical science of the production and distribution of wealth'. The American economist F.A. Walker says that 'Economics is that body of knowledge which relates to wealth'. The classical economists looked upon economics as the study of the laws that govern wealth.

The definition of 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 riches were looked down with contempt. Since Economics was defined in terms of wealth, it did not find favors among people. It was contented 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. Economics as a science of wealth was dubbed as sordid and mean science. The following are the main criticism of wealth definitions.

1.2.2 CRITICISM OF WEALTH DEFINITION

1. In the second half of the seventh century and in the eighteen century, men of letters like Carlyle and Ruskin called economics 'a dismal science' or 'the gospel of Mammon'. They alleged that economists were hankering after the formulation of laws which sought 'to enrich both the people and the sovereign', with complete disregard to the higher values of life. Since the focus was on acquisition of material things of life, economics had elevated wealth to such a level that it had become an 'object of scientific study.
2. Classical economists, by restricting the definition of wealth to material wealth narrowed the scope of Economics. By concentrating only on material wealth, Adam Smith and other classical economists neglected the immaterial wealth. Robbins pointed out that things, which are scarce in relation to their demand and thus involve the problem of choice should be studied in Economics irrespective of the fact, whether they are material or immaterial. In fact, services of teachers, doctors, chartered accountants, singers, etc., satisfy the important wants of the people and are scarce and therefore should form subject matter of Economics. By ignoring this immaterial wealth, classical economists unnecessarily restricted the scope of Economics.
3. Since classical economists kept immaterial things such as education, health, good administration, etc., outside the scope of Economics, they failed to realize their importance for economic growth and for the

expansion of material wealth. In fact, the services, i.e. education health, etc., enhance the productivity of man and promote economic growth of the nation. Therefore, study of Economics without the study of immaterial wealth is incomplete.

4. The wealth definition of Economics ignores the human welfare while laying too much emphasis on wealth. Human and social welfare do not find any place in it. In fact, wealth is only a means to an end; the end is the welfare of man and society. Adam Smith and Ricardo placed undue stress on the means but ignored the end i.e. social welfare. This makes their definition incomplete and inadequate.

1.2.3 WELFARE DEFINITIONS OF ECONOMICS

Over a long time, the view that Economics is concerned with those human activities that center round wealth not for its own sake, but for the sake of material welfare that it promotes, dominated the horizon.

Beveridge defined economics as ‘the study of the general methods by which men cooperate to meet their material needs’

In the words of Cannan ‘The aim of Political Economy is the explanation of the general causes on which the material welfare of human beings depends’ Pigou is another prominent author to define economics in welfare terms. According to 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’ Marshall defined economics as, Political Economy, or 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’

You may notice that one common thread seem to run through the definitions given above, viz., that of material welfare. Beveridge speaks of meeting ‘material needs’, Cannan of ‘causes of material welfare’ and Marshall of ‘material requisites of well-being’. Thus, according to these economists, the aim of Economists is to study human activities, which are conducive to human welfare in its material aspect. Wealth furnishes man with material means of satisfying his wants and of promoting his welfare.

1.2.3.1 FEATURES OF MARSHALL’S DEFINITION

The welfare definitions of economics emphasized main four points:

1.2.3.2 CRITICISM OF WELFARE DEFINITIONS

The 'welfare' definitions of Marshall and Pigou have in recent years been criticized on several grounds. The main critic of the 'material welfare' definitions is Prof. Lionel Robbins.

1. Material welfare

Robbins does not think it right for the economists to confine their attention to the study of material welfare, because in the actual study of economic principles, both the 'material' and 'immaterial' are taken into account.

2. Economics is only a social science

Marshall assumes economics as a social science rather than a human science. A social science studies the activities of those individuals who are the members of the society; while a human science studies all human beings, whether they live in an organized community or live outside the society. Although, Marshall used the word 'individual and social action' but by relating their activities to the measuring rod of money, he narrowed the subject matter of economics to the study of person living in the society using some type of currency. Broadly speaking, the fundamental laws of economics apply to all human beings, and therefore, economics should be treated as a human science and not as a social science.

3. Marshall's definition is classificatory

Marshall's definition is found to be classificatory. It divides various activities of human beings into economic and non-economic, material and non-material. Prof. Robbins pointed out that in actual life, the distinction between the material and the non-material things is not so clear as is assumed by Marshall. There are several things in our daily life, which satisfy our basic needs, but they are not material in any sense of the term. According to Prof. Robbins, an economic problem will arise whenever scarce means are involved in the satisfaction of certain wants. Such a problem will arise even in the case of a person who lives outside the society and may not perform any economic activity in the sense of Marshall. Therefore, economics should study the economic problem whenever and wherever it is found.

4. Impossibility of quantitative measurement

Further it is pointed that welfare cannot be quantitatively measured. Even if money price used as an instrument for the measurement of welfare, but it is only a rough and not a satisfactory measure of welfare.

When two persons pay the same price for a commodity, they get different amount of utility of welfare. The welfare of a relatively poor person will be more than the other.

5. 'Welfare' is ambiguous

Robbins pointed out that the term 'welfare' is ambiguous. It cannot be precisely defined. In fact, it is a subjective concept. Its meaning differs from country to country and period to period. Moreover, it varies from person to person. For example, consumption of liquor may raise one's welfare and reduce that of another. Thus, according to Robbins, it is difficult, if not impossible, to state, in objective terms what (commodity or service) would raise welfare and which would be injurious to it. Moreover, according to Robbins, there are certain commodities (goods) and activities, which are injurious to social welfare. Still they are studied in economics. For example, liquor, certain drugs do more harm than good. They reduce social welfare instead of promoting it. In microeconomics we study how the prices of these items are determined. Such goods are studied for two reasons: they are scarce and they are useful to some people. In fact, according to Robbins, economics is concerned with human welfare. Instead, it is concerned with the most important problem of every economic society, viz., the problem of scarcity. In his view, economics studies the problems that arise due to the scarcity of resources. Most of the desirable goods and services are scarce.

1.2.4 THE ROBBINS DEFINITION: SCARCITY

Perhaps the most common currently accepted definition of economics stems from Lionel Robbins's *Essay on the Nature and Significance of Economic Science* (1932 [1935]), where Robbins defined economics as "the science which studies human behavior as a relationship between ends and scarce means which have alternative uses."

Fetter (1915) and Fairchild, Furniss, and Buck (1926)—the latter of whom identified "the insatiability of man and the niggardliness of nature" as the foundation of economics—came close to the definition offered by Robbins.

The following facts arise from the definition of Prof. Robbins:

1.2.4.1 FEATURES OF ROBBINS' DEFINITION

1. Economics is a science

According to Robbins, Economics is not a mere social science it is a human science. It focuses on man when he is faced with the problem of allocating scarce resources to satisfy his unlimited wants. Robbins asserts that

Economics is a positive science, i.e., it explains the cause-and-effect relationship between economic variables. It explains the things as they are and not what they ought to be. For example, in positive macroeconomics we are basically concerned with how the level of national income is determined and distributed. In positive science, we are not bothered whether that distribution is even or not or what should be the distribution of income.

2. 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. It is, however, to be noted that wants are not of equal intensity. Some wants are more intense than others are. Actually, it is because of different intensities of wants that we are able to make a choice amongst them.

3. 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 in relation to wants. If the resources were abundant and 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.

4. Alternative uses of means

According to Robbins, the resources are capable of alternative uses. The society has to decide for which purposes a resource is to be used. Since the resources are capable of alternative uses, we have to make a choice among these uses and decide about the best allocation of these resources.

Thus, we find that Robbins made Economics a scientific study. He has thus made Economics as a science of choice. Moreover, he has broadened the scope /of Economics by including virtually everything that satisfies human wants.

But Robbins definition is also not free from faults. The following are the various criticisms of his definition:

1.2.4.2 CRITICISM OF ROBBINS' DEFINITION

- ❖ Robbins definition of economics was criticized both for being too broad and for being too narrow. It was considered too broad in that it failed to divide economics sufficiently from other social sciences. But it was also said to be overly narrow in that it was too heavily tilted toward theory

and left little, if any, room for empirical analysis, history, and institutions—and it essentially wrote ethics out of economics.

- ❖ Robbins has made Economics neutral between ends. It has been argued by many economists that if Economics has to play a positive role in promoting social welfare and economic growth, it will have to leave its neutrality between ends. It will serve as an engine of social betterment only when it helps in deciding what is good and what is bad for achieving various objectives. Robbins by declaring Economics as neutral between ends has robbed Economics of its normative aspects.
- ❖ Robbins has kept macroeconomics outside the scope of Economics. He basically concentrates on microeconomics, i.e., on the theory of product and factor pricing. But now a days, the importance of macro economics has increased in which we study how national income is determined, how it is distributed, why economies have periods of boom and depression, why there is instability in the levels of output, income and employment, etc., Robbins totally ignored these aspects. His definition is, therefore, not comprehensive.
- ❖ Robbins definition does not cover the theory of economic growth and development also. Robbins explained the allocation of given resources, but he did not explain how to minimize the scarcity of resources. In the theory of economic growth and development, we study how the scarcity of resources can be minimized through raising the level of national income and accumulating more wealth. Robbins' definition is income as it ignores an important topic like economic growth.
- ❖ Robbins has totally ignored the problem of unemployment. Underemployment is not a problem of scarcity but of abundance. Economist must study the causes of unemployment and to suggest ways of reducing it.

1.2.5 GROWTH DEFINITIONS

A number of modern economists have given the growth definitions of economics.

This definition is very similar to that of Robbins' definition. It has modified the static view of 'scarcity' definition. According to Prof. Boulding, there are three types of human activity which may be described as 'economic', viz. production, consumption and exchange. Study of these activities involves enquiry into certain 'quantities,' e.g. output of goods, the amount of accumulated stocks, prices, wages, interest and rent. These things are called 'economic quantities'. Economics is a scientific study of economic quantities. The collection of figures relating to economic quantities is the task of economic statistics and economic history and their interpretation is the task of economic analysis.

According to Prof. Samuelson, 'Logically there is nothing fundamental about the traditional boundaries of economic science. In fact, a system may be as broad and as narrow as we please depending upon the purpose at hand; and the data of one system may be the variables of a wider system, depending upon expediency. The fruitfulness of any theory will hinge upon the degree to which factors relevant to the particular investigation at hand are brought into sharp focus'. Further, he puts economics as "the study of how man 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 among various people and group of society'.

The most important implication of his 'growth oriented' definition is that it is not only dynamic in its scope but it is applicable even in a barter economy where money measurement is absent. The problem of choice may take place in a barter economy as well as in a money economy. The inclusion of time element makes the scope of economics dynamic. Human wants are not fixed or static. They change over time. Therefore, Samuelson's definition presents the choice problem in its dynamic setting. This definition also possesses universality in its applicability. Hence, it is an improvement over and above the 'scarcity' definition of Prof. Robbins.

1.3 THE NATURE OF ECONOMICS

In order to understand the nature and scope of Economics, we may consider

- (a) The subject matter of Economics
- (b) Whether Economics is a science or an art
- (c) Whether Economics is a positive science or normative science.
- (d) Whether Economics is a social science, and
- (e) Whether Economics can solve practical problem

1.3.1 THE SUBJECT MATTER OF ECONOMICS

Economists have expressed different opinions regarding the subject- matter of economics. With the change and development of social conditions, the subject- matter of economics has also changed. The early definition of economics focused on wealth as the main subject matter of economics. Adam Smith and other classical economists considered economics as a science of wealth. The neo-classical economists led by Prof. Alfred Marshall added 'welfare' in the subject matter of economics. Thus, economics was considered as the science of both wealth and welfare. Marshall confined the subject of economics to the consumption, production, exchange and distribution of wealth by men engaged in the ordinary business of life. Men who is rational and act under the existing social, legal and institutional set-up. It excludes the behavior and activities of socially

undesirable people like drunkards, misers, etc.

According to Robbins and other modern economists, economics studies man and its behavior. It includes 'economic matters including production and productivity, unemployment, the location of industry, the size of firms, monopolies, wages, profits, rent, interest, taxation, exports, imports etc. He cites numerous examples to show that certain human activities possess a definite economic significance but have little or no connection with material welfare. The same commodity or service may promote material welfare at one time and less than one set of circumstances and not at another time under different circumstances. Robbins, therefore, considers that for a commodity or service to have economic importance must be related to price; and for a commodity or service to command a price, it is not essential that it must definitely promote material welfare; rather it must be scarce and capable of being put to alternative uses. Thus, economics is not related so much with the analysis of the consumption, production, exchange and distribution of wealth as with a special aspect of human behavior; that of allocating scarce means among competing end. Thus, the subject matter of economics is mainly related with the economic problem of the household, firms, and the administrative bodies.

According to Boulding, there are three types of human activities which may be described as economic; (i) Production, (ii) Consumption, and (iii) Exchange.

Production is the process whereby man transforms the resources available to him into the products which people want, making them available where they are wanted. It, therefore, includes all the operations which are required to provide the suit in the tailor's shop, operations which began no doubt on an Australian sheep farm, etc. Consumption is the process of using up the products of man's labor; the wearing of clothes, the use of transportation, the use of a television set, the use of a house, etc. Exchange covers about 90 per cent of the activities subjected to economic analysis. Usually, goods are exchanged for money and this money is subsequently exchanged for other goods and services. Prof. Boulding states that exchange not only includes the money exchange of goods and services, but it also includes the determination of prices of factors of production as well as the price determination of commodities in the market. Since the exchange of factors of production and their price determination are separately studied, the study related to factors of production is known as distribution.

The purchase and sale of a commodity is recognized as an act of exchange. For instance, the acts of exchange are the renting of houses, the labor, and the lending of money. When a house is rented, the use of the house is exchanged for money payment. When money is borrowed, the use of 'present' money is exchanged for 'future' money. The amount repaid in the future is greater than the amount borrowed by a sum of money known as interest, which is the payment for the use of money during the period of the

loan. Similarly, when labor is hired, the person exchanges hours of labor for a money payment known as wages.

If we view the subject matter of economics on micro basis, the entire microeconomics is the analysis of the theories of price determination based on demand and supply of commodities. On the demand side we study the laws of consumer behaviour, while on supply side the laws of production are studied. The situation of market equilibrium is studied under exchange. Hence, economics is concerned with the production, consumption and exchange of goods and services. Hence, economics is concerned with the production, consumption and exchange of goods and services. However, it is not sufficient to study that these activities are carried on. We must also see the quantities involved in these activities. The economist is interested in the issues that determine the output of goods and services, the number of persons unemployed, the wages of workers, the tariff on imports and the price of steel, etc. All these are economic quantities.

The subject matter of economics also includes the organizations that control and direct a large part of economic activity of our country. Individuals perform the activities of production, consumption and exchange, but the individual usually carries out his economic activities as part of some organizations. It is within and through such institutions that the greater part of economic activity takes place. Further, Public Finance is that part of the subject matter of economics that is concerned with the income and expenditure of Public Authorities. There has been a great expansion of services the state provides required for the enforcement of regulations to ensure the protection to the community. The state now intervenes extremely in economic life in order to achieve specific social and economic ends.

Thus, economics is a social science concerned with the proper use and allocation of scarce resources for the achievement and maintenance of growth and stability.

1.3.2 ECONOMICS AS A SCIENCE

A science is a systematized body of knowledge regarding a subject. It is not a mere collection of facts but it indicates a relationship between cause and effect. It studies uniformities pervading a subject and tries to find out generalizations that are known as laws. In this sense, physics is a science because it studies certain uniformities regarding the external universe. Also psychology is a science that studies the uniformities of the mental world. In the same vein, economics can also be considered as a full-fledged science, because it studies the uniformities of human conduct in the ordinary business relations. It investigates the possibility of deducing generalizations as regards the behavior of human beings and their economic motives. Hence, economics is a science, because it tries to discover the universal out of the chaotic facts. According to Prof Marshall, 'The economist seeks to discover the many in the one, the one in the many'.

It is pointed out that the phenomena of science must be easily amenable to measurement. The claim of economics to be regarded as a science is based upon the fact that it deals with that part of man's actions, which can be measured by the measuring rod of money. Like the Physicist's balance, economics has an external measure for measuring human motives, and the units of money furnish the measure. Thus, of all social sciences, economics is the most exact, because none of the social sciences has got any external measure to make possible a definite quantitative measurement.

However, it is to be remembered that human motives cannot be accurately measured and the moving forces of economic action can only be measured roughly and imperfectly. Therefore, economics that is the most perfect of all social sciences is not exact as the physical science since it deals with very complex human- motives. Although man is a rational being having the capacity of reasoning logically about the consequences of particular action yet in the majority of cases human actions in response to a particular set of circumstances will follow a particular pattern. Therefore, it is possible to formulate economic laws. But there are always exceptional individuals who may behave in an irrational manner. The economist assumes that such persons form only a small proportion. But since they exist, we must accept that the laws of economics are true only in general. They are statements which are true in the majority of cases and not universally. The physical sciences have developed a large body of laws possessing universal validity, and capable of quantitative measurement. But economics cannot claim to have discovered such laws of universal validity, because of the nature of the subject matter of economics i.e. the behavior of mankind.

The existence of 'free will in human being obstructs economic laws from being a science. Economists cannot claim precision for their laws. S men have free will that can be no surety that men will behave similarly in similar circumstances, so that there might a homogeneous group of human action for our study of economic science. But even admitting that men have free will, it is possible to build up an economic science. Even if they do so, we are in a position to foretell the course of their activities by means of the mathematical laws of probability. But on the whole, men behave reasonably. Customers usually buy a thing where it is cheap. Producer will sell more if the price of the product increases. This way we can predict the future course of human activities, and frame general laws.

It is undoubtedly true that economic prophecies are often found to be false by subsequent events. The reason for this must be sought not in the unscientific nature of economic studies but in our ignorance of the causes at work. The laws of biology are not always borne out by subsequent events; but no one would, on that ground, deny that biology was not a science. The onset of a trade depression can often be predicted a much longer time in

advance than the coming of a cyclone. It means that sometimes-economic forecasts are more reliable than meteorological forecasts. Therefore, the task of the economist is the same as that of the natural science- to apply the processes of sustained and unbiased argument to the data of observation and to determine the general laws of all events. Hence, the claim of economics to be regarded as a science cannot be denied on the ground that it lacks precision and prophetic power.

1.3.3 ECONOMICS AS AN ART

The use of systematic knowledge is an 'art'. According to Prof. Keynes," An art is a system of rules for the settlement of a given end". In this sense economic is an art. The economist presents the ways based on his theoretical knowledge and experience that help in attaining the optimum situation. For example, the laws of equi-marginal utility tell a consumer how to maximize his total utility or satisfaction.

Further, in order to make the economic decision, three kinds of information are needed: (1) a knowledge of alternatives open to the decision maker; (2) a knowledge of the consequences of choosing each of the alternatives, and (3) a criterion or rule that tells the decision-maker which of the sets of consequences is the most valuable to him. For example, a producer attempts to decide how much of a commodity to produce. His range of alternatives then consists of each of the possible quantities his industry is capable of producing. The consequences of choosing each alternative can be summarized by means of two numbers for each; the cost of producing that amount and the revenue which can be obtained from selling it. Now the objective of the producer is to make his profits as high as possible. This is his criterion; therefore, he searches the alternatives for the one which provides the greatest difference between Total Revenue (TR) and Total cost (T). The economic law that marginal cost equal marginal revenue will provide this situation.

Therefore, economics is both a science and an art simultaneously.

1.3.4 POSITIVE AND NORMATIVE ECONOMICS

Economics asks and attempts to answer two kinds of questions, positive and normative. Positive economics attempts to understand behavior and the operation of economic systems without making judgments about whether the outcomes are good or bad. It strives to describe what exists and how it works. What determines the wage rate for unskilled workers? What would happen if we abolished the corporate income tax? The answers to such questions are the subject of positive economics.

In contrast, normative economics looks at the outcomes of economic behavior and asks whether they are good or bad and whether they can be made better. Normative economics involves judgments and prescriptions for

courses of action. Should the government subsidize or regulate the cost of higher education? Should medical benefits to the elderly under Medicare be available only to those with incomes below some threshold? Should India allow importers to sell foreign-produced goods that compete with India-produced products? Should we reduce or eliminate inheritance taxes? Normative economics is often called policy economics.

Of course, most normative questions involve positive questions. To know whether the government should take a particular action, we must know first if it can and second what the consequences are likely to be. For example, if we lower import fees, will there be more competition and lower prices. Some claim that positive, value-free economic analysis is impossible. They argue that analysts come to problems to analyze economists are influenced by political, ideological and moral views. Although this argument has some merit, it is nevertheless important to distinguish between analyses that attempt to be positive and those that are intentionally and explicitly normative. Economists who ask explicitly normative questions should be forced to specify their grounds for judging one outcome superior to another.

1.3.5 SCOPE OF ECONOMICS

The horizon of economics is gradually expanding. It is no more a branch of knowledge that deals only with the production and consumption. However, the basic thrust still remains on using the available resources efficiently while giving the maximum satisfaction or welfare to the people on a sustainable basis. Given this, we can list some of the major branches of economics as under:

1. Microeconomics: This is considered to be the basic economics. Microeconomics may be defined, as that branch of economic analysis that studies the economic behavior of the individual unit, may be a person, a particular household, or a particular firm. It is a study of one particular unit rather than all the units combined together. The microeconomics is also described as price and value theory, the theory of the household, the firm and the industry. Most production and welfare theories are of the microeconomic variety.

1. Macroeconomics:

Macroeconomics may be defined as that branch of economic analysis which studies behavior of not one particular unit, but of all the units combined together. Macroeconomics is a study in aggregates. Hence it is often called Aggregative Economics. It is, indeed, a realistic method of economic analysis, though it is complicated and involves the use of higher mathematics. In this method, we study how the equilibrium in the economy is reached consequent upon changes in the macro-variables and aggregates.

The publication of Keynes' General Theory, in 1936, gave a strong impetus to the growth and development of modern macroeconomics.

3. International economics: As the countries of the modern world are realizing the significance of trade with other countries, the role of international economics is getting more and more significant nowadays.

4. Public finance:

The great depression of the 1930s led to the realization of the role of government in stabilizing the economic growth besides other objectives like growth, redistribution of income, etc. Therefore, a full branch of economics known as Public Finance or the fiscal economics has emerged to analyze the role of government in the economy. Earlier the classical economists believed in the *laissez faire* economy ruling out role of the government in economic issues.

6. Development economics:

As after the second world -war many countries got freedom from the colonial rule, their economics required different treatment for growth and development. This branch developed as development economics.

7. Health economics:

A new realization has emerged from human development for economic growth. Therefore, branches like health economics are gaining momentum. Similarly, educational economics is also coming up.

8. Environmental economics:

Unchecked emphasis on economic growth without caring for natural resources and ecological balance, now, economic growth is facing a new challenge from the environmental side. Therefore, Environmental Economics has emerged as one of the major branches of economics that is considered significant for sustainable development.

9. Urban and rural economics:

Role of location is quite important for economic attainments. There is also much debate on urban-rural divide. Therefore, economists have realized that there should be specific focus on urban areas and rural areas. Therefore, there is expansion of branches like urban economics and rural economics. Similarly, regional economics is also being emphasized to meet the challenge of geographical inequalities.

There are many other branches of economics that form the scope of economics. There are welfare economics, monetary economics, energy economics, transport economics, demography, labor economics, agricultural economics, gender economics, economic planning, economics of infrastructure, etc.

Usefulness of Economics

Economics is an applied science. Its main value lies in the help it can give towards understanding of the forces at work in the economic life of society. Economics is useful for (a) knowledge sake and (b) for practical purposes.

(a) For knowledge sake

Some people study economics because its logical and scientific nature fascinates them. It is of little concern to them whether the subject-matter is relevant to the solution of any of the world's problems for them economics has its own justification, like listening to music. For them theory is everything. They get deeply involved into the subject i.e. how production takes place, how consumers react, how economics grow, etc. They are the masters of the discipline and at various points of times they also make great contributions to the theory.

(b) The practical usefulness for various economic functionaries is as follows:

(i) For businessmen

Economic tools help a businessman in his decision-making exercise. First of all, on the basis of demand forecasting, he can make a choice about the goods to be produced. Once this decision is taken, the decision regarding location, size, product-mix, factor-mix, pricing, marketing, etc. can be made with the help of various economic tools. The theories of production, cost and revenues help him in maximizing his profits and minimizing his costs. Various models such as allocation model, scheduling model, inventory model, etc., help in business. Besides, economic tools apprise him of the various external and internal forces acting on his business and help him making appropriate decisions and plans.

(ii) For planners

The knowledge of economics is of prime importance for planners also. Economic planning as a technique of economic growth has been adopted by many economies and for this, understanding of economic problems and techniques available to attack these problems is very essential. The knowledge of economics is essential at every stage- laying of objectives, analysis of human, physical and financial resources, making administrative

arrangements for implementation of programs and lastly for review and evaluation of the progress.

(iii) For administrators

The role of state in economic matters is increasing regularly. It is therefore, necessary that the administrator should be aware of the economic problems and various economic tools for reducing these problems. Or example, if economy is in the grip of inflation, the administrator should know how to use monetary measures (e.g., increasing cash reserve ratio, increasing bank rate etc.) and fiscal measures (e.g. reducing government expenditure) to control it. Similarly, through credit policy, fiscal policy, industrial licensing policy, EXIM policy, etc. the government can direct economic forces into desired channels of growth and development.

(iv) For social workers

Economic and social conditions are intimately connected. Social backwardness and economic backwardness often go hand in hand. A study of economics helps a social worker in understanding causes for backwardness of society and helps him to suggest ways for reducing it. The kind of questions that could interest social groups are: should the government spend more on defense; how best is monopoly regulated, should health services be provided free of charge, what pattern of public spending will government generate most jobs, should the rate of unemployment be reduced or should it be the rate of inflation; how should decisions regarding the rate of depletion of resources be taken; which type of location policy will help in developing backward areas, etc.

(v) Housewives

Economics is highly useful for a housewife. He is the person who holds the purse strings and she is the main decision-maker of the family. She can maximize family well- being by allocating family income on various family needs. A study of consumer's equilibrium can help her in her purchasing decisions. She can benefit from the study of market behavior of specific goods, e.g., the prices of agricultural goods, especially food-grains, are lower at the time of harvesting than in the rest of the year. She can thus, buy food-grains at the time when are harvested. She can study the movement of various economic indicators and make appropriate financial decisions.

Thus, we find that economics touches almost every aspect of life and a study of economics is essential to understand the economy, its functioning, its components and the behavior of people as individuals and as aggregates. It provides an insight into various economic problems faced by a country and often provide solutions to solve this problem. At micro level, it deals with problems and questions that affect almost all kinds of adequate knowledge

of science of Economics is a pre-requisite for understanding the economy and its various aspects.

1.4 SUMMARY

Economics is the study of the economy in its broadest sense. It includes the study of the process of production in an economy, the effects of inflation, decision-making, and human behaviour. Adam Smith, the founder of economics, described economics as the study of wealth. Earlier economists studied economics only in relation to material wealth, whereas modern economists consider economics as a subject concerned with human welfare. In modern times, economics studies the use of limited resources to satisfy unlimited human wants. The study of human behaviour during the process of decision-making is the subject matter of economics. Economics is regarded as both an art and a science because it is essential for both. Economics is considered a normative science in principle and a positive science in practice. Since economics is concerned with human behaviour, it is regarded as a social science. However, economics does not make value judgments about what is good or bad; rather, it studies what actually exists. Nevertheless, it is true that normative questions are also studied in economics.

The field of economics includes microeconomics, macroeconomics, international economics, public finance, development economics, health economics, environmental economics, regional economics, and rural and urban economics.

1.5 GLOSSARY

- **Alternative uses:** the resources are capable of alternative uses
- **Ordinary business of life** relates to how a person earns his income and how he spends it:
- **Positive economics** attempts to understand behavior and the operation of economic systems without making judgments about whether the outcomes are good or bad.
- **Normative economics** involves judgments and prescriptions for courses of action.

1.6 CHECK YOUR PROGRESS

(a) The definition of economic welfare in economics was given by _____.

(b) _____ defines economics in this way:

"A science which studies human behavior as a relationship between ends and scarce means which have alternative uses."

(c) _____ can be defined as that branch of economic analysis which does not study the behavior of a single particular unit, but studies all units

together.

(d) _____ economics attempts to understand the behavior and functioning of the economic system without making any judgment about whether the results are good or bad.

1.7 ANSWERS TO CHECK YOUR PROGRESS

(a) Alfred Marshall (b) Robbins (c) Macro Economics (d) Positive Economics

1.8 TERMINAL QUESTIONS

1. How different economists have defined economics over a period of time?
2. Discuss the methodology of economics.
3. Throw light on goals and scope of economics.
4. What is the usefulness of economics to different people?

1.9 SUGGESTED READINGS

1. Sampat Mukherjee, Principles of Macroeconomics, (2009), New Central Book Agency, New Delhi.
2. Deepashree & Vanita Agarwal, 'Macroeconomics', Ane Book Pvt Ltd. New Delhi.
3. Hajela, T.N., (2009), Macroeconomic theory', 10th Edition, Ane Book Pvt. Ltd. New Delhi.
4. Errol D'Souza, 'Macroeconomics', (2008), Pearson Education, New Delhi.
5. Prem J. Bhutani, 'Principles of Economics', Second Edition, Taxmann Publications, New Delhi.
6. John Sloman, 'Economics' (2000), Third Edition, PHI, New Delhi

UNIT 2: BASIC PROBLEMS OF THE ECONOMY

Unit structure

- 2.1 Introduction**
- 2.2 Infrastructure**
- 2.3 Transport System**
 - 2.3.1 Railways**
 - 2.3.2 Road Network**
 - 2.3.3 Air Transport**
 - 2.3.4 Power Sector**
 - 2.3.5 Growth in Core Sector and Infrastructure Services**
- 2.4 Unemployment**
- 2.5 Literacy level**
- 2.6 Poverty in India**
- 2.7 Regional Disparities**
- 2.8 Widening gap between the rich and poor**
- 2.9 Balance of Payments Disequilibrium**
- 2.10 Inflation**
- 2.11 Summary**
- 2.12 Glossary**
- 2.13 Check Your Progress**
- 2.14 Answers to Check Your Progress**
- 2.15 Terminal Questions**
- 2.16 Suggested Books**

OBJECTIVES

After studying this unit, you should be able to be aware of:

- The problem of infrastructure.
- The problem of unemployment.
- The problem of illiteracy.

- The problem of increasing gap between the rich and poor.

2.1 INTRODUCTION

Every economy, irrespective of the stage of development it is at, faces certain basic economic problems, though, the nature and the intensity of the problems vary from stage to stage. The nature and the types of the problems faced by the countries which have reached developed stage category are entirely different from the problems faced by countries which are underdeveloped. Indian economy which is passing through the developing stage as of now, though it has come a long way on the path of development after gaining independence, is facing peculiar kind of problems. Over a period of more than 60 years of Independence, India has attained self-sufficiency in food production, has established strong industrial base and has more importantly emerged as an attractive investment centre for the foreign investors. Strong fundamental economic base has made it possible for the country to absorb the shocks of big economic crisis like sub-prime crisis of USA, European crisis and Greece turmoil. But at the same time India is not free from diseases. It is suffering from some severe basic economic problems like poorly planned cities, lack of infrastructure for supporting industrial development, large unskilled and illiterate work force, excessive dependence on foreign money, weak political will for improvement and development, rampant red tapism, poorly designed and implemented social welfare schemes, widening gap between the rich and poor are the main problems faced by the Indian economy. Some of the most critical problems our country is facing presently, are being discussed in the following paragraph.

2.2 INFRASTRUCTURE

The importance of infrastructure in a country is similar to that the foundation in the structure of a building. Stronger the foundation, stronger is the building and greater the chances of its further elevation. Infrastructure includes transportation, agriculture, water management, telecommunications, industrial and commercial development, power, petroleum and natural gas, housing and other segments such as mining, disaster management services and technology-related infrastructure. Though huge resources and efforts have gone into the development of infrastructure in our country during the past, and there has been substantial improvement in infrastructure base of the economy but because of lack of proper planning and poor implementation of infrastructure development schemes, progress of infrastructure in the country is far from satisfactory. The detailed explanation regarding status of various kinds of infrastructure and the associated problems is given below:

2.3 TRANSPORT SYSTEM

Transportation is one of the most important requirements of the economy. The salient features that mark the development of the transport sector in India may be summarized as follows:

1. India which happened to be a rail dominated economy in the 1950's has been transformed into a road dominated economy now. The road transport today accounts for over 60% of intercity freight traffic and over 80% of intercity passenger traffic, and
2. During the same period, Indian Railways shifted from being a freight dominant operation to a passenger dominant operation

The following paragraphs would provide you with a brief account of the modes of transport along with the problems attached to them.

2.3.1 Railways

Indian Railways is the main mode of transportation in the country and has the distinction of being the largest railway network in Asia and the second largest railway system in the world under single management. The Indian Railways system is fourth largest in the world in terms of route length, only U.S., Russia and China go ahead of India in this respect. Indian Railways with network coverage of 63273 kilometers operates more than 11,000 trains per day of which 7000 are passenger trains and serves 13 million people every day. The railways have played a critical role in catalyzing the pace of economic development and continue to be an integral part of the growth engine of the country. During the recent past rapid development has taken place in Indian railways like a large portion of the track which had outlived its life has been replaced with new electric tracks, steam and diesel engines have been replaced with electric engines, passenger amenities in the trains and platforms have been improved, Delhi metro is a shining feather in the cap of Indian railways system. Special emphasis has been given to the safety of passengers but railways still have a long way to cover to become at par with, best railways of the world. Serious Problems like old track, poor condition of rolling stock, travel without tickets, Railway Accidents, Attack on Railways in different parts of the country from naxalites, Lack of Modern Management, Outdated technology, Problem of Replacement, Problem of Laying Double Lines and overcrowding of trains etc. are amongst the few.

Problems in Railway Development

The basic problems in railway development can be discussed under the following heads:

- (i) **Inadequate Capacity network and infrastructure:** - During the period from 1950-51 to 2007-08 route kilometers has increased by just 18% and track kilometers by 11%, while freight and passenger output has gone up by more than 12 and 11 times respectively.
- (ii) **Declining Market Share:** - Indian railways is facing stiff competitive from road ways. According to the white paper of the railways the market share of rail transport has declined substantially from .89% in 1950-51 to a mere 30% in 2007-08, though it has maintained its dominance in the carriage of bulk commodities like core, iron bred fertilizers and cement or for bringing about improvement in this direction. The railways will have to adept a focused strategy to provide better services at a competitive tariff.
- (iii) **Cross Subsidization:** - In India, high freight rates cross subsidize the low passenger fares which are low that there are huge losses in passenger losses operation. The loss on coaching operations was as high as Rs. 13958 crore in 2008-09. To compensate this short working, the Indian railways raise its freight

rates resulting in high prices of transport goods. Creating inflationary pressure on the Indian economy.

- (iv) **The problem of funds and costs over run:** - The consistent pressure to undertake new projects mostly in the form of new lines requires huge funds, but most of these projects are delayed due to shortage and availability of funds. Moreover, the cost escalations due to price rise during execution of the project also proves to be financially unmanageable.
- (v) **Old Technology:** - Indian Railways has been suffering from a considerably old technology both in electric and diesel locomotives. The Indian Railways needs to build its own technology base rather than depending on borrowed one to suit the needs of the Indian economy.

The most pressing problems facing Indian Railways are renewing over 19,000 kilometers of high-density tracks, connecting all major ports and four metros, which, out of a total track of about 64,000 kilometers, carry 80 per cent of total traffic. Further, 11,250 bridges out of about 128,000 rail bridges are to be strengthened to sustain higher pay load and speed on its tracks. Recently for the upgradation of railways two committees have stated a requirement of investment of Rs. 6,60,000 crores over a period of next five years. Anil Kakodkar's committee on railway safety has recommended a package of Rs.1,00,000 crore to be invested in the next five years and Sam Pitroda panel on modernization of railways recommended a whopping sum of Rs.5,60,000 crore during the same period. Railways in India are the life line of the nation and backbone of the whole transportation system.

2.3.2 Road Network

After railways, the second important mode of transportation in India is the roadways. They carry almost 90 percent of the country's passenger traffic and 65 percent of its freight. The density of India's highway network is 0.66 km of highway per square kilometer of land which is almost equal to that of the United States (0.65). Density of India's highway network is much greater than 0.16 of China and 0.20 of Brazil. Although road network is the most preferred system of transportation in India, it lacks capacity to meet the requirement of society. Since 1990 there has been great improvement so far as the length and quality of road network in India is concerned. But it still suffers from a wide variety of problems like most national highways are either single lane or two lanes which is much less than the required capacity. Almost a quarter of all India's road highways have recurrent congestion, reducing speed of vehicle to 30-40 km/hour. Congestion on Indian roads and high traffic contributes to reduced fuel efficiency of the vehicle, damage to the vehicles and severe impact on the environment. According to Ministry of Road transport and Highways about 22 per cent of the total length of National Highways (NHs) is single lane/ intermediate lane, about 53 per cent is two lane standards, and the balance 25 per cent is four lane standard or more. Further most of the roads are of poor quality and the maintenance of roads remains significantly under-funded with the result that only one-third of maintenance needs are met. This leads to the deterioration of roads and high transport costs for users. In India, road transport accounts for 8th highest road fatality rate. So far as network of roads in rural areas is concerned almost 70 percent of India's population reside in rural areas. Although the rural road network is extensive, around 40 percent of India's villages remain cut off during monsoon season due to the lack of good access of all-weather roads. This problem is severe in certain parts of India especially in the northern and northeastern states which are poorly linked to the country's major economic centers. Further, whatever development of road networks is being done it is done on the basis of public private partnership models which allow the private partner to levy toll taxes. Huge amount of toll taxes is being collected by

the private agencies. Some agencies start collecting the tax much before the start of work and continue collecting taxes even when their whole investment along with profits stand recovered.

2.3.3 Air Transport

Besides railways and road transport, civil aviation also plays a significant role in economic development particularly in today's globalized world. A lot of efforts have been put by the government in upgrading the airways system in the country particularly since 1991 reforms. Upgradation of Indira Gandhi International airport at New Delhi, upgradation of Kolkata and Chennai airports, including construction of new terminals, is at an advanced stage of completion. In another 18 non-metro airports, various upgradation works like expansion of terminal buildings, aprons, taxiways, and aerobridges have been taken up. For improving air navigation services, the Airport Authority of India (AAI) installed the new ATS automation system at Chennai. The Government approved a one-time grant-in-aid of Rs. 378.0 crore to the AAI for the Final Operation Phase of GPS Aided GEO Augmented Navigation (GAGAN) project. At IGI Airport, Delhi, upgradation of the existing cargo terminal and construction of a Greenfield cargo terminal have been undertaken. At Mumbai Airport, apart from the airport development project under way, upgradation of runway 09/27 was completed. In order to meet the requirements of increasing traffic, work relating to expansion of the terminal building and apron was undertaken at Bangalore International airport. Government also gave 'in-principle' approval for setting up of a green field airport at Karaikal in Puducherry and Shirdi in Maharashtra. Air traffic in India continues to register significantly higher rates of growth averaging 18.5 per cent in the last seven years. Domestic passenger traffic handled at Indian airports reached 108.1 million during January-November 2011 from a level of 90.5 million in the corresponding period in the previous year registering a growth of 19.4 per cent. International passenger traffic and cargo handled at Indian airports grew by 7.7 per cent during January-November 2011 and was placed at 33.6 million passengers and 1.4 MMT of cargo. Domestic cargo throughput during January- November 2011 stood at 0.75 MMT, the same level as in the previous year.

Table: Transport Sector Key Statistics

	Units	As of 2009
Length of Roads	Km.	3,516,452
Main Roads	Km.	666,452
Paved Roads	%	47.3
Access to All-Season-Roads	%	61
Road Density	km/1,000 sq. km.	1115
Rail Track Length	Km.	63, 327
<i>No. of Ports</i>		<i>199</i>
Turnaround time	Days	3
Airports		125
International		11

2.3.4 Power Sector

Power is the backbone for the economic development of any country. The growth of agriculture, manufacturing and even the growth of service sector is dependent upon the growth and strength of power industry of any country. India has the fifth largest power generation capacity in the world with an installed capacity of 152 GW as on 30

September 2009, which is about 4 percent of global power generation. The top four countries of the world i.e. US, Japan, China and Russia together consume almost around half of the total power generated globally. The average per capita consumption of electricity in India was estimated to be 704 kilowatts per hour during 2008-09. However, this is fairly low when compared to that of some of the developed and emerging nations such as US 15,000 kilowatts per hour and China 1,800 kilowatts per hour whereas the world average stands at 2,300 kilowatts per hour. Further, in India, power failures are a daily feature, even the most developed areas of Delhi, Mumbai, Chennai and Bangalore are not free from this. Any respectable business or factory in India has to maintain a diesel generator to ensure regular supply during power cuts. The outages aren't just spikes, but rather hour-long blackouts with multi-hour blackouts thrown in. Beyond keeping industrial machines and computers running, air conditioning is essential to office work in this unmercifully hot country, and even service providers must bear the burden of backup power.

In a good hotel, visitors first check the availability of generator, but this necessity adds to the cost of building and operating a facility in India. Effectively, the government is passing the buck on infrastructure to the investor, and generator costs add up fast. Some Industrial Parks or Research Parks will provide continuous power through shared generators – for small companies this is a huge perk, as a generator will require maintenance and logistics that the park can provide. Of course the park is charging a premium for that, and for large factories this may not be as good a deal. How to operate with a generator and its logistics is a key factor in designing a factory or office in India, and finding on-site consultants is recommended.

The Indian government desired to achieve the target of availability of 1000 units of per capita electricity by year 2012, it has been estimated that need-based capacity addition of more than 100,000 MW would be required. This has resulted in massive addition plans being proposed in the sub-sectors of Generation Transmission and Distribution.

India's government has committed itself to improving the nation's power grid. Government targets tend towards "Electricity for all by 2012" (a part of many politicians' election campaigns) rather than "Reliable power by 2012" or "A well-managed grid by 2012." One thing sure to expand is the nation's use of electricity per capita, as the middle-class becomes wealthy enough to afford air conditioners and run them around the clock. It is estimated that between increased consumer demand and new industrial projects, over a hundred gigawatts of new power capacity are needed by 2012, of which almost 29 gigawatts are now under construction. Ultimately, the issue is not just total production but improved management, as currently both high-tech factories and residential areas suffer alike.

2.3.5 Growth in Core Industry and Infrastructure Services

Growth of Core industry and Infrastructure services industry in India has not been satisfactory till now. There are a number of problems which are acting as hurdle in the development of this sector e.g. Power industry is facing the problem of non-availability of coal, other core industries are suffering from non-availability of sufficient power etc. Table 2.2 shown further gives data about growth rate of core and infrastructure services sector industry over a period of five years.

Table 2.2: Growth in core industries and infrastructure services (in per cent)

Sl. No.	Sector	2007-08	2008-09	2009-10	2010-11	2011-12 (April-Dec.)
1.	Power	6.3	2.5	6.8	5.7	9.3
2.	Coal	6.0	8.2	8.0	0.0	-2.7
3.	Finished steel	6.8	13.2	3.2	9.6	5.7
4.	Fertilizers	-8.6	-2.6	13.2	1.0	-0.5
5.	Cement	7.8	7.6	10.1	4.3	5.1
6.	Petroleum					
	a) Crude oil	0.4	-1.8	0.5	11.9	1.9
	b) Refinery	6.5	3.0	-0.4	3.0	4.1
	c) Natural gas	2.1	1.4	44.8	9.9	-8.8
7.	Railway revenue earning freight traffic	9.0	4.9	6.6	3.8	4.7
8.	Cargo handled at major ports	12.0	2.2	5.7	1.6	0.4
9.	Civil aviation					
	a) Export cargo handled	7.5	3.4	10.4	13.4	-1.1
	b) Import cargo handled	19.7	-5.7	7.9	20.6	1.4
	c) Passengers handled at international terminals	11.9	3.8	5.7	11.5	7.2
	d) Passengers handled at domestic terminals	20.6	-12.1	14.5	16.1	17.5
10.	Telecommunications					
	Cell phone connections	38.3	80.9	47.3	18.0	-51.0
11.	Roads					
	Up gradation of highways*					
	i) NHAI	164.6	30.9	214	-33.3	8.9
	ii) NH(O) & BRDB	12.5	17.3	4.0	-6.8	-36.5

Source: Ministry of Statistics and Program Implementation (MOSPI).

* Includes Widening to four lanes & two lanes and strengthening of existing weak pavement only. # Provisional.

Notes: NH(O) stands for National Highways Organization and BRDB for the Border Roads Development Board (BRDB).

2.4 UNEMPLOYMENT

Unemployment means the people who are eligible and interested for employment but are without any job. According to Keynes unemployment in developed economies arise because of ineffective demand whereas in India, a developing country, unemployment arises entirely due to different reasons. In developing countries unemployment and inflation go side by side. Data in percentage form of the Indian youth who remained unemployed over a period of last 9 years are given below:

Year	Percentage of Unemployed Youth
2002	8.8
2003	9.5
2004	9.2
2005	8.9

2006	7.8
2007	7.2
2008	6.8
2009	10.7
2010	10.8

Source: CIA world fact book

The data given in the table are derived from the website of Central Intelligence Agency, US. These figures indicate that the problem of unemployment in India has always been critical with around 10% of the eligible youth remaining unemployed in the most parts of the years. In the years 2009 and 2010 problem of unemployment got further severe with unemployment percentage increasing 10% mark.

As per Labour Bureau Survey the total number of unemployed youth at the end of year 2010 was 40 million, the rate of unemployment amongst the males being 8% and in case of females 14.6%. Mahatma Gandhi National Rural Employment Guarantee Act has been enacted by the government which has a provision of providing 100 days of employment in a year to unemployed youth. This new act is contributing a lot in resolving the unemployment problem particularly in rural areas. Besides, it has also helped in checking migration of rural population to urban areas.

2.5 LITERACY LEVEL

One of the most significant parameters to measure the level of development of a society is the literacy rate. As per the definition given in census, a person of the age limit of seven years and above, who can both write and read with understanding in any of the language is considered as literate in India. Literacy level in India has been quite low and has been the main cause of unemployment in India.

Few years back government of India launched two schemes like Mid-day meal and Sarva Shiksha Abhiyan which are aimed at increasing literacy rate in the society. Besides the above stated two schemes, Government of India has taken several other measures to improve the literacy rate in villages and towns of India. State Governments have been directed to ensure and improve literacy rate in districts and villages where people are very poor.

As per the Population Census of India 2011, the Literacy rate of India has shown an improvement of almost 9 percent. It has gone up to 74.04% in 2011 from 65.38% in 2001, thus showing an increase of 9 percent in the last 10 years. It consists of male literacy rate 82.14% and female literacy rate of 65.46%. Kerala with 93.9% literacy rate is the top state in India. Lakshadweep and Mizoram are at second and third positions with 92.3% and 91.06% literacy rate respectively. Bihar with 63.08% literacy rate is the last in terms of literacy rate in India.

There has been a substantial improvement in literacy rate of India in last 10 years but there is still a long way to go. Following table shows the ranking of states in India on the basis of literacy rate:

Ranking of States in India by Literacy Rate				
Sl. No.	State	Literacy Rate (2011 Census)	Male Literacy Rate (2011 Census)	Female Literacy Rate (2011 Census)
1	Andaman & Nicobar Islands	86.3%	90.1%	81.8%
2	Andhra Pradesh	67.7%	75.6%	59.7%
3	Arunachal Pradesh	67.0%	73.7%	59.6%
4	Assam	73.2%	78.8%	67.3%
5	Bihar	63.8%	73.5%	53.3%
6	Chandigarh	86.4%	90.5%	81.4%
7	Chattisgarh	71.0%	81.5%	60.6%
8	Dadra & Nagar Haveli	77.7%	86.5%	65.9%
9	Daman & Diu	87.1%	91.5%	79.6%
10	Delhi	86.3%	91.0%	80.9%
11	Goa	87.4%	92.8%	81.8%
12	Gujarat	79.3%	87.2%	70.7%
13	Haryana	76.6%	85.4%	66.8%
14	Himachal Pradesh	83.8%	90.8%	76.6%
15	Jammu and Kashmir	68.7%	78.3%	58.0%
16	Jharkhand	67.6%	78.5%	56.2%
17	Karnataka	75.6%	82.8%	68.1%
18	Kerala	93.9%	96.0%	92.0%
19	Lakshadweep	92.3%	96.1%	88.2%
20	Madhya Pradesh	70.6%	80.5%	60.0%
21	Maharashtra	82.9%	89.8%	75.5%
22	Manipur	79.8%	86.5%	73.2%
23	Meghalaya	75.5%	77.2%	73.8%
24	Mizoram	91.6%	93.7%	89.4%
25	Nagaland	80.1%	83.3%	76.7%
26	Orissa	73.5%	82.4%	64.4%

27	Puducherry	86.5%	92.1%	81.2%
28	Punjab	76.7%	81.5%	71.3%
29	Rajasthan	67.1%	80.5%	52.7%
30	Sikkim	82.2%	87.3%	76.4%
31	Tamil Nadu	80.3%	86.8%	73.9%
32	Tripura	87.8%	92.2%	83.1%
33	Uttar Pradesh	69.7%	79.2%	59.3%
34	Uttarakhand	79.6%	88.3%	70.7%
35	West Bengal	77.1%	82.7%	71.2%
-	INDIA	74.04%	82.14%	65.46%

Source: Census of India, 2011

2.6 POVERTY IN INDIA

Poverty is a social phenomenon in which a part of the society does not get sufficient resources to fulfill even its basic needs. Although poverty exists in developed countries of the world also but in case of underdeveloped and developing economies the problem is more severe. Different authorities have defined the term poverty differently. According to 'Task Force on Minimum Needs and Effective Consumption Demand' poverty is defined in terms of per capita intake of calories. According to this task force a person who fails to get 2400 calories in urban areas and 2100 calories in rural areas is put below poverty line. As per planning commission of India, a person who earns an income of Rs. 28.65 in urban areas and Rs. 22.42 in rural areas is not poor. According to planning commission of India definition, number of people living below poverty line during 2009-10 was 34.47 crore which was 29.8 % of total population.

It's not only 'high proportion of population living below poverty line' which is a cause of concern, but there are some critical dimensions attached to it. One of the most astonishing revelations is that poverty has actually gone up in the north-eastern states of Assam, Meghalaya, Manipur, Mizoram and Nagaland.

Even big states like Bihar, Chhattisgarh and Uttar Pradesh could register only a marginal decline in poverty ratio, particularly in the rural areas. States such as Himachal Pradesh, Madhya Pradesh, Maharashtra, Orissa, Sikkim, Tamil Nadu, Karnataka and Uttarakhand registered a decline of 10 per cent in poverty over the past years.

States like Bihar with a poverty rate of 53.5 per cent, Chhattisgarh 48.7 per cent, Manipur 47.1 per cent, Jharkhand 39.1, Assam 37.9 per cent and Uttar Pradesh 37.7 per cent are the worst hit.

Among social groups in the rural areas, Scheduled Tribes (47.4 per cent) suffer the highest level of poverty, followed by Scheduled Castes (42.3 per cent), Other Backward Castes (31.9 per cent) as against 33.8 per cent for all classes.

In rural Bihar and Chhattisgarh, nearly two-third of the SCs and the STs are poor where as in Manipur, Orissa and Uttar Pradesh more than 50 per cent are below poverty line.

In urban areas, 34.1 per cent of SCs, 30.4 percent of STs and 24.3 per cent of OBCs fall under this category against 20.9 per cent for all classes.

2.7 REGIONAL DISPARITIES

There exists regional dualism in India. There is always danger of some regions developing faster than the other, it poses threat to national integration and seen as a largest socio-political problem. This is called as regional disparity. Difference in the rate of growth of state income as well as per capita income is very wide. On one side there are richer states like Punjab and Maharashtra with per capita income of above Rs. 19,000 at current prices and on the other side there are states like Bihar and Orissa with meager per capita income of Rs. 4700 and Rs. 6800 respectively. Western and southern states like Gujarat, Maharashtra and Andhra Pradesh have more flows of Foreign Direct Investment (FDI) than the other states and they are technologically more advanced states than rest of India. Regional disparities exist in all walks e.g. three industrial advanced states of Maharashtra, Gujarat and Tamil Nadu contribute 44% of industrial output; developed states like Maharashtra and Tamil Nadu have urban population of 39 and 34% respectively while poor states like Assam has urban population of 9% only; Kerala has Infant mortality rate of 12 per thousand live births whereas Orissa has 96 per thousand live births.

2.8 WIDENING GAP BETWEEN THE RICH AND THE POOR

There exists huge and wide gap between rich and poor sections of the society. This is called inequality of income and distribution of wealth. According to experts, upper stratum of 10% people contributes 45% to the national product, whereas lower stratum of 10% people contributes 1.9% to the national product. Even the advantage of 5-year plans goes to the richer section of the society with rapid industrialization and agriculture development, large farmers and capitalist have gained more than the small and marginal farmers. Even the benefit of subsidy goes to the large farmers because they have large farms, they can adopt modern technology, whereas 77% of small and medium farmers have only access to the land holding less than 1%. There exists even more widening gap between rich and poor in rural sectors or villages where upper sections of the society have 80% of the total property and lower sections of the society has just a meagre 2%.

2.9 BALANCE OF PAYMENTS DISEQUILIBRIUM

Balance of payment is an account of exports and imports made by a country. There has always been a deficit in balance of payments in case of India. Our share of exports is only 1% in the world trade whereas share of imports has been rising with each successive year. Disequilibrium in balance of payments is the root cause of many problems of our economy. There is a need to enhance exports to make the balance of payments favourable.

2.10 INFLATION

Inflation is the consistent rise in price of product and services. Indian economy has always been suffering from inflation, though at some points of time it has been less critical, but most of the time it has been highly critical. High rate of Inflation not only makes it difficult for the general public to meet their both ends but also put a cap on the rate of economic development of the country. Main causes of Inflation are increase in money supply vis-a-vis output due to technique of deficit financing and Balance of Payment disequilibrium. Recently, Indian economy has faced serious threats from constantly declining value of rupee in terms of dollar. Rise in crude oil prices is another factor which has led to sharp rise in the rate of inflation further.

If we look at the overall level of economic development of our country, India is ranked at number 127 (out of 177 countries) in Human Development Index report released by World bank. Indian Economy is developing economy in which people have backward and low agriculture productivity and low standard of living, weak industry sector, lack of infrastructure adversely affecting growth and social problems like poverty, inequality, corruption, inefficiency, deficiency in production, lack of water, lack of electricity, poor sanitation and hygiene condition etc., basically Indian economy is agrarian economy which is dependent on agriculture still 40% people of the country are dependent on agriculture whereas in countries like America, Canada, England only 3-4% of the work force is employed in agriculture. Agriculture is still dependent on natural factors without proper irrigation facility and indigenous techniques are used in agriculture. Lack of credit facility, poor storage capacity, and inefficient transport system are adversely affecting economic growth.

29 percent people are still living below poverty line, poor medical facilities infrastructure. Although in recent years the role of institutional credit has gone up in India, but rural India still finds it difficult to meet their credit needs from organized financial institutions. Rural India is still dependent on shahukars to meet their credit needs at exorbitant rates of interest.

2.11 SUMMARY

India is suffering from a number of severe economic problems. Planned efforts of more than 60 years have helped India build a strong economic base but it has still a long way to go. Railways are overcrowded; safety is not up to mark, amenities for the passengers both within the train and on platforms haunts the public. Aviation industry is into doldrums e.g. Air India and Kingfisher are struggling for survival. Road transport is suffering because of lack of planning in road development. Narrow roads, inefficient traffic management leads to frequent traffic jams. Average speed of vehicles on national highways in India is around 30-40 Kilometers per hour. Besides these the problem of galloping Inflation, high rate of unemployment, poverty, widening gap between rich and poor, poor industrial base, lack of basic amenities etc. are the major hurdles in the economic development of the country.

India needs a strong political consensus to overcome all the above stated problems.

2.12 GLOSSARY

- **Infrastructure:** It refers to the basic physical and organizational structures and facilities necessary for the operation of a society or enterprise.
- **Unemployment:** It refers to people who are able and willing to work but are without employment.
- **Poverty:** It is a social phenomenon in which some people in the society do not have enough resources to meet their basic needs.
- **Balance of Payments:** It is a record of imports and exports made by a country.
- **Inflation:** A persistent increase in the price of goods and services.

2.13 CHECK YOUR PROGRESS

(A) Fill in the Blanks:

- (i) Indian railways run.....trains in a day.
- (ii) Indian government desired to achieve the target of availability ofunits of per capita electricity by year 2012.
- (iii) Only.....percent of roads in India are two lane.
- (iv) Air traffic in India is registering on an average growth rate ofover the last seven years.
- (v) Road transport in India accounts forhighest fatality rate in the world.

(B) State whether the following statements are true or false:

- (i) The Indian Railways is Second largest in the world railway network.
- (ii) Power back up in the industries through generators is a necessity.
- (iii) Public Private Partnership (PPP) is the only way to develop infrastructure in India.
- (iv) 29% people in India live below poverty line.
- (v) As per census 2011, literacy rate in India is 74.04%.
- (vi) As per labour bureau survey the total number of unemployed youths at the end of year 2010 was 60 million.
- (vii) Percentage of people living below poverty line in Bihar is 67%

2.14 ANSWER TO CHECK YOUR PROGRESS

- (i) 11,000 (ii) 1000 (iii) 53 (iv) 18.5% (v) 8th
- (ii) False (ii) True (iii) False (iv) True (v) True (vi) False (vii) False

2.15 TERMINAL QUESTIONS

- (i) Critically evaluate the status of infrastructure in India.
- (ii) “Poverty and low literacy rate is the root cause of all the problems in India”. Give your comments.
- (iii) Write an essay on the various basic problems faced by the Indian society.
- (iv) What do you understand by regional imbalance. Discuss its causes and suggest measures to eradicate it.

2.16 SUGGESTED BOOKS

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UNIT-3: DEMAND ANALYSIS

Unit structure

3.1 Introduction

3.2 Meaning of Demand

3.3 The Law of Demand

3.4 The Demand Function

3.4 Market Demand

3.5 Concept of Market Demand

3.6 Types of Demand

3.7 Determinants of Market Demand

3.8 Summary

3.9 Glossary

3.10 Check Your Progress

3.11 Answer to check your progress

3.12 Terminal Questions

3.13 Suggested Readings

OBJECTIVES

After studying this unit, you will be able to:

- Describe the meaning of demand.
- Explain the law of demand and the demand function.
- Explain the types of demand and the components of market demand.

3.1 INTRODUCTION

If the demand of all individual consumers is aggregated, we can get the market demand for a product. In other words, the quantity demanded in the market at each price is the sum of the individual demands of all consumers at that price. The analysis of market demand plays a crucial role in business decision-making. The information regarding the magnitude of the current and future demand for a product is essential for a firm to plan its future production, arrange the

inventories, chalk out its advertising plan and setting up point for sales output. The analysis of market demand provides an insight to the business executives of a firm to resolve issues such as:

1. What are the factors that determine its demand?
2. How much responsive is the demand to the various factors?
3. How the sales can be promoted?
4. What is the elasticity of advertising expenditure of its product

In this chapter we have discussed the meaning of market demand, types of demand, determinants of demand and their measurement, demand function and elasticity of demand.

3.2 MEANING OF DEMAND

In economics the term 'demand' is used in a particular sense. According to Stonier & Hague, 'Demand in economics means demand backed up by enough money to pay for the good demanded'. In the absence of purchasing power, demand is not effective. For instance, many people would probably like to have a big modernized house, a brand-new car, and a summer collage. But they have no effective demand for these things. In order for them to have a demand for these things, they must be able and willing to buy them. Hence the use of the term 'effective demand has a particular meaning in economics. Demand then shows us the quantities of goods that people are willing to purchase at different prices. Benham right points out,' Demand for any thing, at given price is the amount of it which will be bought per unit of time at that price. Demand always means demand at a price; the term has no significance unless a price is stated or implied'.

Characteristics of Demand

The demand has the following four characteristics:

1. Price

The demand is always at a time. If we say that there is a demand for thousand motorcars in the market, this type of statement has no meaning. The person must state the price at which he is prepared to purchase the said quantity of the commodity.

2. Time

Demand must mean demand per unit of time, per month, per week or per day.

3. Market

Demand is always held in the market. Market is a set of points of contact between buyers and sellers. It need not be a definite geographical area.

4. Amount

Demand is always a specific amount that a person is willing to purchase. It is not

an approximation, but is to be expressed in numbers.

A demand schedule shows us how much of some product people will buy at different prices.

3.3 THE LAW OF DEMAND

Generally speaking, the amount of a commodity people are willing and able to buy varies with the price. The lower the price, people tend to buy more of a commodity, and the higher the price the less people tend to buy. In fact, the 'law of demand' states that the quantity of a product demanded varies inversely with the price. More precise we can say, the lower the price, the greater the effective demand, or, the higher the price, the less the effective demand. It follows from this law that sellers cannot get as high a price for a large quantity as for a lesser quantity. The greater the quantity of a good they are trying to sell, the lower the price must be.

The law of demand is a generalization to which there are some exceptions. Mainly, there are two situations in which this law will not hold true, but they are exceptional. If the price of a commodity is declining, and it is expected to fall still further, buyers may hold off until they think it has reached the bottom, so as to get, it at the lowest possible price. This is particularly true of dealers and speculators, but it also holds for consumers in certain situations. But when the bottom has been reached, consumers will buy more than they would be at a higher price, so that the general principle inherent in the law is valid, even for this case. The other exception runs directly counter to the principle. There are a few commodities (like diamonds) that are bought largely for the prestige that they confer upon the possessor. To display a demand necklace or a big diamond in a ring confers a distinction upon the wearer as a person of great wealth. If diamonds were to become so inexpensive that even the poor could have plenty of them, they would no longer carry any prestige and the demand for them might fan off. Not with standing the existence of a great many such goods, for most commodities the law of demand is a valid generalization.

Alfred Marshall defines the law of demand as follows: "The greater the amount to be sold, the smaller must, be the price at which it is offered in order that it may find purchasers; or in other words, the amount demanded increases with a fall in price, and diminishes with a rise in price. Marshall understood it as the general law of demand. It will be proper to make it clear that like the other laws of economics, the law of demand holds only when other things remain the same. This assumption is known as the assumption of *ceteris paribus*."

3.4 THE DEMAND FUNCTION

The demand function for a commodity can be defined as the relationship between the various amount of commodity demanded and the determinants of these amounts in a given market in a given period of time. Generally, the determinants

of the demand for a commodity are the following:

- (i) The price of the commodity,
- (ii) The income of the consumers
- (iii) Tastes of the consumers, and
- (iv) The prices of other commodities

In general, therefore, the demand function for a commodity can be written

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

D_x = Quantity of commodity X demanded per unit of time P_x =

Price of the commodity X

P = Average price of other commodities. Y =

Income of the consumer

T = Taste of the consumer.

The accurate or exact form of such a demand function on how consumers respond to changes in the value of each of determinants. The prices of other commodities, income and tastes are all assumed to be a constant, the demand function reduces to the simple form

$$D_x = f(P_x)$$

The demand function states that the demand for a commodity (X) is a function exclusively of its own price (P_x)

But when the other determinants are not held constant or when changes occur in the economy over a time period, then a dynamic demand function may be used to allow for all changes. Econometrics is the subject that combines economic and statistical theory for the purpose of measuring actual economic relations. Mathematical models are developed on the basis of economic theory. Statistical methods and techniques are used to estimate the values of the parameters of these mathematical models from the empirical statistics collected for the purpose.

Demand functions are generally homogeneous, of degree zero in prices and income, i.e., if all prices and income change in the same proportion, the quantity demanded remains unchanged.

If income, price of other commodities, tastes and other independent variables are held constant, the demand function takes the simple form $D_x = f(P_x)$. This form of the demand function can vary considerably as long as the demand curve is monotonic with quantity varying inversely with price.

3.5 MARKET DEMAND

The market demand at any price is the sum of individual quantities demanded at that price. The market demand for a given commodity is the horizontal summation of the demands of all the individual consumers. In other words, the quantity demanded in the market at each price is the sum of the individual

demands of all consumers at each price. The individual demand connotes the quantity demanded of a commodity by an individual at a given price per unit of time. The aggregate of individual demands for a product is called market demand for the product. The market demand can be found out by summing the quantities demanded by individual consumers and aggregate of individual demand curve yield a market demand. To derive the market demand curve, individual demand curves of consumers are summed up horizontally. The negative slope of these normal demand curves suggests an inverse relationship between price and quantity demanded.

Let us suppose that there are three consumers A, B, C. Table 3.1 gives the quantities demanded of the commodity at different prices. The market demand schedule is obtained by adding all individual demand schedules for the product.

Table 3.1. Individual Demand Schedules for Consumers A, B, C

Unit Price	Quantity Demanded by			Market Demand
	Consumer A	Consumer B	Consumer C	
10	4	3	2	9
8	5	6	3	14
5	6	7	5	
18				

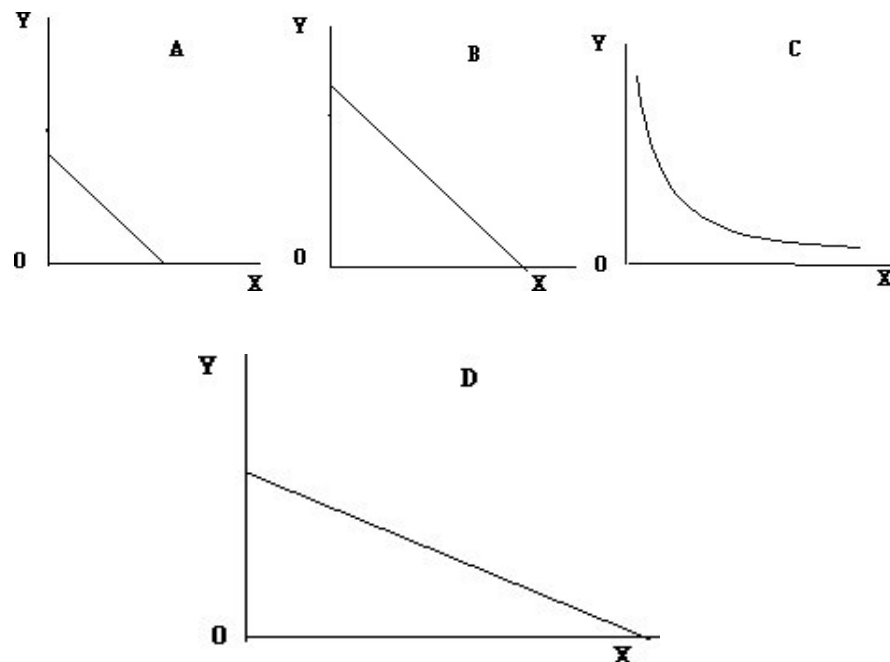


Fig.3.1 Individual and Market Demand

Fig.3.1 illustrates the summation of individual demand curves and obtain the market demand curve.

Another method is to take the demand schedule of a representative consumer and multiply the quantities demanded at various prices by the total number of consumers.

Third method is to make three groups of consumers – the rich, the middle income and the poor. Then prepare an individual demand schedule for a representative consumer in each group. Then the total number of consumers in the respective groups should multiply the quantities demanded at different prices in each group. We get three schedules -one for each group. Then we add all three schedules horizontally. We, thus, get the market demand schedule.

3.6 TYPES OF DEMAND

A careful classification of a large number of goods and services available in every economy is important in order to carry out a meaningful market demand analysis for taking managerial decisions. A clear understanding of demand at various levels of aggregate demand is essential for a business firm for taking policy decisions. We have discussed here the major types of demand that are significant for business-decision-making.

1. Demand for firm's product and industry's products

The shape of the demand curve of a firm is different in various market structures.

In pure competition the demand of the individual firm is perfectly elastic. Pure competitive market assumes homogeneous product and large number of seller. An individual firm, however, large, offers a very small part of the total quantity in the market. Hence it cannot affect the price. The firm is a price taker. The market price is determined by the market supply and demand functions and at this price the firm can sell any amount it wishes.

In monopoly a firm is also the industry. Therefore, the firm's demand is also the demand of the industry. The monopolist decides his price and output on the basis of his downward sloping market demand. This implies that the monopolist in order to sell more has to reduce the price

In monopolistic competition the demand of the individual firm is downward sloping, as is the market demand. The product differentiation has given a firm some freedom to decide its own price. Each firm has its own customers, who have a preference for its products.

In oligopoly market situation various shapes of the firm's demand curve have been suggested. There is a great uncertainty regarding the demand curve of the oligopoly, due to the interdependence of competitors and the uncertainty as to their reaction to any particular decision of a firm within the group.

2. Individual and market demand

The demand for a commodity by an individual buyer is called individual demand while the demand for a commodity by all individual buyers taken together in a market is called market demand. The example given in section 3.2.1 illustrates adequately individual and market demand.

3. Demand for durable and non-durable goods

Both consumer and producer goods are further classified into durable and non-durable goods. Durable goods are those whose usefulness is not exhausted in a single or short-run use. They can be used repeatedly or continuously over a period of time. Durable goods partly satisfy new demand and partly replace old items. They are more expensive than the non-durable goods and their demand alone is subject to pre and postponement, depending on current market conditions vis-à-vis expected market conditions in future.

Durable goods may be consumer goods as well as producer goods. Durable consumer goods include cars, scooters, furniture, houses, clothes, shoes, washing machine etc. Durable producers' goods include items such as buildings, office furniture and fixtures, plant and machinery etc. These goods are generally called "fixed assets".

Non-durable goods are those goods that perish or become unusable after sometime. They can be used or consumed only once and their utility is exhausted in a single use. Non-durable goods are also classified into non-durable consumer goods and non-durable producers' goods. The former include all items of food, drinks, and soaps, cooking fuel, cosmetics, lighting, milk, fish, eggs, paper cups and plates. Raw materials, fuel and power, finishing material and packing items fall under the latter category.

4. Autonomous demand and derived demand

Demand that arises on its own out of a natural desire to consume or for satisfying human wants directly is called direct or autonomous demand. Autonomous demand is not tied with any other good. It is independent of the demand for some other goods. Demand for food, clothes, shelter, soaps, toothpastes, tape recorders, TV sets, etc., is an autonomous demand. Demand for all producer goods is derived demand, as they are needed to produce consumer or producer goods. However, there is hardly anything whose demand is totally independent of any other demand. But the degree of this dependence varies widely from product to product. Autonomous demand may also arise due to 'demonstration effect' or a rise in income of the consumers, increase in population and advertisement of new products. On the other hand, demand that depends upon the demand for some other good is called derived demand. These are goods that are used as raw materials or inputs in producing other products. For example, demand for packing materials depends upon the demand for the products for the packing of which these materials are used. Demand for vegetable oils used in soap-making depends

upon the demand for soaps. Demand for machines depends upon the demand for the products produced by these machines. Also, the demand for complementary or supplementary goods is a derived. For example, petrol is a complementary good for automobiles and a chair is a complement to a table. Butter is a supplement to bread; mattress is a supplement to cot; sugar is a supplement for tea. Thus, derived demand increases or decreases with increase or decrease in demand for 'parent product'

5. Demand by Market Segments and by Total Market

If the market is large in terms of geographical spread, product usage, distribution channels, customer sizes or product varieties, and if any one or more of these differences were significant in terms of product price, profit margins, competition, seasonal patterns or cyclical sensitivity, then it may be worthwhile to distinguish the market by specific segments for a meaningful analysis. A particular market segment demand would refer to demand for the product in that specific market-segment while the total demand would mean the total demand for the product from all market segments.

6. Short-term and Long-term Demand

Demand for goods that are demanded over a short period of time is referred to as short-term demand. The fashion consumer goods, goods of seasonal nature, inferior substitutes fall in this category. In contrast the demand for generic goods continues to remain for long period. Trousers, shoes, ties are goods that have long- term demand. Umbrella, raincoats, gum- boots, cold-drinks, ice creams are goods of seasonal nature. There are certain other goods that are demanded for a very short period. For example, New Year Greeting Cards, candles and crackers on the occasion of Diwali are goods of seasonal nature but for a very short duration. Electric fans, woollen garments are goods of such seasonal nature that they are used only in season but they are of durable nature.

Demand that exists for a long period of time is referred to as long-term demand. Most generic good have long-term demand. Long-term income, availability of better substitutes, sales promotion, consumer credit facilities are the factors that determine and influence long term demand. On the other hand product's own price, prices of substitutes, current disposable income, adjustment time and advertisement greatly influence the short-term demand. The short-term and long-term concepts of demand are useful in designing new products for established producers and choice of products for the new entrepreneurs, in pricing- policy, and in determining and phasing the advertisement expenditure.

7. Consumer Goods and Producers' Goods

Consumer goods are those goods and services that are used for final consumption by human- beings. They include clothes, residential houses, medicines, services of doctors, lawyers, shoe- makers, and lawyers etc. On the other hand producers' goods are those goods that are used for production of other goods. They consist of

plant and machines, factory buildings, services of business employees, raw-materials. However, the distinction made is arbitrary. The same commodity may be consumer's good or producers' goods depending upon its use. For example, a sofa set in the drawing room of a house is a consumer's good, while in the reception room of a business enterprise, it is a producers' good. Nevertheless, the distinction is useful for a proper demand analysis. While the demand for consumers' goods depends on consumers' income, that for producers' goods varies with the level of production.

8. New Demand Vs Replacement Demand

Sometimes a distinction is made between new demand and replacement demand. When machinery is purchased or installed new it is new demand, compared to when it is repaired and replaced by some parts or accessories.

3.7 DETERMINANTS OF MARKET DEMAND

Demand is a multivariate function. It means that demand for a commodity is determined by many variables. Price of the commodity itself, the prices of related goods, consumers' income and tastes are considered to be the most important determinants of the market demand. The result of a change in the price of the commodity is shown by a movement from one point to another on the same demand curve, while the effect of changes in other determinants is shown by a shift of the demand curve. Therefore, these factors are called shift factors. Demand curve is drawn assuming the shift factors constant. Apart from these, demand is affected by numerous other factors, such as the distribution of income, total population and its composition, wealth, credit availability, stocks and habits. The last two factors allow for the influence of past behavior on the present, thus rendering demand analysis dynamic.

1. Price of the Product

The demand for a good varies inversely with its own price. If the price of commodity X rises, the demand for that commodity falls and vice versa. The buyers of a commodity can be classified into two kinds: marginal and intra-marginal buyers. Intra-marginal buyers are those who increase or decrease their consumption of a commodity but do not give up or start their consumption when faced with changed conditions such as variations in price. Marginal buyers will start their consumption of the good if price fall or stop their consumption if price rises. The behavior of intra marginal buyers is best explained with the help of income and substitution effect.

As the price of a commodity falls, prices of other goods remaining unchanged, the commodity becomes relatively cheaper and therefore, its demand increases. Thus, the substitution effect is always negative. A fall in price of the commodity, other things remaining constant, increases the real income of the consumer buying the commodity whose price has fall. This, in turn, increases consumer's demand for superior goods and decreases their demand for inferior goods. Thus, the

income effect of a change in price is negative for superior goods and positive for inferior goods. Since a change in price gives rise to both substitution and income effects, the sum of these two effects measures the price effect. For superior goods both substitution and income effects, work in the same direction while for inferior goods they work in the opposite direction.

2. Price of Related Good

The price of related goods also affects the demand for a good. Related goods may be substitutes or complementary goods.

(a) Substitutes

Substitutes are goods that serve as replacements for one another. The number and price of substitute goods (i.e. competitive goods) also determine the demand for a good. The higher the price of substitute goods, the higher will be the demand for this good as people switch from the substitutes. A fall in the price of a good causes a decline in demand for its substitutes. To be substitutes, two products do not need to be identical. Identical products are called perfect substitutes. Japanese cars are not identical to American cars. Nevertheless, all have some common characteristics as four wheels, capable of carrying people, and run on gasoline. Thus, significant changes in the price of one country's cars can be expected to influence demand for the other country's cars. Restaurant meals are substitutes for meals made at home, and flying from New Delhi to Bombay is a substitute for taking the train.

(b) Complements

Complementary goods are those that are consumed together; cars and petrol, shoes and polish, fish and chips. The higher the price of complementary goods, the fewer of them will be bought and hence the less will be the demand for this good. If you write more letters, the more you will demand stamps and stationery, and as you send more e-mails the more you will need Internet access. During a price war among the airlines when travel became less expensive, the demand for taxi service to and from airports increased. When two goods are complements, a decrease in the price of one result in increase in demand for the other, though its price has not fallen and vice versa.

A given commodity may have many potential substitutes and complements at the same time; a single price change may affect a consumer's demand for many goods simultaneously; the demand for some of these products may increase while the demand for others may decrease. For example, massive amount of data can now be stored digitally on CDs that can be read by personal computers with a CD-Rom drive. As more and more the price of CDs and CD hardware is falling, demand for encyclopedia printed on paper is falling.

3. Consumer's Income

Income of a consumer determines his purchasing power and so it is the basic determinant of the demand for a product. People with higher current disposable income demand more goods and services than those with lower income. Product's own price, the price of related goods are significant in the short run, while income as a determinant of demand is significant both in the short and long run. Income as a determinant of demand has varied relationship depending upon the nature of the commodity. The business executives, therefore, have to be fully aware of the nature of goods they are dealing with and their relationship with the consumers' income.

Consumer goods and services may be classified under four categories for the purpose of income-demand relationship.

- (i) Essential consumer goods
- (ii) Normal goods
- (iii) Inferior goods
- (iv) Luxury Goods.

The effect of variation in income on each of these goods is discussed in brief.

(i) Essential consumer goods

Essential consumer goods are those goods and services that are consumed by all persons of a society. They are items of 'basic needs' such as minimum clothing, housing, food grains, salt, vegetable oils, matches, cooking fuel etc. Demand for essential goods increase with increase in consumer's income but only upto a certain point where basic needs are fulfilled. Beyond that point expenditure on this category of goods go for improving the quality of goods. Fig.3.1 illustrates the relationship of essential consumer goods and income. The curve B shows that a consumer's demand for essential goods increases only until his income rises to OY2. Beyond this level it tends to saturate.

(ii) Normal goods

Goods for which demand goes up when income is higher and goes down when income is lower are called normal goods. Movie tickets, restaurant meals, telephone calls, and shirts are all normal goods. Curve C in the Fig.3.2 shows the income-demand relationship of normal goods.

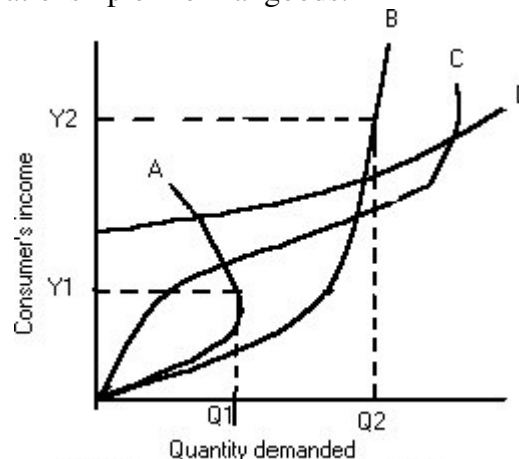


Fig.3.2 Income Demand Relationship Curves

(iii) Inferior goods

An inferior good is one whose demand decreases when the consumer's income increases. In case of inferior goods, it is negative income effect. As the level of income goes up the consumers are known to traveling by taxi rather than by bus; start smoking cigarettes in place of *bide*; use cooking gas rather than kerosene; shift to wheat and rice from millet. Demand for inferior goods raises only up to a certain level of income, beyond this level demand declines with the increase in income. Curve A in Fig.3.1 shows the behavior of inferior goods to rise in income.

(iv) Prestige or luxury goods

Any product that has an income-elasticity of demand greater than one is called luxury goods. As the income of the consumer rises, proportionately more income is spent on such products. By contrast, products with an income-elasticity of less than one are referred to as necessary *products*. Luxury goods add to the pleasure and prestige of the consumer without enhancing his earning. For example, luxury cars, accommodation in 5-star hotels, travel by first-class railway AC cars, upper class air travel, precious jewelery can be treated as luxury goods. A special category of luxury goods is that of prestige goods such as possession of antiques and rare paintings, diamond-studded jewelry and watches, prestigious schools, ostentatious decoration of buildings. Demand for such goods is nil below a certain level of income, as the income reaches that level consumption enters the area of luxury goods, and consumption increases more and more as income rises. Producers of prestigious and luxury goods while assessing the demand for their products consider the income changes in the richer section of the society. Curve D illustrates the demand for luxury goods.

4. Consumer's Taste & Preference

In general, a change in people's taste or preferences for a product compared to other products will change the amount of the product they purchase at any given price. The more desirable people find the good, the more they will demand it. Tastes are affected by Advertising, fashion, observing other consumers, considerations of health and the experiences from consuming the good on previous occasions affect people's taste and preferences for goods and service.

5. Consumers' Information

A change in information relating to a product can also cause the demand curve to shift. For example, when people learned about the dangers of smoking, the demand for cigarettes declined. Similarly, information about the effects of cholesterol may have reduced the demand for beef and increased the demand for chicken or vegetarian food.

6. Advertisement Expenditure

Advertisement expenditure has a positive relationship with demand for a commodity. As the advertisement expenditure increases, the volume of sales also increases. Advertisement expenditure is made with the objectives of informing consumers of a product's existence and uses, differentiating the product from all available rivals products in the market, influencing the consumer's choice of the product against all rival products and setting new patterns of consumption. The rise in advertisement outlays, other things remaining the same, leads to an increase in the volume of sales. Symbolically, the relationship between advertisement expenditure and sales volume may be expressed as:

$$S = f(AD)$$

Graphically, the relationship between the two factors is shown in Fig.3.3.

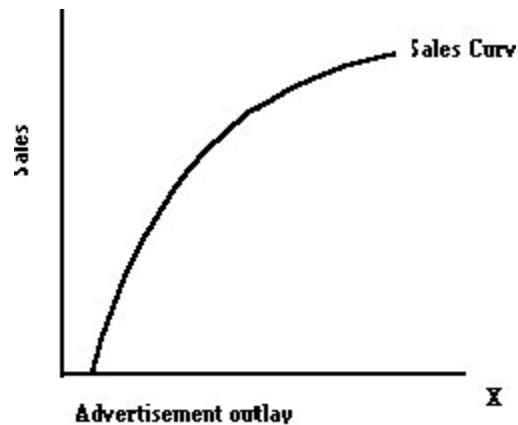


Fig.3.3 Advertisement Expenditures and Sales relationship

7. Consumer's Expectations

Consumer's expectations about a further fall or rise in future prices also affect the present demand for a commodity. If people expect the price of a good to increase, they will want to buy it before the price increases. Conversely, if people expect the price to decline, they will purchase less and wait for the decline. We can see this effect of expectations of future price changes often. "We better buy before the price goes up" or "Let us put off buying until the price comes down" are the common reasons for purchasing or postpone purchasing several items every now and then.

In general, it is difficult to forecast the future, but sometimes consumers know quite a bit about whether the price of a good will rise or fall, and they react accordingly. Thus, demand increases if people expect the future price of the good to rise, and demand decreases if people expect the future price of the good to fall.

8. Demonstration Effect

Affluent people often purchase first new goods or new models of existing goods as and when they are introduced into the market because either they have genuine need for them or they possess adequate purchasing power to buy them. Some other people buy these goods, even though they may not have genuine need for them. They buy them because they want to show themselves equally affluent.

Increased purchases because of this factor is termed as ‘Demonstration-effect’ or ‘Band-wagon-effect’. This factor has a positive effect on demand. In general, affluent people reduce or stop the consumption of those goods that are used by common people. This factor has a negative effect on the demand for a commodity and is termed as ‘Snob-effect’

9. Consumer-Credit Facility

Sale on credit and easy terms of credit, such as spread of installments, large number of installments and smaller down payment in cash may also influence the demand for a firm’s products. The availability of consumer credit facilities may shift demand curve to the right showing increase in demand. If the rival producers offer more concessions in credit terms, the firm’s demand will decrease and the demand curve will shift to the left.

10. Population of the Country

A change in the total population, sex- ratio, age-composition or occupational structure, will change demand for a commodity. For example, when children are born, the demand for milk, milk- foods etc., will increase. Again, every year, there is an increase in the number of school-going children, college students, etc., and more quantities of school uniforms, books, etc., are demanded even though their prices have not fallen.

11. Distribution of National Income

The level of and distribution pattern of national income of a country also determine the market demand for a product. The higher the national income, the higher reaches the demand for all normal goods and services. The more even distribution of national income causes the demand for essential goods higher and other kinds of good to be relatively lower.

Demand Function

A function is that which describes the relationship between a variable and its determinants. A demand function states the dependence relationship between the demand for a commodity or service and the factors or variables affecting it such as its own price, the prices of substitutes and complementary goods, income of the consumer, credit terms, advertisement expenditure etc. The quantity demanded is the dependent variable and the determinant factors are independent variables. The effect of each independent variable on the dependent variable may be estimated statistically.

We will consider a simple case of demand function. Assume that all determinants of demand, except price remain constant. This is a case of short run demand function, where quantity demanded of a commodity varies with its price. This demand function, symbolically, may be expressed as:

$$D_x = f(P_x)$$

Where,

D_x = Quantity demanded of commodity X P_x =

Price of commodity X

In this demand function D_x is dependent variable and P_x is independent variable.

The independent variable causes a change in the dependent variable. If we are able to know the quantitative relationship between the dependent and independent variables, the demand function may take the form as:

$$D_x = a - bP_x \quad \dots(3.2)$$

Where,

a = a constant denoting maximum quantity demanded at zero price.

b = change in quantity demanded due to change in price ($\Delta D/\Delta P$).
This ratio also remains constant.

If we are able to find out the values of 'a' and 'b', we can prepare a demand schedule showing quantities demanded at different levels of price. When the quantity demanded and price relationship results in the form of a linear demand curve, a demand function is said to be a linear demand function. From the demand function, price function can be easily obtained. When the slope of the demand curve changes all along the curve a demand function is said to be nonlinear. A nonlinear demand function takes the form of a power function.

In the short run, factors other than price of the commodity were assumed to be constant. However, in the long run, other factors are subject to change. A long run demand for a product depends on the composite impact of all its determinants operating simultaneously. Therefore, for the purpose of estimating long- term demand for a product, all its relevant determinants are taken into account. A function of this kind is called a multi-variate or dynamic demand function. A demand function of this sort states that quantity demanded of a commodity (D_x) depends on its price, price of related goods, consumers income, advertisement expenditure, consumer's taste etc. This multivariate demand function, symbolically, can be expressed as

$$D_x = f(P_x, Y, P_s, P_c, A, T) \quad \dots (3.3)$$

Where,

Y = consumer's income P_s =

price of substitutes

P_c = price of complements

A = Advertisement expenditure

T = Consumer's taste

If all the independent variable can be easily quantified, and the relationship is linear, then the demand function may be rewritten in the form

$$D_x = a + bP_x + cY + dP_s + gP_c + hA + jT \quad \dots (3.4)$$

where,

'a' is a constant

b, c, d, g, h, and j are the coefficients of relationship between quantity demanded of X and the respective independent variables. Other independent variables such as population of the country, expectations of the consumers may also be included.

3.8 SUMMARY

If the demand of all individual consumers is aggregated, we can get the market demand for a product. An analysis of market demand plays a crucial role in business decision-making. What are the factors that determine its demand? The market demand at any price is the sum of individual quantities demanded at that price. The individual demand connotes the quantity demanded of a commodity by an individual at a given price per unit of time. The aggregate of individual demands for a product is called market demand for the product.

The major types of demand that are significant for business-decision-making:

1. Demand for firm's product and industry's products
2. Individual and market demand
3. Demand for durable and non-durable goods

The demand for a commodity by an individual buyer is called individual demand while the demand for a commodity by all individual buyers taken together in a market is called market demand.

Demand that arises on its own out of a natural desire to consume or for satisfying human wants directly is called direct or autonomous demand. Demand for all producer goods is a derived demand, as they are needed to produce consumer or producer goods. A particular market segment demand would refer to demand for the product in that specific market-segment while the total demand would mean the total demand for the product from all market segments.

Demand for goods that are demanded over a short period of time is referred to as short-term demand. Demand that exists for a long period of time is referred to as long-term demand. Consumer goods are those goods that are used for final consumption by human- beings. On the other hand producers' goods are those goods that are used for production of other goods.

Demand is a multivariate function. It means that demand for a commodity is determined by many variables. The demand for a good varies inversely with its own price. The price of related goods also affect the demand for a good. Related goods may be substitutes or complementary goods. Substitutes are goods that serve as replacements for one another. The number and price of substitute goods (i.e. competitive goods) also determine the demand for a good.

Complementary goods are those that are consumed together; cars and petrol, shoes and polish, fish and chips. The higher the price of complementary goods, the fewer of them will be bought and hence the less will be the demand for this good. Income of a consumer determines his purchasing power and so it is the basic determinant of the demand for a product.

Demand for essential goods increase with increase in consumer's income but only up to a certain point where basic needs are fulfilled. Beyond that point expenditure on this category of goods go for improving the quality of goods

Any product that has an income-elasticity of demand greater than one is called luxury goods.

A change in information relating to a product can also cause the demand curve to shift.

Advertisement expenditure has a positive relationship with demand for a commodity. Consumer's expectations about a further fall or rise in future prices also affect the present demand for a commodity.

Affluent people often purchase first new goods or new models of existing goods as and when they are introduced into the market because either they have genuine need for them or they possess adequate purchasing power to buy them. Sale on credit and easy terms of credit, such as spread of installments, large number of installments and smaller down payment in cash may also influence the demand for a firm's products. A change in the total population, sex- ratio, age- composition or occupational structure, will change demand for a commodity. The level of and distribution pattern of national income of a country also determine the market demand for a product.

A function is that which describes the relationship between a variable and its determinants. A demand function states the dependence relationship between the demand for a commodity or service and the factors or variables affecting it such as its own price, the prices of substitutes and complementary goods, income of the consumer, credit terms, advertisement expenditure etc.

Thus, in this chapter, we have discussed meaning of its, its characteristics that include price, time market and amount. We have described the law of demand and its exceptions, the demand function, the market demand and types of market demand. The market demand includes Demand for firm's product and industry's products, Individual and market demand, Demand for durable and non-durable goods, Autonomous demand and derived demand, Demand by Market Segments and by Total Market, Short-term and Long-term Demand, Consumer Goods and Producers' goods, New Demand Vs Replacement Demand. The determinants of demand have also been discussed.

3.9 GLOSSARY

- **Demand:** Demand for anything, at given price is the amount of it, which will be bought per unit of time at that price.
- **The Law of Demand:** The law of demand states that the lower the price, the greater the effective demand, or, the higher the price, the less the effective demand.
- **The Demand function:** defined as the relationship between the various amount of commodity demanded and the determinants of these amounts in a given market in a given period of time.
- **Market demand:** The market demand at any price is the sum of individual quantities demanded at that price.
- **Durable goods** are those whose usefulness is not exhausted in a single or short-run use.
- **Substitutes:** are goods that serve as replacements for one another.
- **Complementary goods** are those that are consumed together; cars and petrol, shoes and polish, fish and chips.
- **Normal goods:** Goods for which demand goes up when income is higher and goes down when income is lower are called normal goods.
- **Inferior goods:** An inferior good is one whose demand decreases when the consumer's income increases.
- **Demonstration-effect:** Some other people buy these goods, even though they may not have genuine need for them. They buy them because they want to show themselves equally affluent. Increased purchases because of this factor is termed as 'Demonstration-effect'

3.10 CHECK YOUR PROGRESS

- (a) A particular good and service that a consumer or a group of consumers is willing to buy at a given price is called _____.
- (b) _____ states that at higher prices, fewer goods are demanded.
- (c) _____ are those whose demand decreases when the income of

the consumer increases.

(d) Petrol with a car and polish with shoes are called _____ goods.

3.11 ANSWERS TO OBJECTIVE QUESTIONS

(a) Demand (b) Law of Demand (c) Inferior Goods (d) Complementary Goods

3.12 TERMINAL QUESTIONS

1. Why does the demand curve slope downwards to the right? Under what circumstances a demand curve slopes upward to the right.
2. Analyze the circumstances in which a fall in the price of a commodity leads to a fall in its demand.
3. Explain how the demand for a commodity is affected by (i) change in the price of other commodity, and (ii) changes in the income of the consumer.
4. What is a demand function? Discuss the law of demand with its exceptions.
5. Explain the determinants of demand.

3.13 SUGGESTED READINGS

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UNIT 4: ELASTICITY OF DEMAND

Unit structure

4.1 Introduction

4.2 Elasticity of Demand

4.3 Types of Elasticity of Demand

4.4 Price Elasticity of Demand

4.5 Measuring the Price Elasticity of Demand

4.5.1 Arc Elasticity

4.5.2 Point Elasticity

4.5.3 Total Outlay or Expenditure Method

4.6 Determinants of Price Elasticity of Demand

4.7 Income Elasticity of Demand

4.7.1 Determinants of Income Elasticity of Demand

4.8 Cross Price Elasticity of Demand

4.9 Demand Elasticity of Substitution

4.10 Advertising Elasticity of Demand

4.11 Significance of the Elasticity of Demand

4.12 Elasticity of Supply

4.13 Price Elasticity of Supply

4.14 Factors that affect Price Elasticity of Supply

4.15 Useful applications of price elasticity of demand and supply

4.16 Summary

4.17 Glossary

4.18 Check Your Progress

4.19 Answers to Check Your Progress

4.20 Terminal Questions

4.21 Suggested Readings

OBJECTIVES

After studying this unit, you should be able to understand:

- Define the Law of Demand.
- Explain the classification of the Law of Demand.
- Describe the determinants of the Law of Demand.
- Explain the factors determining the elasticity of demand.
- Explain the importance of the elasticity of demand.

4.1 INTRODUCTION

The law of demand tells us that consumers will respond to a price change by buying more or less of a product. If the price of a product falls, consumers will buy more and vice versa. The law of demand does not, however, tell us anything about the degree of responsiveness of consumers to a price change. The concept of elasticity of demand not only tells that consumer's demand responds to price changes but also the degree of responsiveness of consumers' demand. Elasticity of demand is defined as the ratio of the percentage change in quantity demanded to the percentage change in the demand determinant under consideration. In this section, we will discuss various methods of measuring elasticity of demand as well as different concepts of demand elasticity. These include (i) Price elasticity (ii) Income elasticity (iii) Cross elasticity, and (iv) Advertising elasticity and (v) Elasticity of price expectation.

4.1.1 Importance of the concept of Elasticity of Demand

(a) Theoretical Importance:

The concept of elasticity of demand is very useful as it has got both theoretical and practical advantages. As regards its importance in the academic interest, the concept is very helpful in the theory of value. In the words of Keynes:

"The concept of elasticity is so important that in the provision of terminology and apparatus to aid thought, I do not think, Marshall did any greater service than by the explicit introduction of the idea of the elasticity".

(b) Practical Importance:

(i) Importance in taxation policy.

As regards its practical advantages, the concept has immense importance in the sphere of government finance. When a finance minister levies a tax on a certain commodity, he has to see whether the demand for that commodity is elastic or inelastic. If the demand is inelastic, he can increase the tax and thus can collect larger revenue. But if the demand of a commodity is elastic, he is not in a position to increase the rate of a tax. If he does so, the demand for that

commodity will be, calculated and the total revenue reduced.

(ii) Price discrimination by monopolist.

If the monopolist finds that the demand for his commodities is inelastic, he will at once fix the price at a higher level in order to maximize his net profit. In case of elastic demand, he will lower the price in order to increase, his sale and derive the maximum net profit. Thus we find that the monopolists also get practical advantages from the concept of elasticity.

(iii) Price discrimination in cases of joint supply

The concept of elasticity is of great practical advantage where the separate, costs of Joint products cannot be measured. Here again the prices are fixed on the principle. "What the traffic will bear" as is being done in the railway rates and fares.

(iv) Importance to businessmen

The concept of elasticity is of great importance to businessmen. When the demand of a good is elastic, they increase sale by lowering its price. In case the demand is inelastic, they are then in a position to charge higher price for a commodity.

(v) Help to trade unions

The trade unions can raise the wages of the labor in an industry where the demand of the product is relatively inelastic. On the other hand, if the demand, for product is relatively elastic, the trade unions cannot press for higher wages.

(vi) Use in international trade

The terms of trade between two countries are based on the elasticity of demand of the traded goods.

(vii) Determination of rate of foreign exchange

The rate of foreign exchange is also considered on the elasticity of imports and exports of a country.

(viii) Guideline to the producers

The concept of elasticity provides a guideline to the producers for the amount to be spent on advertisement. If the demand for a commodity is elastic, the producers shall have to spend large sums of money on advertisements for increasing the sales.

(ix) Use in factor pricing

The factors of production that have inelastic demand can obtain a higher price in the market than those that have elastic demand. This concept explains the reason of variation in factor pricing.

The following elasticity measures will be considered:

- (a) Price elasticity of demand
- (b) Income elasticity of demand
- (c) Cross elasticity of demand;
- (d) Promotional elasticity of demand;
- (e) Expectations elasticity of demand.

4.2 PRICE ELASTICITY OF DEMAND

Price elasticity of demand is a measure of the responsiveness of demand to changes in the commodity's own price. It is the ratio of the relative change in a dependent variable (quantity demanded) to the relative change in an independent variable (Price). In other words, price elasticity is the ratio of a relative change in quantity demanded to a relative change in price. Let 'e' stand for elasticity. Then

$$e_p = \frac{\text{relative change in quantity demanded}}{\text{relative change in price}} \quad 4.1$$

Also, elasticity is the percentage change in quantity demanded divided by the percentage in price. Symbolically, we may rewrite the formula

$$e_p = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}} \quad 4.2$$

If percentages are known, the numerical value of elasticity can be calculated. The coefficient of elasticity of demand is a pure number i.e. it stands by itself, being independent of units of measurement. The coefficient of price elasticity of demand can be calculated with the help of the following formula.

$$e_p = \frac{\Delta Q}{Q} \cdot \frac{P}{\Delta P} \quad 4.3$$

Where

Q is quantity

P is price,

$\Delta Q/Q$ relative change in the quantity demanded

$\Delta P/P$ Relative change in price.

It should be noted that a minus sign (-) is generally inserted in the formula before the fraction with a view to making the coefficient of elasticity a non-negative value.

The price elasticity can be measured between two finite points on a demand curve (called arc elasticity) or on a point (called point elasticity).

4.2.1 Arc Elasticity:

Any two points on a demand curve make an arc. In the words of Baumol, "Arc elasticity is a measure of the average responsiveness to price changes exhibited by a demand curve over some finite stretch of the curve". The measure of elasticity of demand between any two finite points on a demand curve is known as arc elasticity. The elasticity coefficient can be calculated with the help of the following formula:

$$e_p = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} \quad 4.4$$

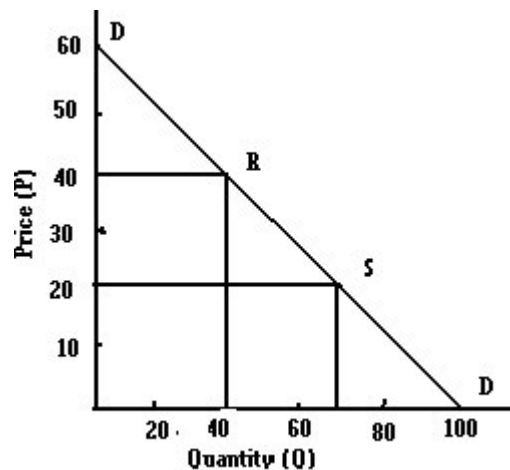


Fig. 4.1 Linear Demand Curve

For example, in Fig.4.1 two finite points R and S are taken to measure the arc elasticity. First we move to measure elasticity for a fall in the price of the commodity from Rs.40 to 20. ΔP is $40-20 = 20$ this decrease in price causes an increase in demand from 40 units to 70 so that ΔQ is $40-70 = -30$. These values can be put in the formula so that

$$e_p = \frac{-30}{20} \cdot \frac{20}{20} \quad 4.4$$

This implies that a one percent fall in price of commodity X cause a 1.5 per cent increase in demand for it.

In the measurement, interpretation and use of arc elasticity, the business executives need take adequate care as the elasticity coefficient may differ depending upon the direction of movement. In this case we have measured the elasticity coefficient while moving down from point R to S. The coefficient will

be different while moving upward from S to R (increase in price from Rs.20 to 40 and quantity demanded is reduced from 70 to 40 giving an elasticity coefficient of .42 implying that one per cent increase in price will reduce the quantity by .42 percent. Thus, the elasticity depends on the direction of change in price. Therefore, measuring elasticity through arc method, the direction of price change should be kept in mind.

The way out of this difficulty is to take an average of prices and quantities and thus to measure elasticity at the midpoint of the arc. The formula then becomes:

$$\frac{\Delta Q}{\frac{1}{2}(Q_1 + Q_2)} \div \frac{\Delta P}{\frac{1}{2}(P_1 + P_2)} \quad 4.5$$

Although the $\frac{1}{2}$ cancels out in the formula, it is put there to stress the fact that by using the average values of the quantities and prices, the elasticity coefficient is the same whether price goes up or goes down.

4.2.2 Point Elasticity on a linear demand curve

Point elasticity is the ratio of an infinitesimally small relative change in quantity to an infinitesimally small change in price. If a price range is made as small as possible, that is, shrunk to a point- then the relative changes must be made as small as possible-infinitesimally small. Point elasticity is the ratio of an infinitesimally small relative change in quantity to an infinitesimally small change in price. *Point elasticity of demand is defined as the proportionate change in the quantity demanded resulting from a very small proportionate change in price.* Fig.4.2 shows how to find the elasticity at a point on a demand curve.

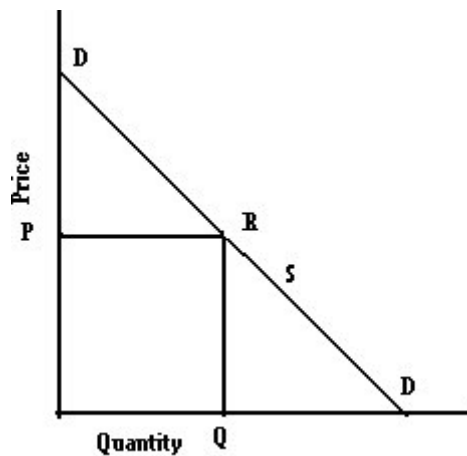


Fig. 4.2 Point Elasticity

Let us take a point such as R on the demand curve DD. For measuring elasticity at a point the following formula may be used.

$$e_p = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} \quad 4.6$$

Point elasticity is the product of price-quantity ratio (P/Q) at a particular point (R) on the demand curve (DD) and the reciprocal of the slope of the demand line. The slope of the demand slope is defined by RQ/QD. The reciprocal of the slope of the demand line is QD/RQ.

$$e_p = \partial Q / \partial P = QD/RQ \quad 4.7$$

At point R, price P = RQ and Q = OQ

If we substitute these values in equation 3.11, what we get is

$$e_p = RQ/OQ \cdot QD/RQ = QD/OQ \quad 4.8$$

If the numerical values for QD and OQ are available, elasticity at point R can be calculated.

4.3 PRICE ELASTICITY AT DIFFERENT POINTS ON A NON-LINEAR DEMAND CURVE

The method used to measure point elasticity on a linear demand curve cannot be applied straightway to measure point elasticity on a non-linear demand curve. In order to measure point elasticity on a non-linear demand curve, we first draw a tangent to the selected point and bring it on a linear demand curve. Fig.4.3 illustrates how we can measure point elasticity on a non-linear demand curve at point R. For this purpose, we

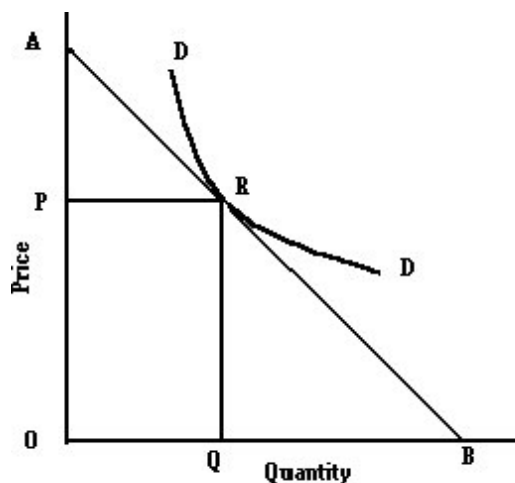


Fig4.3 Point elasticity on a non-linear demand curve

Draw a tangent TT' through point R. Since demand curve DD and the line TT' pass through the same point R, the slope of the demand curve and that of the tangent is the same. Therefore, the elasticity of demand curve at point R will be the same as the elasticity on point R on line TT'. The formula applied to measure the elasticity on a linear demand curve can now be used as the non-linear demand curve has been changed into a linear demand curve.

4.4 PRICE ELASTICITY AND TOTAL REVENUE

One important application of elasticity is to clarify whether a price increase will raise or lower total revenue. Many business executives are concerned with the issue whether it is worthwhile to raise prices and whether the higher prices make up for lower demand.

Total revenue is equal to price times quantity ($TR = P.Q$). If we know the price elasticity of demand, we may know what will happen to total revenue when price changes:

- (1) If price elasticity ($e_p > 1$), reducing the price will increase the total revenue.
- (2) When demand is perfectly inelastic $e_p = 0$, there is no decrease in quantity demanded when price is raised. Therefore, a rise in price increases the total revenue and vice versa.
- (3) In case of an inelastic demand ($e_p < 1$), the total revenue falls when the price is decreased. The total revenue increases when the price is increased.
- (4) When the demand for a product is unitary elastic ($e_p = 1$) quantity demanded increases or decreases in the proportion of increases or decrease in the price. Hence total revenue remains unaffected.

To make this point more clear, we require total and marginal revenue function and price-elasticity of demand.

$$TR = P.Q \quad \dots 4.9$$

The marginal revenue (MR) is the derivative of the TR function

$$MR = \Delta (TR) / \Delta Q = \Delta (PQ) / \Delta Q \quad 4.10$$

Or

$$MR = P + Q.\Delta P/DQ \quad 4.11$$

If the demand curve is linear its equation is

$$Q = b_0 - b_1 P \quad 4.12$$

Solving for P

$$P = a_0 - a_1 Q \quad 4.13$$

Where

$$a_0 = b_0/b_1$$

Substituting P in the total revenue function we find

$$TR = PQ = a_0Q - a_1Q^2 \quad 4.14$$

The MR is then

$$MR = \Delta (TR)/\Delta Q = a_0 - 2a_1Q \quad \dots (3.18)$$

It can be seen from the figure 4.4 that if the demand curve is falling the TR curve initially increases, reaches a maximum, and then starts declining. The derived relationship between MR, P and e can be used to establish the shape of the total-revenue curve.

The total revenue curve reaches its maximum level at the point where $e_p = 1$, because at this point its slope, the marginal revenue, is equal to zero

$$MR = P (1 - 1/e_p) = 0$$

If $e_p > 1$ the total revenue curve has a positive slope. It is still increasing and has not reached its maximum point. If $e_p < 1$ the total-revenue has a negative slope and is falling.

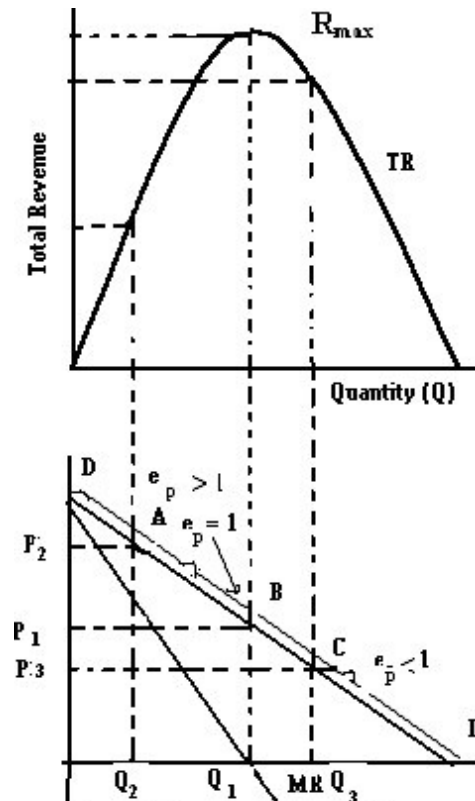


Fig 4.4 Price elasticity and total revenue

The following can be summarized:

1. If the $e_p < 1$, the demand is inelastic, an increase in price leads to an increase in total revenue, and a decrease in price leads to a fall in total revenue.
2. If $e_p > 1$, the demand is elastic, and increase in price will cause a decrease in the total revenue and a decrease in price will lead to an increase in the total revenue.
3. If $e_p = 1$, the demand is unitary elastic, total revenue is not affected by changes in price because MR has reached zero.

4.5 PRICE ELASTICITY AND MARGINAL REVENUE

Demand and marginal revenue curves show where demand is elastic, unitary elastic and inelastic. It is clear that demand becomes less elastic at lower prices. This is a characteristic of linear demand curves because the curve is linear dQ/dP is a constant. Thus price elasticity is determined by the value of P/Q . But as price decreases, P/Q also decreases

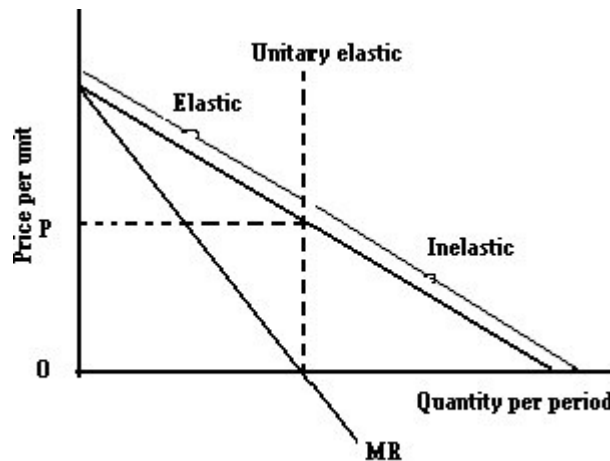


Fig 4.5 Price Elasticity and Marginal Revenue

Consequently, the absolute value of e_p becomes smaller and demand becomes less elastic.

The figure 4.5 illustrates that the point of unitary elasticity corresponds to the point where the marginal revenue crosses the quantity axis. The marginal revenue is zero where demand is unitary elastic. Unitary elasticity means that a 1 percent increase in price causes quantity demanded to decrease by 1 percent and the increase in price is exactly offset by the decrease in quantity demanded. Consequently, there is no change in total revenue as the marginal revenue is zero.

The marginal revenue is positive where demand is elastic and negative when demand is inelastic. Note that these relationships are also true for

nonlinear demand curves. The point where marginal revenue is zero always divides the elastic and inelastic regions of the demand curve.

In case of a vertical demand curve, quantity demanded is not affected by changes in price as dQ/dP is zero and price-elasticity is also zero. For a horizontal demand curve, quantity demanded is highly responsive to changes in price as even a very small change in price can lead to an infinitely large change in quantity demanded as dQ/dP and price elasticity being infinite. Horizontal demand curves are said to be infinitely elastic. The cases of infinitely elastic or completely inelastic demand curves are rare to find in real life, but an understanding of these is useful for economic analysis.

4.6 DETERMINANTS OF PRICE ELASTICITY OF DEMAND

We have explained that demand is a multivariate function. Traditionally the most important determinants of the market demand are considered to be the determinants of price elasticity of demand. These include substitutes, nature of the commodity, and position of the commodity in the buyer's budget, time period, number and uses of a commodity.

1. Substitutes

If a commodity has many close substitutes, its demand is almost certain to be elastic, perhaps highly so because the substitution effect would be strong in the case of close substitutes. If its price goes up, consumers buy less of the commodity and more of its substitutes. If its price goes down, consumers desert the substitutes and buy the commodity in relatively much larger quantities. The more narrowly and the more specifically a commodity is defined, it has more close substitutes and the more elastic is the demand for it. If a commodity is so defined that it has perfect substitutes, then its elasticity of demand is perfect, or infinite. For this reason, price elasticity of demand for a brand of a product is higher than that for the product as a whole. In other words, the demand curve facing a firm is more elastic than the one faced by the corresponding industry.

2. Nature of the Commodity:

Nature of the commodity is an important determinant of the price elasticity of demand. Necessities like food items and prestige goods have an inelastic demand, while luxuries and comforts have relatively elastic demand.

3. Position of Commodity in the Buyer's Budget:

Importance of a commodity in the buyer's budget also influences its elasticity. Importance means the portion of total expenditure devoted to a single commodity. The demands for soap, salt, matches, ink, and for many other similar commodities are highly inelastic because the typical household spends only a few rupees a week on each of them. The percentages of family budgets

devoted to such commodities are exceedingly small. The demand for such commodities is highly inelastic, but not perfectly inelastic. This is because of the magnitude of the income effect.

The higher the proportion of our income that is spent on a good, the more we will be forced to cut consumption when its price rises: the bigger will be the income and the more elastic will be the demand. Thus salt has a very low price elasticity of demand. Partly because there is no close substitute and partly because we spend such a tiny fraction of our income on salt that we would find little difficulty in paying a relatively larger percentage increase in its price: the income effect of a price rise would be very small. By contrast there will be much bigger income effect when a major item of expenditure rises in price. For example, if mortgage interest rates rise (the price of loans for house purchase), people may have to cut down substantially their demand for housing- being forced to buy somewhere much smaller and cheaper, or to live in rented accommodation.

4. Time Period

When price rises consumers may take a time to adjust their consumption patterns and find alternatives. The longer the time period after a price change, the more elastic is the demand is likely to be. For example, between December 1973 and June 1974 the price of crude oil increased four times. This led to similar rise in prices of petrol and central- heating oil. Over the next few months, there was only a very small reduction in the consumption of oil products. Demand was highly inelastic. Motorists had no alternative fuel to which they could turn. All they could do was to cut the number of journeys and try to drive their cars more economically. Likewise, those with oil-fired central heating could not suddenly burn gas or coal in their boilers. All they could do was to turn there heating down. Over time, however, as the higher oil prices persisted, new fuel-efficient cars were developed and many people switched to smaller cars. Similarly, people switched to gas or solid fuel central heating, and spent more money insulating their houses to save on fuel bills. Demand was thus much more elastic in the long run.

5. Number of Uses of a Commodity

The more uses a commodity can be put to, the more elastic its demand. If a commodity has only a few uses, its demand is likely to be inelastic. The various uses of any commodity can be thought of. If the price of a commodity is very high, consumers will put it only to the most important use of the commodity. At successively lower prices, more of the commodity is bought, and some units are devoted to the less important uses. The greater the number of uses to which a commodity can be put the greater its price elasticity of demand will be. For example, milk, which can be used in making curd, sweets, ice cream, cream, ghee etc., will have high price elasticity of demand. When its price rises, it will be put to only most important use. On the other, when its price declines it will

be applied to many less important uses and as a result its quantity demanded will increase significantly.

Any judgment of the elasticity of the demand for a commodity must take all determinants into account. They can either reinforce one another or work in opposite directions. A commodity can have several uses but no close substitutes. Another commodity with many substitutes can have a low position in consumer's budget.

The concept of price elasticity of demand is very useful for decision-making. Its major significance lies in price determination.

4.7 CROSS ELASTICITY OF DEMAND

Demand is also influenced by prices of other goods and services. The cross elasticity measures the responsiveness of quantity demanded to changes in price of other goods and services. Cross elasticity of demand is defined as the percentage change in quantity demanded of one good caused by a 1 percentage change in the price of some other good.

$$e_c = \frac{\% \Delta Q_x}{\% \Delta P_y} \quad 4.15$$

Cross elasticity is used to classify the relationship between goods. If cross elasticity is greater than zero, an increase in the price of y causes an increase in the quantity demanded of x, and the two products are said to be substitutes. When the cross-elasticity is greater than zero, the goods or services involved are classified as complements. Increases in the price of y reduces the quantity demanded of that product. Diminished demand for y causes a reduced demand for x. Bread and butter, cars and tires, and computers and computer programs are examples of pairs of goods that are complements.

The coefficient is positive if B and A are substitutes because the price change and the quantity change are in the same direction. The coefficient is negative if A and B are complements, because changes in the price of one commodity cause opposite changes in the quantity demanded of the other. Other things such as consumer taste for commodities, consumer incomes and the price of the other commodity are held constant.

Many companies produce several related products. Where a company's products are related, the pricing of one good can influence the demand for other products. Gillette makes both razors and razor blades. Ford sells several competing makes of automobiles. Gillette probably will sell more razor blades if it lowers the price of its razors.

The closer two commodities are as substitutes for each other, the greater is the size of the cross elasticity coefficient. Close substitutes have high cross elasticity of demand; poor substitutes have low cross elasticity.

In general, a rise in the price of a commodity increases the demand for its substitutes and diminishes the demand for its complements.

4.8 INCOME ELASTICITY OF DEMAND

The responsiveness of quantity demanded to changes in income is called income elasticity of demand. With income elasticity, consumer incomes vary while tastes, the commodity's own price, and the other prices are held constant. The income elasticity of demand for a good or service may be calculated by the formula:

Or
$$e_y = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

$$e_y = \frac{\text{Relative change in quantity demanded}}{\text{Relative change in the incomes of the buyers}}$$

$$e_y = \frac{\Delta Q / Q}{\Delta Y / Y} = \frac{Y}{Q} \cdot \frac{\Delta Q}{\Delta Y} \quad 4.16$$

where,

e_y stands for the coefficient of income elasticity

Y for income

Whereas price-elasticity of demand is always negative, income-elasticity of demand is always positive (except inferior goods), as the relationship between income and quantity demanded of a product is positive. For inferior goods the income elasticity of demand is negative because as income increase, consumers switch over to the consumption of superior substitutes.

The degree of income elasticity varies in accordance with the nature of commodities.

- ❑ In case of all normal goods, the income elasticity is positive
- ❑ For essential goods, the income elasticity is less than one. This means that quantity demanded increases less than proportionately as income increases. Soap, salt, match, newspapers have low income- elasticity of demand.
- ❑ For goods of comfort, the income-elasticity coefficient is equal to unit, which results in proportionate change in quantity demand.
- ❑ Luxury goods have income elasticity greater than unity implying more than proportionate change in quantity demanded. Jewelry, automobiles are goods of this category.

Income elasticity of demand can be useful in the following business decisions:

1. Income-elasticity can be helpful in production planning and management in the long run, particularly during the period of business cycle.
2. It can be used for demand forecasting with given rate of increase in income.

4.8.1 Income Sensitivity

The income elasticity of demand measures the degree of responsiveness of physical quantities of consumption of a good as income changes. If we measure consumption by consumer expenditures rather than by physical quantities of a

good, the phenomena may be described as *income sensitivity*. An income-sensitivity may be defined as the percentage change in expenditures on a good divided by the percentage change in income of the consumers. The income sensitivity may be measured with the help of following formula

$$Y_s = \frac{\text{Percentage change in expenditures}}{\text{Percentage change in income}}$$
$$Y_s = \frac{\Delta R / R}{\Delta Y / Y} \quad 4.17$$

Where

Y_{es} measures the income sensitivity

ΔR measures change in consumer expenditure

ΔY measures change in income

Suppose a 10 percent increase in income causes consumer expenditure on a good to increase by 12 percent, the income sensitivity of that good is 1.2.

4.9 ADVERTISEMENT OR PROMOTIONAL ELASTICITY OF SALES

The advertisement expenditure helps in promoting sales. The impact of advertisement on sales is not uniform at all level of total sales. The concept of advertising elasticity is significant in determining the optimum level of advertisement outlay particularly in view of competitive advertising by rival firms. An advertising elasticity could be defined as the percentage change in quantity demanded for a percentage change in advertising. Advertising might be measured by expenditure. Advertising elasticity may be measured by the following formula

$$e_A = \frac{\Delta S}{\Delta A} \cdot \frac{A}{S}$$

Where

S = sales

ΔS = increase in sales;

A = initial advertisement outlay

ΔA = increased advertising outlay

The advertising elasticity of sales varies between zero and infinity. If advertising elasticity is zero, sales do not respond to the advertising expenditure. Promotional elasticity coefficient greater than zero but less than 1 ($e_A > 0 < 1$) indicates that sales increase less than proportionate to the increase in advertisement expenditure. The coefficient of equal to 1 means proportionate increase in sales to the increase in expenditure on advertisement. If $e_A > 1$ it interprets that sales increase at a higher rate than the rate of increase of advertisement expenditure.

4.10 Determinants of Advertisement Elasticity

1. The level of sales

The advertising elasticity of sales, particularly in case of products newly introduced into the market, is greater than unity. Sales increase more than proportionately with the increase in advertisement expenditure. As sales increase elasticity begins to decrease. Now the advertisement is done to create new customers to the product. Therefore, demand now increases less than proportionately to increase in advertisement.

2. Competitive Advertising

The advertising elasticity of a firm will depend not only on the advertisement expenditure incurred by the firm for its product but also on the effectiveness of the competitive advertising by the rival firms

3. Cumulative effect of past advertisement

In the initial stages the advertisement outlay is not adequate enough to be effective. Therefore, the elasticity may be very low. But in later stages as the cumulative effect of advertisement gather, the advertising elasticity may increase over time.

Change in product's price, consumer's income, increase in the number of substitutes and their prices are other factors that influence the advertising elasticity of a product.

4.11 ELASTICITY OF PRICE EXPECTATIONS

People's price expectations also play a significant role as a determinant of demand. J.R.Hicks, the English economist, in 1939, devised the concept of elasticity of price expectations. The elasticity of price expectations may be defined as the ratio of the relative change in expected future prices to the relative change in current prices.

$$e_x = \frac{\text{relative change in expected future prices}}{\text{relative change in current prices}}$$

Where,

$$e_x = \frac{\Delta P_f / P_f}{\Delta P_c / P_c} = \frac{\Delta P_f}{\Delta P_c} \cdot \frac{P_c}{P_f}$$

P_c Current prices

P_f Future prices

If $e_x > 1$ Buyers expect that future prices will rise by a larger percentage than current prices.

$e_x = 1$ Buyers expect that future prices will rise by the same percentage as current prices.

$e_x < 1$ Buyers expect that future prices will rise by a smaller percentage than current prices.

$e_x = 0$ Buyers expect current rise to have no effect on future prices.

$e_x < 0$ Buyers expect that current rise will be followed by a fall in future prices.

The concept of elasticity of price-expectation is very useful in formulating pricing policy.

4.12 ELASTICITY OF SUPPLY

The elasticity of supply refers to the measure of responsiveness of the quantity supplied of a commodity to the changes in its determinants.

4.13 PRICE ELASTICITY OF SUPPLY

The price elasticity of supply refers to the degree of responsiveness of the quantity supplied of a commodity to the changes in its price. In other words, **price elasticity of supply** measures the relationship between change in quantity supplied and a change in price. If supply is elastic, producers can increase output without a rise in cost or a time delay. If supply is inelastic, firms find it hard to change production in a given time period.

The formula for price elasticity of supply is:

Percentage change in quantity supplied divided by the percentage change in price

When $P_{es} > 1$, then supply is price elastic

When $P_{es} < 1$, then supply is price inelastic

When $P_{es} = 0$, supply is perfectly inelastic

When $P_{es} = \text{infinity}$, supply is perfectly elastic following a change in demand

4.14 FACTORS THAT AFFECT PRICE ELASTICITY OF SUPPLY

(1) Spare production capacity

If there is plenty of **spare capacity** then a business should be able to increase its output without a rise in costs and therefore supply will be elastic in response to a change in demand. The supply of goods and services is often most elastic in a recession, when there is plenty of spare labor and capital resources available to step up output as the economy recovers.

(2) Stocks of finished products and components

If stocks of raw materials and finished products are at a high level then a firm is able to respond to a change in demand quickly by supplying these stocks onto the market - supply will be elastic. Conversely when stocks are low, dwindling supplies force prices higher and unless stocks can be replenished, supply will be inelastic in response to a change in demand.

(3) The ease and cost of factor substitution

If both capital and labor resources are **occupationally mobile** then the elasticity of supply for a product is higher than if capital and labor cannot easily and quickly be switched

(4) Time period involved in the production process

Supply is more price elastic the longer the **time period** that a firm is allowed to adjust its production levels. In some agricultural markets for example, the momentary supply is fixed and is determined mainly by planting decisions made months before, and also climatic conditions, which affect the overall production yield.

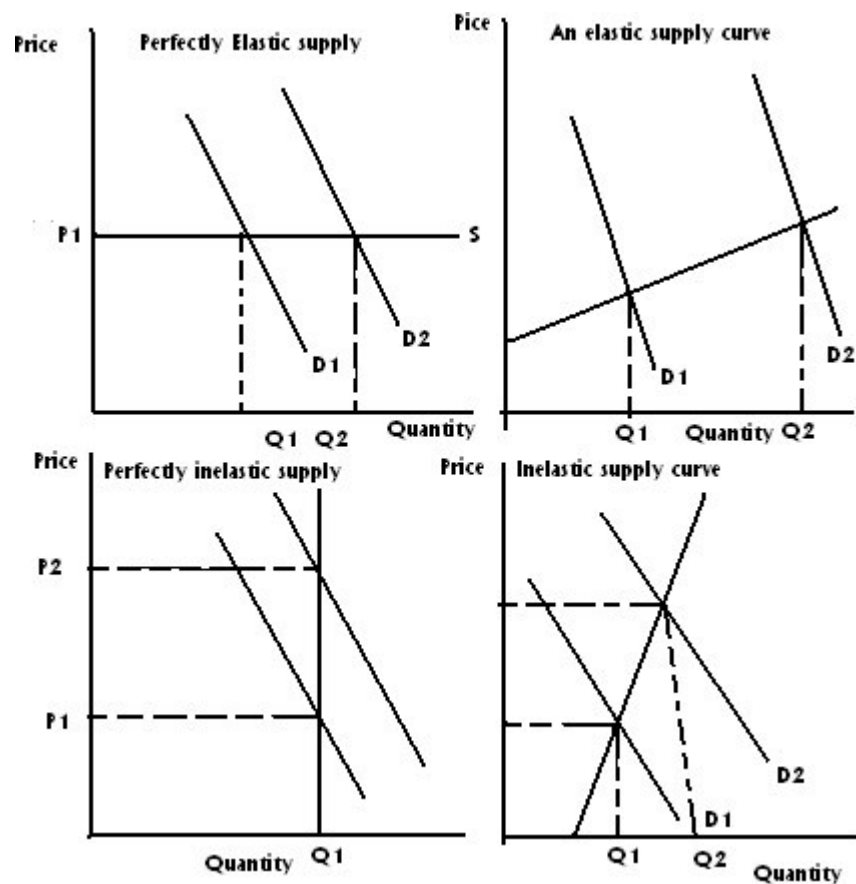


Fig. 4.7 Elasticities of Supply curves with different price elasticity of supply

The non-linear supply curve

A non-linear supply curve has a changing price elasticity of supply throughout its length. This is illustrated in the diagram below.

4.15 USEFUL APPLICATIONS OF PRICE ELASTICITY OF DEMAND AND SUPPLY

Elasticity of demand and supply is tested in virtually every area of the AS economics syllabus. The key is to understand the various factors that determine the responsiveness of consumers and producers to changes in price. The elasticity will affect the ways in which price and output will change in a market. And elasticity is also significant in determining some of the effects of changes in government policy when the state chooses to intervene in the price mechanism.

Some relevant issues that directly use elasticity of demand and supply include:

- **Taxation:** The effects of indirect taxes and subsidies on the level of demand and output in a market e.g. the effectiveness of the congestion charge in reducing road congestion; or the impact of higher duties on cigarettes on the demand for tobacco and associated externality effects
- **Changes in the exchange rate:** The impact of changes in the exchange rate on the demand for exports and imports
- **Exploiting monopoly power in a market:** The extent to which a firm or firms with monopoly power can raise prices in markets to extract consumer surplus and turn it into extra profit (producer surplus)
- **Government intervention in the market:** The effects of the government introducing a minimum price (price floor) or maximum price (price ceiling) into a market
- Elasticity of demand and supply also affects the operation of the price mechanism as a means of **rationing scarce goods and services** among competing uses and in determining how producers respond to the incentive of a higher market price.

4.16 SUMMARY

Elasticity of demand is defined as the ratio of the percentage change in quantity demanded to the percentage change in the demand determinant under consideration

Price elasticity of demand is a measure of the responsiveness of demand to changes in the commodity's own price

Arc elasticity is a measure of the average responsiveness to price changes exhibited by a demand curve over some finite stretch of the curve

Point elasticity of demand is defined as the proportionate change in the quantity demanded resulting from a very small proportionate change in price. Generally the most important determinants of the market demand are considered to be the determinants of price elasticity of demand. These include substitutes, nature of the commodity, and position of the commodity in the buyer's budget, time period, number and uses of a commodity.

Cross elasticity of demand is defined as the percentage change in quantity demanded of one good caused by a 1 percentage change in the price of some other good.

The income elasticity of demand for a good or service may be calculated by the formula:

$$e_y = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

Or

4.17 GLOSSARY

- **Elasticity of demand** is defined as the ratio of the percentage change in quantity demanded to the percentage change in the demand determinant under consideration
- **Price elasticity of demand** is a measure of the responsiveness of demand to changes in the commodity's own price
- **Arc elasticity** is a measure of the average responsiveness to price changes exhibited by a demand curve over some finite stretch of the curve"
- **Point elasticity of demand** is defined as the proportionate change in the quantity demanded resulting from a very small proportionate change in price
- **Cross elasticity of demand** is defined as the percentage change in quantity demanded of one good caused by a 1 percentage change in the price of some other good.

4.18 CHECK YOUR PROGRESS

A.Fill in the Blanks:

- (a) The income elasticity of inferior goods is _____.
(b) In the case of substitute goods, the elasticity of demand is _____.
(c) The elasticity of demand for luxury goods is _____.

Which statement is true:

- (a) The quality of a good does not affect the elasticity of demand.
(b) When the distribution of wealth in society is unequal, the elasticity of demand becomes inelastic.
(c) For wealthy people, the elasticity of demand is inelastic.

4.19 ANSWERS TO CHECK YOUR PROGRESS

Fill in the blanks:

- (a) Negative (b) Positive (c) Highly Elastic

Statements True/False:

- (a) False (b) True (c) True

4.20 TERMINAL QUESTIONS

1. Explain the concept of price elasticity of demand. How would you measure price elasticity of demand?
2. Define and distinguish between:
 - a. Arc elasticity and point elasticity
 - b. Price elasticity and cross-elasticity
 - c. Income elasticity and price elasticity.
3. What do you understand by income elasticity of demand? What is its practical importance for business executives?
4. Explain the concept of cross price elasticity of demand. How do you measure it?
5. Which of the following commodities has the most inelastic demand and why?
(a) Soap (b) Salt (c) Matches (d) Ice-cream (e) Newspaper

4.21 SUGGESTED READINGS

1. Watson, Donald S., Price Theory and Its Uses, Houghton Mifflin, Boston, Price Theory in Action, Houghton Mifflin, Boston.
2. Baumol, William J. Economic Theory and Operations Analysis, Prentice Hall of India Pvt.Ltd., New Delhi.2000.
3. Ferguson, C.E Microeconomics Theory, Richard D. Irwin, Home Wood. Ill.
4. George J. Stigler, The Theory of Price, 3rd ed. Macmillan, New York, 1966.
5. Spencer, Milton H., Managerial Economics, Richard D.Irwin, Home-wood, Ill.

UNIT-5: INDIFFERENCE CURVES ANALYSIS

Unit Structure

- 5.1 Introduction**
- 5.2 Meaning of Indifference Curves**
- 5.3 Indifference Map**
- 5.4 Assumptions of Indifference Curves**
- 5.5 Marginal Rate of Substitution**
- 5.6 Properties of Indifference Curves**
- 5.7 The Budget Constraint**
- 5.8 Equilibrium of the Consumer**
- 5.9 Consumer's Surplus**
- 5.10 Summary**
- 5.11 Glossary**
- 5.12 Check Your Progress**
- 5.13 Answer to check Your Progress**
- 5.14 Terminal Questions**
- 5.15 Suggested Readings**

OBJECTIVES

After studying this unit, you will be able to understand:

- Explain the meaning of an Indifference Curve.
- Explain the Marginal Rate of Substitution (MRS).
- Describe the assumptions of the Indifference Curve.
- Describe the properties of the Indifference Curve.
- Understand the applications of Indifference Curve Analysis

5.1 INTRODUCTION

Hicks and Allen made the real elaboration of the indifference curves. In 1934, J.R.Hicks and R.G.D. Allen wrote an article, 'A Reconstruction of the Theory of Value' in *Economica* presenting the indifference curve analysis. The great merit of indifference curve analysis is that it leads to ordinal measurement of utility.

5.2 MEANING OF INDIFFERENCE CURVE

An indifference curve examines the two good, single consumer case. An indifference curve represents satisfaction level of a consumer from two commodities. It is drawn on the assumption that for all possible combinations of the two commodities, the total satisfaction remains the same. Hence, the consumer is indifferent to the combinations lying on an indifference curve.

5.3 INDIFFERENCE MAP

An indifference curve shows various combinations of two goods X & Y that give the same utility, but different indifference curves show different levels of utility. For instance, the L_3 indifference curve on the graph below indicates a higher level of utility than the L_2 or the L_1 indifference curves. Economists assume that people want to attain the highest level of utility possible (I_3 is better than I_2 which is better than I_1)

There are an infinite number of indifference curves in the indifference map, and each person's indifference map is unique to that person. Figure 5.1 shows an indifference map.

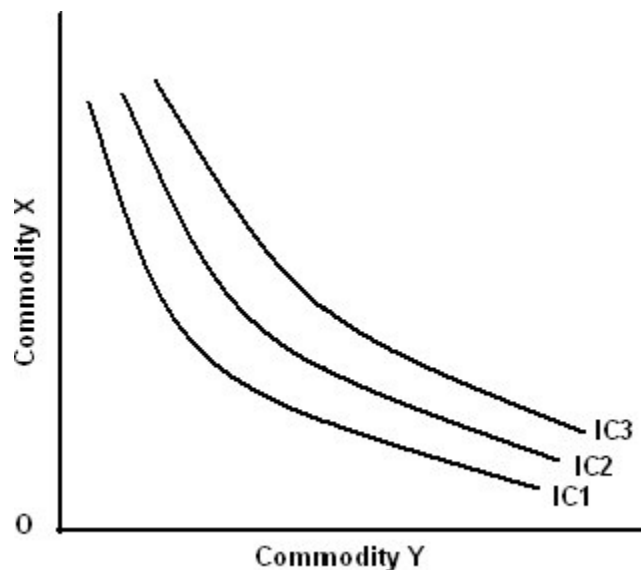


Fig. 5.1 Indifference Map

Thus, an indifference map shows all the indifference curves that rank the preferences of

the consumer. Combinations of goods situated on an indifference curve yield the same satisfaction. Combinations of goods lying on a higher indifference curve yield higher level of satisfaction and are preferred. Combinations of goods on a lower indifference curve yield a lower utility.

5.4 ASSUMPTIONS OF THE INDIFFERENCE CURVE ANALYSIS

The indifference curve analysis is based on the following main assumptions:

1. Entire income is spent on consumption

The budget constraints of a consumer are the given prices of different goods and services and constant income of the consumer. Under the budget constraint, it is assumed that the consumer spends his entire income to attain his objective of maximizing satisfaction.

2. Scale of preferences can be expressed

Every consumer has a scale of ordered preferences which enables him to compare any two combinations of two or more goods and to decide whether or not a given combination of any two goods, say Q1 and Q2 is preferred, not preferred or equivalent to any other combination of Q1 and Q2. Naturally, he can indicate when between two particular combinations of goods he is indifferent. The indifference in this context does not mean indecision. It simply implies that the consumer assigns the same rank order to both the combinations of goods.

The taste of the consumer can, therefore, be described with the ideas of preference and indifference. If he can choose between two goods or combinations of goods, he always prefers one to the other or else he is indifferent. Therefore, the only assumption is that the consumer prefers or is indifferent.

3. Complete knowledge about the market

The indifference curve analysis assumes that the consumer possesses full knowledge about all matters pertaining to his consumption decisions. For example, he knows the complete range of goods and services available in the market. He also knows the technical capacity of each commodity to satisfy his want. He possesses the information regarding the prices of various goods and services.

4. Preferences towards a combination of goods

The indifference curve analysis assumes that the consumer is not interested in any one commodity at a particular time as asserted by the utility analysis, but he is interested in a combination of goods and services. He is able to compare the total satisfaction derived by one particular combination of goods with that given by other.

5. Rational Behavior

The analysis assumes that the consumer behaves rationally. It implies if a consumer prefers a combination of goods to another combination, he will not prefer the second

combination to the first one at another time. He is consistent in his behavior.

6. Diminishing Marginal Rate of Substitution

It is assumed that the marginal rate of substitution of one commodity for another is always diminishing.

5.5 MARGINAL RATE OF SUBSTITUTION (MRS)

Dr. J.R. Hicks and Prof. R.G.D. Allen introduced the concept of *marginal rate substitution (MRS)* to take the place of the concept of diminishing marginal utility. Allen and Hicks are of the opinion that it is unnecessary to measure the utility of a commodity. For example, there are two goods X and Y, which are not perfect, substitute of each other. The consumer is prepared to exchange goods X for Y. How many units of Y should be given for one unit of X to the consumer so that his level of satisfaction remains the same?

The marginal rate of substitution of X for Y MRS_{xy} is defined, as the amount of Y the consumer is just willing to give up to get an additional unit of X (and still remain on the same indifference curve. In other words “The marginal rate of substitution of X for Y measures the number of units of Y that must be sacrificed for unit of X gained so as to maintain a constant level of satisfaction”.

Marginal rate of substitution (MRS) can also be defined as: “The ratio of exchange between small units of two commodities, which are equally valued or preferred by a consumer”. The MRS can be expressed in the form of a formula:

$$MRS_{xy} = \frac{\Delta Y}{\Delta X}$$

It may here be noted that the marginal rate of substitution (MRS) is the personal exchange rate of the consumer in contrast to the market exchange rate.

The concept of MRS can be easily explained with the help of schedule given below:

Marginal Rate of Substitution

Combination	Good X	Good Y	MRS of X for Y
1	1	13	--
2	2	9	4: 1
3	3	6	3: 1
4	4	4	2: 1
5	5	3	1: 1

In the table given above, all the five combinations of good X and good Y give the same satisfaction to the consumer. If he chooses first combination, he gets 1 unit of good X and 13 units of good Y. In the second combination, he gets one more unit of good X and is prepared to give 4 units of good Y for it to maintain the same level of satisfaction. The

MRS is therefore, 4:1. In the third combination, the consumer is willing to sacrifice only 3 units of good Y for getting another unit of good X. The MRS is 3:1. Likewise, when the consumer moves from 4th to 5th combination, the MRS of good X for good Y falls to one (1:1). This illustrates the diminishing marginal rate of substitution.

Diminishing Marginal Rate of Substitution:

In the above schedule, we have seen that as the consumer moves from combination first to fifth, the rate of substitution of good X for good Y goes, down. In other words, as the consumer has more and more units of good X, he is prepared to forego less and less of good Y. For instance, in the 2nd combination, the consumer is willing to give 4 units of good Y in exchange for one unit of good X; in the fifth combination only one unit of Y is offered for obtaining one unit of X. This behavior showing falling MRS of good X for good Y and yet to remain at the same level of satisfaction is known as *diminishing marginal rate of substitution*.

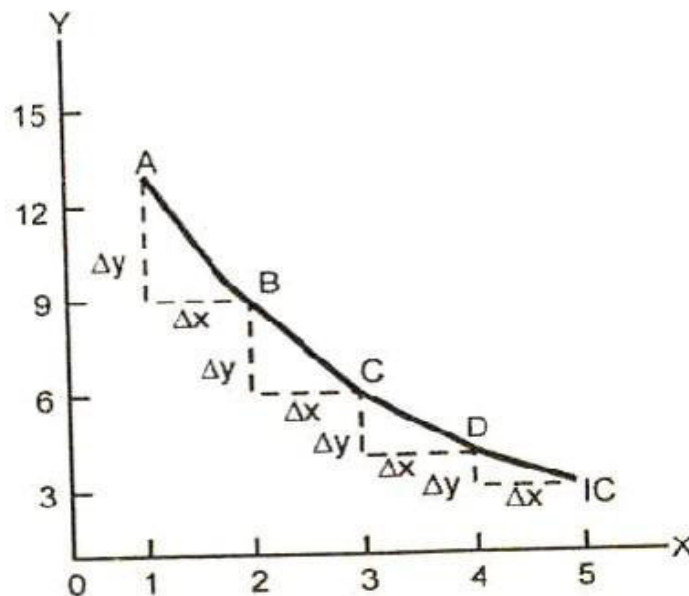


Fig. 5.2

In the fig. 5.2 above as the consumer moves down from combination 1 to combination 2, the consumer is willing to give up 4 units of good Y (ΔY) to get an additional unit of good X (ΔX). As the consumer slides down from combinations 2, 3 and 4, the length of ΔY becomes smaller and smaller while the length of ΔX is remain the same. This shows that as the stock of the consumer for good X increases, his stock of good Y decreases. He, therefore, is willing to give less units of Y to obtain an additional unit of good X. In other words, the MRS of good X for good Y falls as the consumer has more of good X and less of good Y. The indifference curve IC slopes downward from left to the right. This means a negative and diminishing rate of substitution of one commodity for the other.

5.6 PROPERTIES OF INDIFFERENCE CURVES

1. The Indifference Curves Slope downwards to the right

The negative slope of the indifference curve means that each indifference curve slopes downward from left to the right as shown in Fig. 5.3 (a). The negative slope implies that if a consumer is to attain the same level of satisfaction, then for an increase in the stock of one commodity he is required to forgo certain units of the other commodity.

If an indifference curve does not have a negative slope, then the three possible situations may arise. (i) It is horizontal to X axis, or (ii) it is vertical to X axis, or (iii) it may have a positive slope

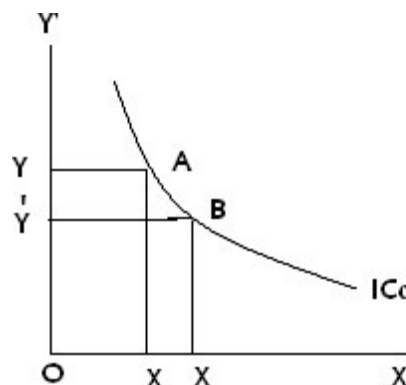


Fig. 5.3(a)

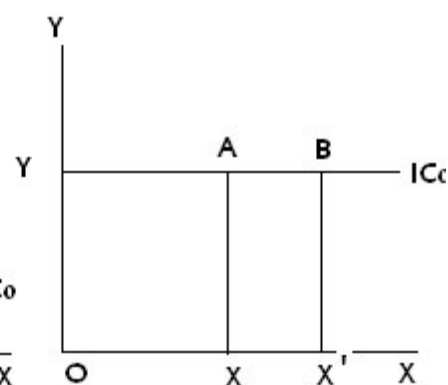
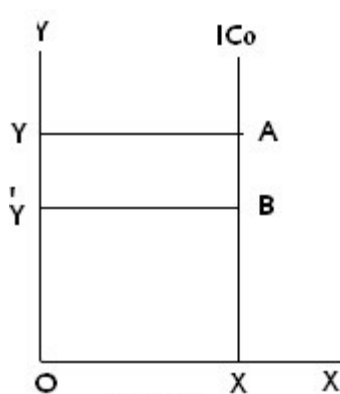
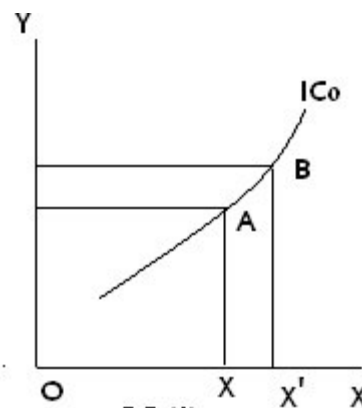


Fig. 5.3 (b)



5.3 (c)



5.3 (d)

Suppose an indifference curve is a horizontal straight line as shown in Fig. 5.3 (b). This situation shows that as the consumer moves from point A to B it results in an increase

The indifference curves must slope down from left to right. This means that an indifference curve is negatively sloped. It slopes downward because as the consumer

increases the consumption of X commodity, he has to give up certain units of Y commodity in order to maintain the same level of satisfaction.

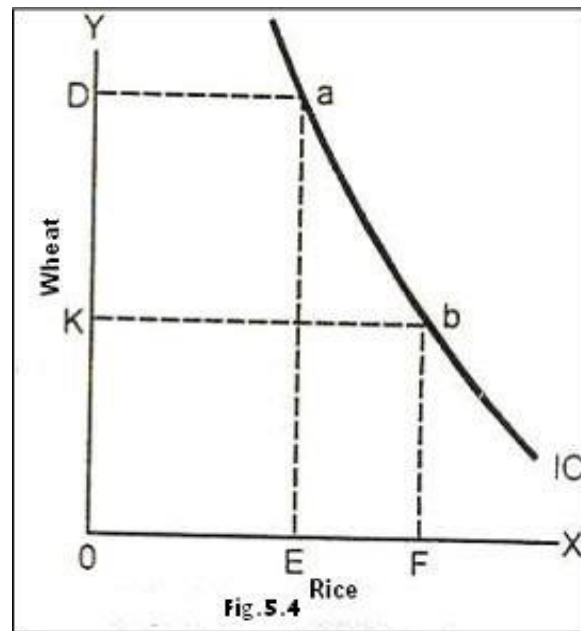


Fig.5.4 shows the two combinations of commodity rice and wheat by the points b and a on the same indifference curve. The consumer is indifferent towards points a and b as they represent equal level of satisfaction.

At point (a) on the indifference curve, the consumer is satisfied with OE units of rice and OD units of wheat. He is equally satisfied with OF units of rice and OK units of wheat shown by point b on the indifference curve. It is possible only on the negatively sloped curve that different points representing different combinations of goods X and Y represent the same level of satisfaction to make the consumer indifferent.

2. The Indifference Curves cannot intersect each other

Given the definition of indifference curve and the assumptions behind it, the indifference curves cannot intersect each other. It is because at the point of tangency, the higher curve will give as much as of the two commodities as is given by the lower indifference curve. In the fig, two indifference curves are showing cutting each other at point B. The combinations represented by points B and F gives equal satisfaction to the consumer because both lie on the same indifference curve IC₂. Similarly the combinations shows by points B and E since both lie on indifference curve IC₁ give equal satisfaction to the consumer.

If combination F is equal to combination B in terms of satisfaction and combination E is equal to combination B in satisfaction. It follows that the combination F will be

equivalent to E in terms of satisfaction. This is absurd and impossible. We therefore, conclude that indifference curves cannot cut each other.

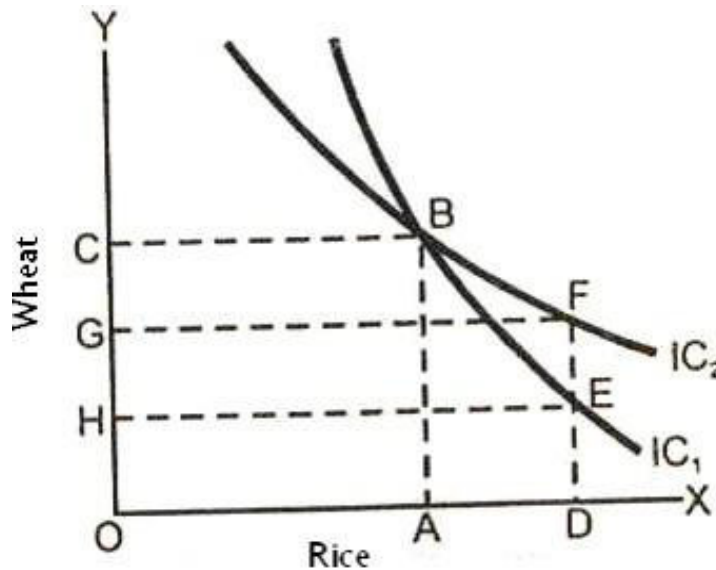


Fig. 5.5

3. Indifference Curves are Convex to the Origin:

This is an important property of indifference curves. They are convex to the origin. Convexity implies that the slope of an indifference curve decreases as we move along the curve from the left downward to the right. It also implies that as the consumer substitutes one commodity for another commodity, the marginal rate of substitution of the commodities diminishes along an indifference curve. The upper end of the curve shows a lot of Y and relatively little of X. If the consumer gains X, he is ready to give up a lot of Y in order to remain on the same level of satisfaction as below. But down at the lower end of the curve, there is relatively little of Y and a lot of X. If down here the consumer gains x2 for a less amount of y, y2 will be given up by the consumer to stay on the same level of satisfaction. Thus, the convex shape of the indifference curve reflects differences in consumer feelings about giving up Y to get more X, depending on how much X and Y are already being consumed.

In this figure 5.6 as the consumer moves from A to B to C to D, the willingness to substitute good X for good Y diminishes. This means that as the amount of good X is increased by equal amounts, that of good Y diminishes by smaller amounts. The marginal rate of substitution of X for Y is the quantity of Y good that the consumer is willing to give up to gain a marginal unit of good X. The slope of IC is negative. It is convex to the origin.

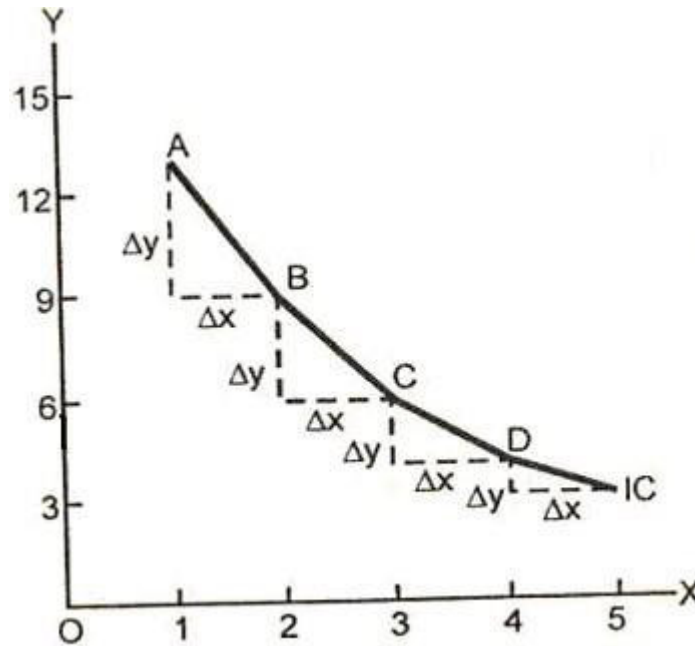


Fig. 5.6

4. Higher Indifference Curve Represents Higher Level of Satisfaction

A higher indifference curve that lies above and to the right of another indifference curve represents a higher level of satisfaction and combination on a lower indifference curve yields a lower satisfaction. In other words, a consumer to the combination that lies on a lower indifference curve will prefer the combination of goods that lies on a higher indifference curve.

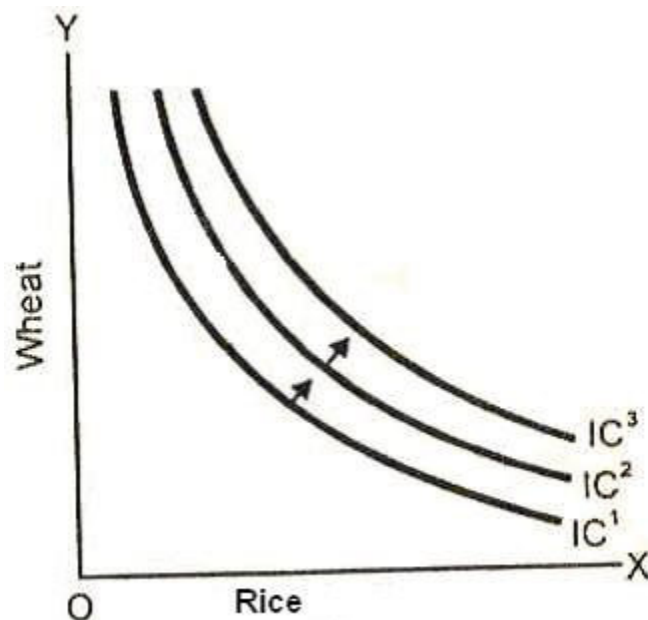


Fig. 5.7

In Fig.5.7 There are three indifference curves, IC^1 , IC^2 and IC^3 , which represent different levels of satisfaction. The indifference curve IC^3 shows greater amount of satisfaction and it contains more of both goods than IC^2 and IC^1 ($IC^3 > IC^2 > IC^1$).

5. Indifference Curves do not touch the Horizontal or Vertical Axis:

One of the basic assumptions of indifference curves is that the consumer purchases combinations of different commodities. He is not supposed to purchase a single commodity. In that case indifference curve will touch one axis. This violates the basic assumption of indifference curves.

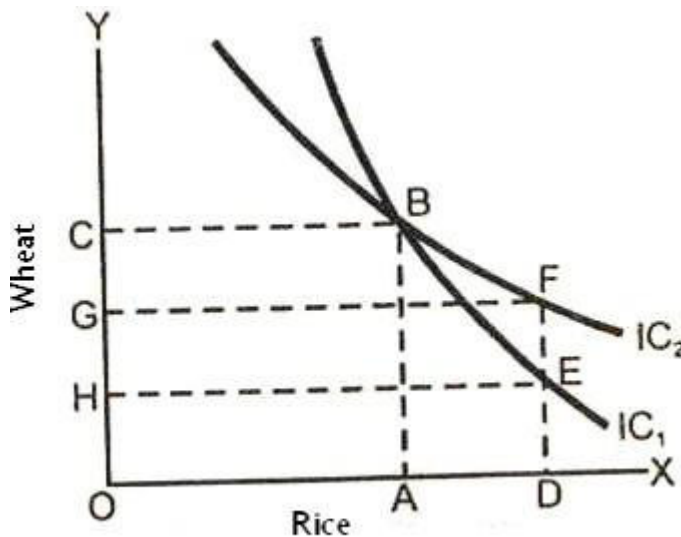


Fig. 5.8

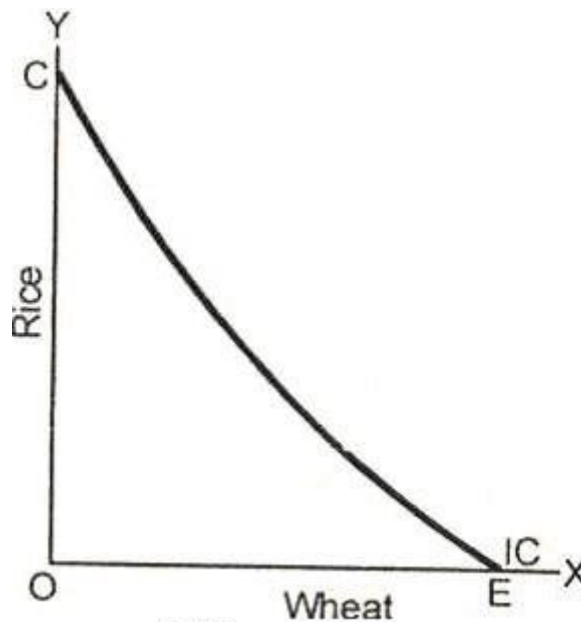


Fig. 5.9

Fig.5.8 shows that the indifference curve IC touches Y axis at point C and X axis at point E. At point C, the consumer purchase only OC commodity of rice and no commodity of wheat, similarly at point E, he buys OE quantity of wheat and no amount of rice. Such indifference curves are against our basic assumption. Our basic assumption is that the consumer buys two goods in combination.

5.7 THE BUDGET LINE OR THE PRICE LINE

The indifference map provides merely a hypothetical ranking of various combinations of two commodities. A consumer is unable to buy a particular bundle of goods merely on the basis of indifference curves. The indifference curves do not ask the consumer which combination will give him the most satisfaction for his money. In order to study and predict the consumer behavior vital information is essential in addition to the well-defined preference pattern of the consumer is the income of the consumer and the prices of the commodities. The understanding of the concept of budget line is essential for knowing the theory of consumer's equilibrium.

"A **budget line or price line** represents the various combinations of two goods which can be purchased with a given money income and assumed prices of goods".

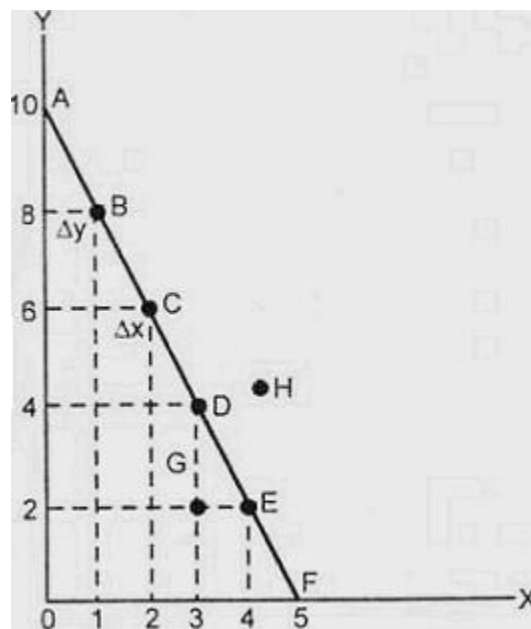


Fig.5.10

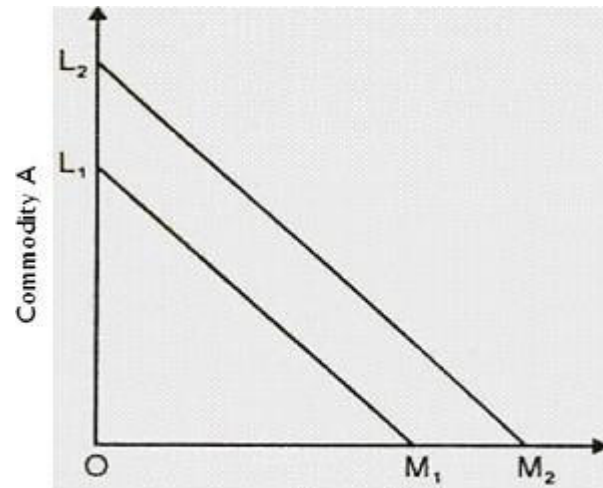
In the fig 5.10 the line AF shows the various combinations of goods the consumer can purchase. This line is called the budget line. The budget line shows 6 possible combinations of biscuits and coffee that a consumer can purchase weekly. These combinations are indicated by points A, B, C, D, E and. Point A indicates that 10 units of biscuits can be purchased if the entire income of Rs.100 is spent to the purchase of biscuits. Similarly, point F shows the purchase of 5 units of coffee for the entire income of Rs.100 per week. The budget line AF indicates all the combinations of biscuits and coffee that a consumer can buy given the prices and income. In case, a consumer decides to purchase combination of goods inside the budget line such as G, then it involves a total outlay that is smaller than the amount of Rs.100 per week. Any point outside the budget line such as H requires an outlay larger than the consumer's weekly income of Rs.100. The slope of the budget line indicates how many units of biscuits a purchaser must give up to buy one more unit of coffee. For example, the slope at point B on the budget line is $\Delta Y / \Delta X$ or two units of biscuits 1 = unit of coffee. This indicates that a move from B to C involves sacrificing two units of biscuits to gain an additional one unit of coffee. Since AF budget line is straight, the slope is constant at -2 units of biscuits per one unit of coffee at all points along the budget line.

Shifts in Budget Line:

The price line is determined by the income of the consumer and the prices of goods in the market. If there is a change in the income of the consumer or in the prices of goods, the price line shifts in response to an exchange in these two factors.

(i) **Change in Income of the consumer:**

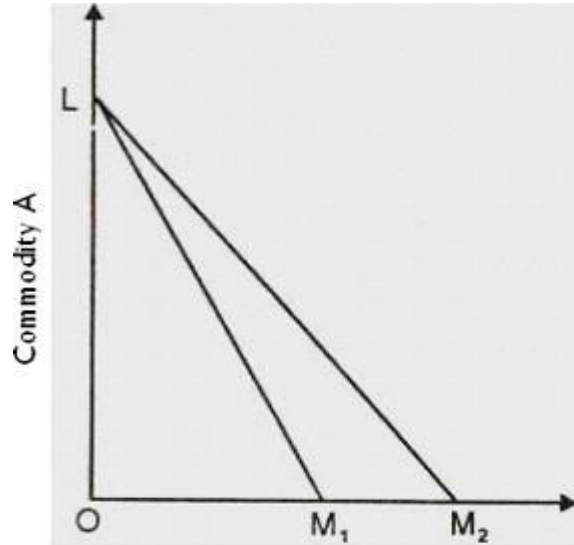
When there is change in the income of the consumer, the prices of goods remaining the same, the price line shifts from the original position. It shifts upward or to the right hand in a parallel position with the rise in income. A fall in the level of income, prices of the commodities remaining unchanged, the price line shifts left side from the original position. With a higher income, the consumer can purchase more of both goods than before but the cost of one good in terms of the other remains the same. In the fig. a change in income is shown when product prices remain unchanged. Fig.5.11 shows the rise in income results in a parallel upward shift in the budget line from $L' M'$ to $L_2 M_2$. The consumer is able to purchase more of both the goods A and B.



Commodity B
Increase in consumer's income
prices remaining the same

Fig. 5.11

(ii) **Price changes.** Now let us consider that there is a change in the price of one good. The income of the consumer and price of other good is held constant. When there is a fall in the price of one good say commodity A, (Fig.5.12) the consumer purchases more of that good than before. A price change causes the budget line to rotate about point L.



Commodity B
Change in Price of commodity A only
with given income

Fig. 5.12

It becomes flatter and gives the new budget line from LM' to LM_2 . A **flatter budget line** means that the relative price of the good A on the horizontal axis is lower. If the greater

amount is spent on the purchase of good A, the consumer can buy increased OM_2 amount of good A.

5.8 CONSUMER'S EQUILIBRIUM

A consumer is in equilibrium when he maximizes his satisfaction subject to a limited money income and given market prices of goods and services.

Equilibrium of the consumer occurs where the slope of the indifference curve and the slope of the budget constraint are equal. Mathematically, this occurs where $MRS = P_2/P_1$. This is an equilibrium point because at this point there is no reason to move away. The marginal rate of substitution can also be thought of as a ratio of marginal benefit that each good provides our consumer. Therefore, equilibrium in this setting involves equating the marginal benefit for two goods with their marginal cost.

Figure 5.13 illustrates the consumer's equilibrium.

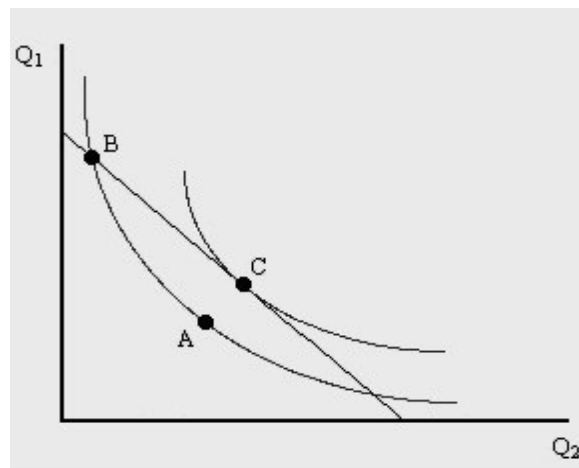


Fig. 5.13

To find out where the equilibrium is, if one exists, we want to see if there is one point that is always preferred to every other point. We can begin by starting at a specific point (the one we pick isn't important). To keep things simple, we'll continue to assume that our consumer spends their entire income on these two goods. Start at point B, at the top of the Budget Constraint. Based on our discussion above, we know that points A and B provide this consumer with equal levels of satisfaction. That is, the consumer is indifferent between points A and B.

The consumer's equilibrium refers to the amount of goods and services which the consumer may buy in the market given his income and given prices of goods in the market". The consumer aims to get maximum satisfaction from his money income. Given the price line and the indifference map a consumer is said to be in equilibrium at a point where the price line is tangent to the highest attainable indifference curve from below".

Thus the consumer's equilibrium under the indifference curve analysis must meet the following two conditions:

1. A given price line should be tangent to an indifference curve or marginal rate of satisfaction of good X for good Y (MRS_{xy}) must be equal to the price ratio of the two goods. i.e.

$$MRS_{xy} = P_x / P_y$$

2. The second order condition is that indifference curve must be convex to the origin at the point of tangency.

Income Effect

The consumer's equilibrium analysis had primarily assumed that the price of the goods X and Y and the income of the consumer remain constant. We will now examine as to how the consumer behaves in his purchases of goods when his income changes. Income is one of the most important factors affecting the purchase of commodities. If the prices of goods, tastes and preferences of the consumer remain constant and a change in his income it will directly affect consumer's demand.

An increase in consumer's income will shift the price line or budget line upward to the right and he attains a higher point of equilibrium. Similarly, a fall in the income will shift the price line downward to the left and the consumer attains a lower point of equilibrium. These changes in income of the consumer are depicted by a parallel upward or downward shift in the consumer's budget line. As the income changes, a new equilibrium is established and the consumer moves from one equilibrium point to another. Such movements show the rise and fall in the consumption basket. This is termed as 'income effect'. The income effect is explained with the help of following diagram.

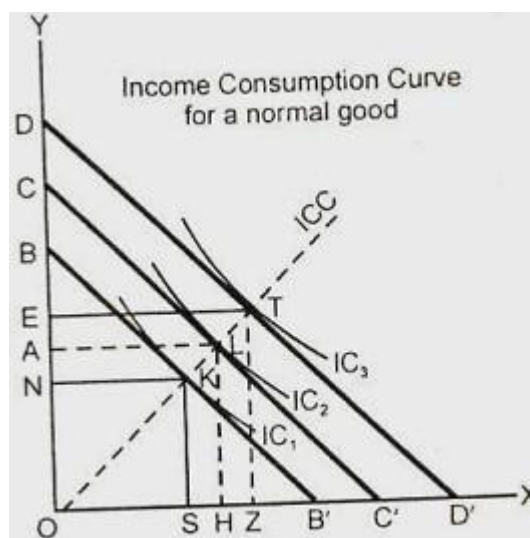


Fig.5.15 Income Consumption Curve

In the Fig.5.15 X is measured along OX and Y along OY. When the price line or budget line is BB'' , the consumer is in equilibrium position at point K where it touches the

indifference curve IC^1 . The consumer buys OS quantity of X and ON quantity of Y. We suppose now that the income of the consumer has increased and the new price line is now CC^1 that shifts in a parallel fashion to the right.

The consumer is in equilibrium at a level at point L, which is its equilibrium point. If there is further increase in income: shift of the price line now will be DD^1 , and the consumer is in equilibrium at point T and will be purchasing OZ quantity of X and OE quantity of Y. If these, equilibrium points K, L, T are joined together by a dotted line passing through the origin we get a curve known as income consumption curve ICC. The income-consumption curve is a locus of points in the commodity space showing the equilibrium commodity bundles associated with different level of money income for constant money prices. The income effect is positive in case of normal goods.

Income Consumption Curve and Nature of the Commodity

The effect of changes in income on the consumption of different kind of commodities is different. It can be positive, negative or even neutral. Infected the nature of a commodity determines whether the positive or negative. The income-effect is positive in case of normal goods and negative in case of inferior goods. An inferior good is one for which the quantity demanded varies inversely with income- increases in income reduce the quantity demanded and decreases in income increase the quantity demanded of inferior goods. Fig. 5.16 and explain the income effect in case of inferior commodity. In Fig. 5.16 (a) X is an inferior commodity. Its consumption goes on decreasing when consumer's income increases. Similarly, in Fig. 5.16 (b) Y is an inferior commodity as its consumption decreases with an increase in income of the consumer.

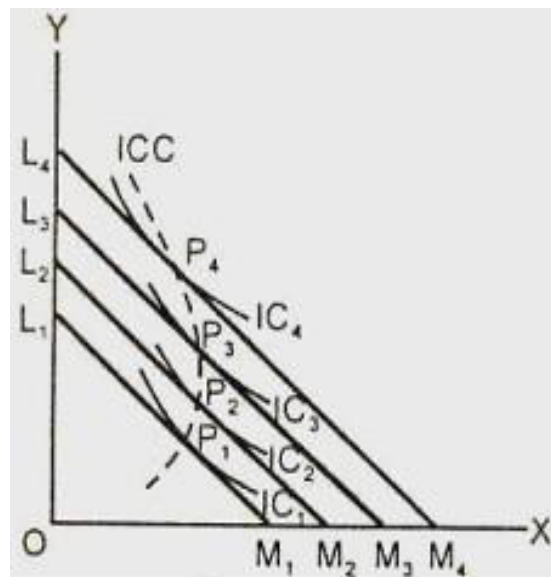
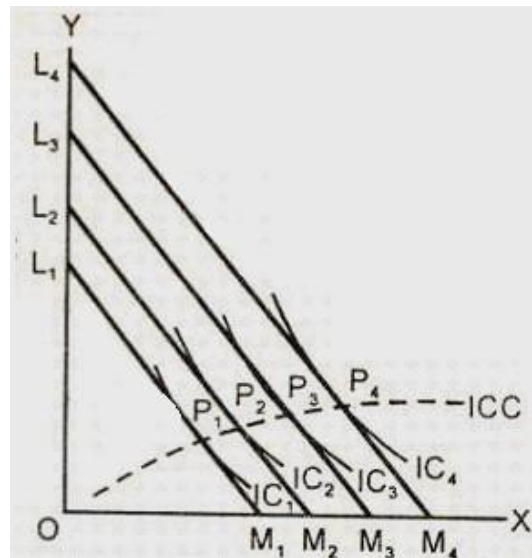


Fig. 5.16



Thus the positive or negative income-effect on the consumption of a commodity determines that a commodity is a 'normal good' or an 'inferior good'. If the income effect is positive, the commodity is through to be a 'normal good' and if it is negative, the good is considered to be 'inferior good'. Thus, depending on the nature of a commodity the income consumption curve may take different shapes

Price Effect:

We now discuss the reaction of the consumer to the changes in the price of a good while his money income; tastes, preferences and prices of other goods remain unchanged. A change in the price of a commodity not only induces the consumer to buy more or less because the relative price (P_x/P_y) has changed, but it also affects the demand for a commodity via income effect of a change in price.

When the price of a commodity changes the slope of the budget line shifts. The equilibrium of the consumer is also disturbed. A rational consumer, with a view to maximize his satisfaction, attempts to adjust his consumption basket. When the price of a commodity changes the consumer alters his purchase. A change in the quantity demanded of a commodity due to a change in its price is called the Price-effect.

The price effect may be defined as the total change in the quantity consumed of a commodity due to a change in its price. In fact it is the relative price structure that affects the demand. In order to investigate the effect of a change in price of one of the commodities, let us retain our two-commodity model, and hold the consumer's income, his taste and preference the price of the other commodity) Y) constant. Fig. illustrates the response of a consumer to changes in the price of a commodity shown on the horizontal axis (X) and the resultant change in the bundle of the two goods.

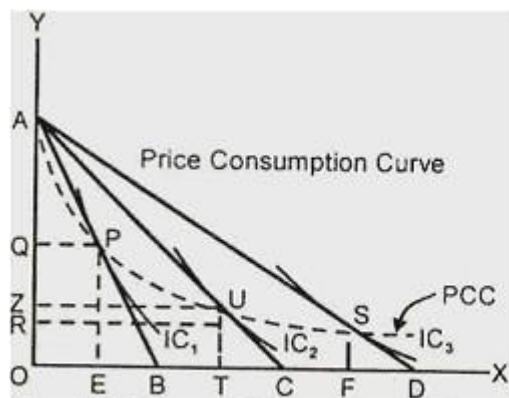


Fig.5.17 Price Consumption Curve

In the Figure 5.17 AB is the initial budget line. It is assumed that the price of X has fallen and the price of Y and the income of the consumer remain unchanged. The price line takes a new position AC and the equilibrium point shifts from P to U.

The consumer buys now OT quantity of X (the amount demanded rises from OE to OT and OZ quantity of Y. With further fall in the price X, the consumer is in equilibrium at point S, where the budget line AD is tangent to a higher indifference curve AC3. He buys now OF quantity of X and OR quantity of Y

The rise in amount purchased of X (OE to OF) as a result of a fall in its price is called price effect. The price effect on the consumption of a normal good is negative. If we join the equilibrium points PUS, we get price consumption curve (PCC) of the consumer for the commodity X.

The price consumption curve is a locus of points in the commodity space showing the equilibrium commodity bundles resulting from variations in the price ratio, money income remaining constant.

Thus the price consumption curve (PCC) shows the change in consumption basket due to a change in the price of commodity X. The quantity of X consumed goes on increasing whereas that of Y first decreases and then increases. The price consumption curve indicates the quantities of X the consumer buys at each price. The curve therefore contains the information from which the consumer's demand curve can be derived.

Price Effect When Commodity X is a Giffen Good:

Giffen good is a particular type of inferior good. When there is a decrease in the quantity demanded of a good with a fall in its price, the good is called *Giffen good*. Sometimes it so happens that a decrease in the price of a particular good causes its quantity demanded to fall. The consumer spends the money he saves by reducing his demand on the purchase of increased quantity of the other good. The decrease in the price of Giffen good has an effect similar to an increase in the income of a buyer. This particular type of behavior of the consumer to decrease demand of good when its price falls is called *Giffen Paradox*. Fig. explains the price effect on the consumption of the Giffen good X.

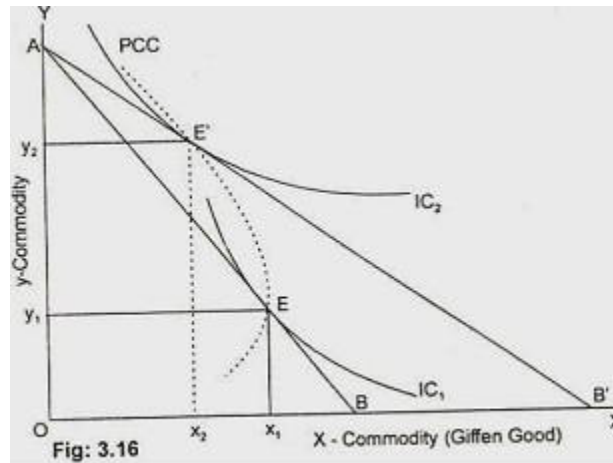


Fig. 5.18

In Fig.5.18 the consumer is in equilibrium at point E where the budget line AB is tangent to the indifference curve IC₁. The consumer purchases OX₁ quantity of Giffen good X and OY₁ quantity of good Y. When there is a reduction in the price of good X but no change in the price of good Y, the budget line AB' will show upward. The consumer is in equilibrium at point E' where the budget line AB' is a tangent to the indifference curve IC₂. In the new equilibrium position, the consumer purchases only OX₂ units of Giffen good X and OY₂ units of good Y. We find that the decrease in the price of Giffen good X, its quantity purchased has fallen from OX₁ to OX₂ and the quantity demanded of Y commodity goes up from OY₁ to OY₂. The price effect on the consumption of Giffen good is positive. It is indicated by the backward bending PCC in the case of X as a Giffen good.

Separation of price effect into income and substitution effects – Hicks vs. Slutsky

As discussed earlier, a fall in the price of commodity X leads to an increase in its quantity demanded. The total increase in the quantity demand of X is, however, the result of the combined action of the substitution and the income effect of a given change in price. Thus

$$\text{Price Effect} = \text{Substitution Effect} + \text{Income Effect}$$

Here, we need to know that of the total price effect how much is contributed by the substitution effect and how much is contributed by the income effect. The substitution effect is the change in quantity demanded resulting from a change in relative price after compensating the consumer for a change in real income. Substitution-effect arises due to the consumer's inherent tendency to substitute cheaper goods for the relative expensive ones. The income-effect of a change in the price of one commodity is the change in quantity demanded resulting exclusively from a change in real income, as other prices and money income held constant. It arises due to a change in real income caused by a change in the price of the goods. Substitution effect causes a movement along the price-consumption curve that generally has a negative slope. Income effect, on the other hand, causes a movement along the income-consumption curve that has a positive slope.

This section will illustrate the methods of measuring the total price effect and splitting the income effect and substitution effect.

Two approaches have been developed in this respect

1. Slutsky's approach and
2. Hicks' Approach

Slutsky states that to keep the real income of the consumer constant, the money income of the consumer should be reduced to the extent that he should be just able to purchase the original combination of the two commodities. This can be done by drawing a line parallel to the new price line that passes through the original combination of the two commodities X and Y. This approach, however, has been criticized on the ground that here the apparent real income remains constant and not the real income of the consumer. This approach enables the consumer to enjoy a higher indifference curve.

The second approach states that in order to keep the real income of the consumer constant, we should reduce his money income to the extent that he is just able to enjoy the original indifference curve. Drawing a parallel line to the new price line that at some point touches the original indifference curve can do this.

The two approaches differ in that the former approach emphasizes the attainment of the original combination of the two goods while the latter approach emphasizes the attainment of the original level of total satisfaction.

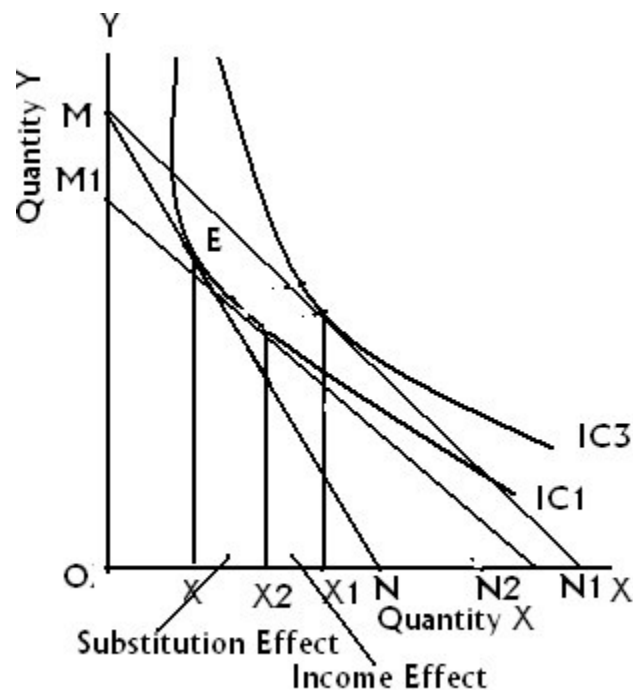


Fig. 5.19 Splitting of Price Effect

Fig.5.19. illustrates the substitution effect and the income effect of a decline in price of a commodity. In Fig.5.19 MN is the original price that is tangent to IC_1 at the point E. The original equilibrium point E indicates that the consumer buys OX of X. Now supply the price of X fall and, therefore, the price line shift rightward to the new position of MN1. The new equilibrium point is E1 where the indifference curve IC_3 touches the price line MN1. At the new equilibrium point E1 the consumer buys OX_1 quantity of X. Thus, the net increase in the quantity demanded of X is equal to XX_1 . This increase of XX_1 is due to the combined contribution of the income and substitution effects. Now we are interested to identify how much of this total increase in quantity demanded X is due to the substitution effect alone. In order to separate the two effects we discuss the techniques separately.

According to Slutsky, for this we draw line M_1N_2 parallel to the new price line MN1 in such a way that it passes through the original equilibrium point E. It means that we have reduced the money income of the consumer to the extent of the distance MM_1 on Y axis NN_1 on X axis. In Slutsky's opinion the line M_1N_2 keeps the consumer's real income constant. Now on the price line M_1N_2 , the consumer can buy the original combination of X and Y at the point E As a rational consumer, he would not buy the old combination of the two commodities at point E and moves on to the point E2 which lies on a higher indifferent curve IC_2 which is the direct effect (substitution effect) of the price change. Under Slutsky's approach, the substitution effect is equal to XX_2 . If we subtract this substitution effect XX_2 from the total effect XX_1 , we get the income effect X_2X_1 .

According to Hicksian approach, to keep the real income constant the money income of the consumer should be reduced to the extent that he forced to go back to the original indifference curve. For this we draw a line M_2N_3 parallel to the new price line MN1 in such a way that it touches the original indifference curve IC_1 at point E3. At point E, the consumer's real income remains the same in the sense that he gets the same level of total satisfaction as the original point E, because both the points E and E2 line on the same indifference curve IC_1 . But at point E, the consumer buys only OX quantity of X while at point E3, he buys OX_3 quantity of X Thus, the substitution effect is equal to XX_3 . From the total increase in the quantity demanded of X due to the fall in its price XX_1 . If we subtract the substitution effect XX_3 then the remaining portion X_3X_1 is the income effect.

5.9 CONSUMER'S SURPLUS

Alfred Marshall introduced the concept of consumer's surplus According to him: "A consumer is generally willing to pay more for a given quantity of good than what he actually pays at the price prevailing in the market". **For example**, you go to the market for the purchase of a shirt. You are mentally prepared to pay Rs.850 for the shirt, which the seller has shown, to you. He offers the shirt for Rs.600 only. You immediately purchase the shirt. You were willing to pay Rs.850 for the shirt but you are happy to get it for Rs.600 only. Consumer's surplus is the difference between the maximum amount a

consumer is willing to pay for the good and the price he actually pays for the good. In our example the consumer's surplus is Rs.250 (Rs.850-600) the consumer surplus can be easily found out by consumer's demand curve for the commodity and the current market price that we assume a purchaser cannot change.

In the words of **Alfred Marshall**:

"The excess of the price which he (consumer) would be willing to pay rather than go without the thing over that which he actually does pay is the economic measure of this surplus satisfaction".

In the words of **A. Koutsoyannis**:

"Consumer's surplus is equal to the difference between the amount of money that consumer actually pays to buy a certain quantity rather than go without it".

The concept of consumer's surplus is the result of two important phenomena:

- (i) Characteristic of consumer's behavior.
- (ii) Characteristic of market.

The characteristic of consumer's behavior is that as he buys more and more of a particular commodity, the marginal utility of the successive units goes on diminishing. A rational buyer continues to buy the commodity up to the unit, which equates his marginal utility of the good to the price he pays for it.

The second phenomenon is that there is perfect competition among sellers and a single price prevails in the market for a particular commodity at a particular time. The buyer is able to get the first unit of the commodity at the same price as the second or pay any other unit thereafter.

The concept of consumer's surplus is now explained with the help of a schedule and a demand curve.

Schedule

Quantity	Willing to Pay (Rs.)	Price (Rs.)	Consumer's Surplus (Rs.)
1	250	100	150 = (250 – 100)
2	200	100	100 = (200 – 100)
3	150	100	50 = (150 – 100)
4	100	100	0
Total	700	100x 4 = 400	300

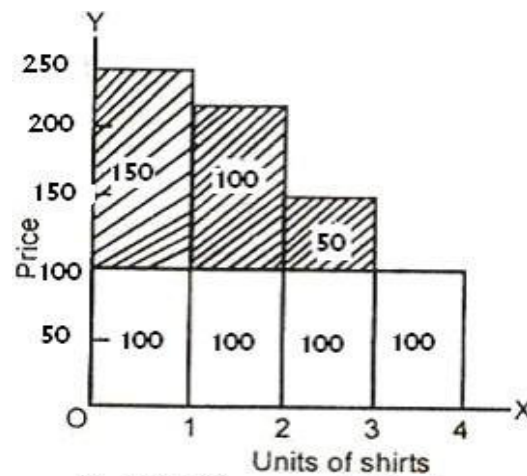


Fig.5.20 Consumer's Surplus

Modern economists Allen and Hicks have severally criticized the *Marshallian concept of consumer's surplus*. According to them, the concept is based on assumptions that are unwarranted. Utility, according to them, is a psychological feeling. It cannot be exactly measured in term of money. In Marshallian analysis, the marginal utility of money is assumed to remain constant. The fact is that when a consumer spends money on goods, his income decreases and the marginal utility of money to him rises. Analysis ignores this basic fact. Consumer's surplus is said to be imaginary as it assumes that utilities derived from various goods are independent. In real life, this is not true. The fact is that utilities derived from various goods are independent.

5.10 SUMMARY

Hicks and Allen made the real elaboration of the indifference curves. In 1934, J.R.Hicks and R.G.D. Allen wrote an article, 'A Reconstruction of the Theory of Value' in *Economica* presenting the indifference curve analysis.

An indifference curve examines the two good, single consumer case. An indifference curve represents satisfaction level of a consumer from two commodities. It is drawn on the assumption that for all possible combinations of the two commodities, the total satisfaction remains the same. Thus, an indifference map shows all the indifference curves that rank the preferences of the consumer.

Assumptions of the Indifference Curve Analysis include that the entire income of the consumer is spent on consumption. The consumer is in a position to show his scale of preferences can be expressed. The consumer has a complete knowledge about the market and exhibits preferences towards a combination of goods. The consumer is a rational being and substitutes one commodity for another on a diminishing rate.

Marginal rate of substitution (MRS) can also be defined as: "The ratio of

exchange between small units of two commodities, which are equally valued or preferred by a consumer”. The MRS can be expressed in the form of a formula:

$$MRS_{xy} = \frac{\Delta Y}{\Delta X}$$

An indifference curve has a number of properties that include:

1. The Indifference Curves Slope downwards to the right.
2. The Indifference Curves cannot intersect each other
3. Indifference Curves are Convex to the Origin:
4. Higher Indifference Curve Represents Higher Level of Satisfaction
5. Indifference Curves do not touch the Horizontal or Vertical Axis:

"A **budget line or price line** represents the various combinations of two goods which can be purchased with a given money income and assumed prices of goods". A budget line shifts with a change in the income of the consumer and the change in the price of one of the commodities.

A consumer is in equilibrium when he maximizes his satisfaction subject to a limited money income and given market prices of goods and services. Equilibrium of the consumer occurs where the slope of the indifference curve and the slope of the budget constraint are equal. The income-effect is positive in case of normal goods and negative in case of inferior goods.

The price effect may be defined as the total change in the quantity consumed of a commodity due to a change in its price. The total increase in the quantity demanded of a commodity is, however, the result of the combined action of the substitution and the income effect of a given change in price.

Thus, Price Effect = Substitution Effect + Income Effect

The excess of the price which he (consumer) would be willing to pay rather than go without the thing over that which he actually does pay is the economic measure of this surplus satisfaction. “Consumer’s surplus is equal to the difference between the amount of money that consumer actually pays to buy a certain quantity rather than go without it”.

5.11 GLOSSARY

- **Indifference curve:** An indifference curve is a locus of points showing different combinations of two goods giving equal amount of satisfaction
- **Indifference Map:** an indifference map shows all the indifference curves that rank the preferences of the consumer.
- **Marginal Rate of Substitution:** The ratio of exchange between small units of two commodities, which are equally valued or preferred by a consumer:
- **Budget Line:** A budget line or price line represents the various combinations of two goods which can be purchased with a given money income and assumed prices of goods.
- **Consumer’s Equilibrium:** A consumer is in equilibrium when he maximizes his satisfaction subject to a limited money income and given market prices of goods

and services.

- **Price Effect:** The price effect may be defined as the total change in the quantity consumed of a commodity due to a change in its price.
- **Income Effect:** The income effect may be defined as the total change in the quantity consumed of a commodity due to a change in income of the consumer
- **Consumer's Surplus:** Consumer's surplus is equal to the difference between the amount of money that consumer actually pays to buy a certain quantity rather than go without it

5.12 CHECK YOUR PROGRESS

Fill in the blanks:

- (A) _____ shows the different combinations of two goods X and Y that give the same utility.
- (B) _____ introduced the concept of the Marginal Rate of Substitution.
- (C) Indifference curves are _____ towards the origin.
- (D) _____ represents the different combinations of two goods that can be purchased with a given amount of money income and given prices of goods.
- (E) _____ introduced the concept of Consumer Surplus.

5.13 ANSWERS TO OBJECTIVE QUESTIONS

(A) Indifference Curve (B) J. R. Hicks (C) Convex (D) Budget Line (E) Alfred Marshall

5.14 TERMINAL QUESTIONS

1. What the characteristics of indifference curves? How would you explain a consumer's equilibrium with the help of indifference curves?
2. With the help of indifference curves show the effect of a change in income and a change in the price of the good on consumer's demand.
3. What do you understand by indifference curves? Explain the uses of indifference curve.
4. Explain the concept of diminishing marginal rate of substitution.
5. Differentiate between 'income effect' and 'substitution effect' caused by the change in the price of the commodity.

6. What is Giffen Paradox? Explain it with the help of indifference curves.
7. What do you by 'income consumption curve' and 'price consumption curve'

5.15 SUGGESTED READINGS:

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2. S.P. Singh, 'Managerial Economics', AITBS, New Delhi.
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UNIT-6 PRODUCTION FUNCTION: TOTAL, AVERAGE AND MARGINAL PRODUCT AND CURVES

Unit Structure

- 6.1 Introduction**
- 6.2 Basic Concepts of Production**
- 6.3 Production Function**
- 6.4 Summary**
- 6.5 Glossary**
- 6.6 Check Your Progress**
- 6.7 Answers to Check Your Progress**
- 6.8 Terminal Questions**
- 6.9 Suggested Readings**

OBJECTIVE

After reading this unit, you should be able to:

- Describe the basic concepts of production.
- Explain the concept of production function.
- Describe the long-run and short-run production function.

6.1 INTRODUCTION

The managers or decision-makers of business firms are primarily concerned with achieving optimum efficiency in production or minimizing cost for a given output irrespective of their objectives. In fact, in the rapidly intensifying competition the

survival of firms most likely depends on their capability to produce at a most competitive price. In their endeavor to minimize the cost of production, the managers are confronted with the following fundamental issues:

- (a) Relationship of the production and the costs.
- (b) The effect of technology on the cost of production.
- (c) The effect of substitution of one factor for the other on the cost of production.
- (d) The achievement of least cost combination of inputs.
- (e) Factors giving rise to economies and diseconomies of scale
- (f) The rate of return when the scale of production varies.

The theory of production provides tools and techniques to analyze production conditions and helps in the solution of practical business issues. In this you will study the basic concepts of production, **production function and** First, some basic concepts of theory of production are discussed.

6.2 BASIC CONCEPTS OF PRODUCTION

Meaning of Production

The term “production” refers to a process by which inputs are transformed into an output. It includes an activity that creates utility or adds value that the consumer could have derived from the inputs. This transformation process can be of three dimensions: change in form, space and time. In manufacturing raw material is changed into finished

goods, in transportation, a commodity is made available where it is demanded, storage increases the value of goods by making them available when it is wanted involving time dimension.

Input and Output

An input is simply anything which the firm buys for use in its production or other process for sale. A production process requires a variety of inputs depending upon the nature of product. Generally, the inputs have been classified as (i) Land, (ii) Labor, (iii) Capital, (iv) Raw material and (v) Time.

An output is any commodity which the firm produces or processes for sale.

Inputs are distinguished as (a) Fixed Inputs and (b) Variable Inputs.

Fixed Input and Variable Input

A fixed input is defined as one whose quantity cannot readily be changed when market conditions indicate that an immediate change in output is desirable. In other words, a fixed input is one whose supply cannot be expanded in the short run. A variable input, on the other hand, is one whose quantity may be changed almost instantaneously in response to desired changes in output. Its supply is elastic in the short run.

Short-Run and Long-Run

Short-run refers to that period of time in which the input of one or more productive agents is fixed. In the short run production of a commodity can be expanded

by varying the use of only variable inputs like labor.

Long-run is defined as the period of time in which all inputs are variable but not long enough to permit a change in technology. In the long run, both variable and fixed inputs can vary in the production of a commodity. In the long run all inputs are variable.

6.3 PRODUCTION FUNCTION

Production function is a purely technical relationship that connects factor inputs and output. In general terms, the production function shows that the production of a commodity depends on certain specific inputs. In specific sense, it presents the quantitative relationship between physical inputs and physical output. Thus the production function describes the transformation of factor inputs into products (outputs) at any particular time period and specifies either the maximum output that can be obtained with a given input combination, or the minimum quantity of inputs necessary for a given level of output. The production function includes all the technically efficient methods of production. Rational entrepreneurs will not use inefficient methods.

Economic theory looks to two kinds of input-output relations in production functions. One of the relations where quantities of some inputs are fixed while quantities of other inputs change. In the other relation, all of the inputs are variable.

Each firm has a production function whose form is determined by the state of technology. When technology improves, a new production function comes into being. The new one has a greater flow of outputs from the same inputs, or smaller quantities of

inputs for the same output.

In real life, a manufacturer wants to know how much of the various factors or inputs as land, labor, and capital, time and space will be required to produce a unit or given quantity of a commodity. It is necessary for him not only to assess his requirements of productive services but also roughly to estimate the probable cost. It will thus indicate the varieties of the productive resources and their possible combinations used for the purposes of production between the variable inputs and the output.

All these inputs enter the actual production function of a firm. For simplicity, we assume that all inputs or factors of production can be grouped into two broad categories, Labor (L) and Capital (K). In practice the raw materials bear a constant relation to output at all levels of production. For example, the number of bricks, the quantity of cement and steel etc. bears a constant relation for a given type of house irrespective of the number of houses built. Land, as an input, is constant for the economy as a whole, and hence does not enter into an aggregate production function. However, land is not constant for individual sectors or for individual firms. In these cases, land is lumped together with capital.

The general equation for the production function is:

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

Where,

Q = the quantity of output

K = Capital

L = labor

The production function implies that the quantity of output depends on the quantity of inputs (capital and labor). Increasing production will require increasing K and L. Increasing capital or labor depends on the time period taken into consideration for increasing production. In the short run only labor is variable while in the long run both inputs labor and capital are variable. Therefore, a firm would have two types of production functions: (a) short run production function and (b) long run production function

The short run production equation may be written as

$$Q = f(L)$$

In the long run production function takes the form as

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

The long run production function may also be written in the form as

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

Where,

v 'returns to scale' refers to the long run analysis of the laws of production.

y 'the efficiency parameter' refers to the entrepreneurial-organizational aspects of

production.

The two firms with identical factor inputs (and the same returns to scale) may have different levels of output due to differences in their entrepreneurial and organizational efficiency.

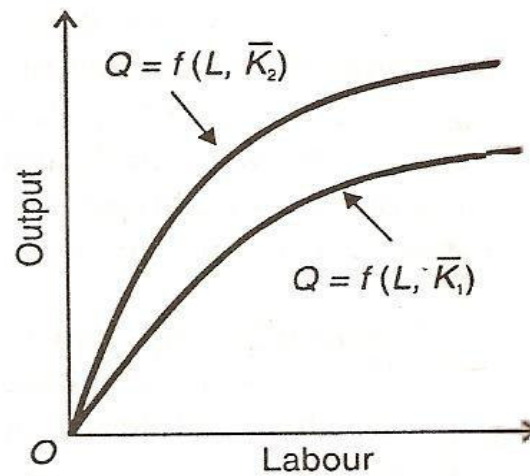
The Short-Run Production Function

In the short run, the technical conditions of production are rigid so that the various inputs used to produce a given output are in fixed proportions. However, in the short run, it is possible to increase the quantities of one input while keeping the quantities of other inputs constant in order to have more output. This aspect of the production function is known as the *Law of Variable Proportions*. The short-run production function in the case of two inputs, labor and capital, with capital as fixed and labour as the variable input can be expressed as

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

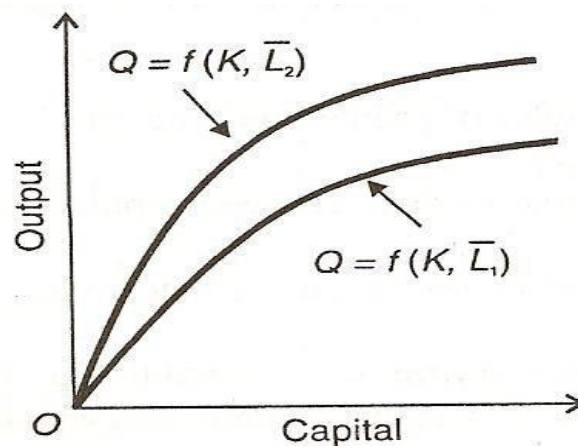
Where K refers to the fixed input.

This production function is depicted in Figure 1 where the slope of the curve shows the marginal product of labour. A movement along the production function shows the increase in output as labour increases, given the amount of capital employed K_1 . If the amount of capital increases to K_2 at a point of time, the production function $Q = f(L, K_1)$ shifts upwards to $Q = f(L, K_2)$, as shown in the figure.

**Fig. 1**

On the other hand, if labour is taken as a fixed input and capital as the variable input, the production function takes the form

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

**Fig.2**

This production function is depicted in Figure 2 where the slope of the curve represents the marginal product of capital. A movement along the production function

shows the increase in output as capital increases, given the quantity of labour employed, L_1 . If the quantity of labour increases to L_2 at a point of time, the production function $Q = f(K, L_1)$ shifts upwards to $Q = f(K, L_2)$.

The Long-run Production Function

In the long run, all inputs are variable. Production can be increased by changing one or more of the inputs. The firm can change its plants or scale of production. Given the level of technology, a combination of the quantities of labour and capital produces a specified level of output. The long-run production function is depicted in Figure 3 where the combination of OK of capital and OL of labour produces $100Q$. With the increase in inputs of capital and labour to OK_1 and OL_1 , the output increases to $200Q$. The long-run production function is shown in terms of an isoquant such as $100Q$.

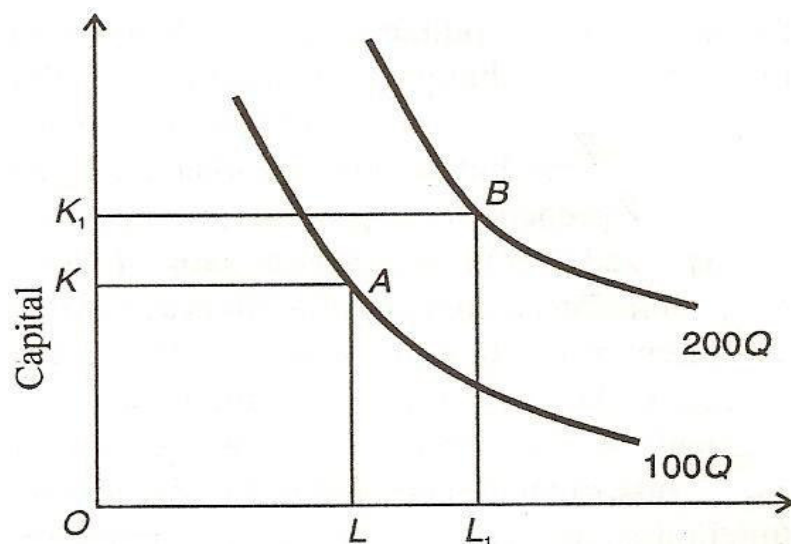


Fig.3

In the long run, it is possible for a firm to change all inputs up or down in accordance with its scale. This is known as *returns to scale*. The returns to scale are constant when output increases in the same proportion as the increase in the quantities of inputs. The returns to scale are increasing when the increase in output is more than proportional to the increase in inputs. They are decreasing if the increase in the output is less than proportional to the increase in inputs.

Let us illustrate the case of constant returns to scale with the help of our production function:

$$Q = f(L, M, N, K, T)$$

Given T, if the quantities of all inputs L, M, N, K are increased n-fold, the output Q also increases n-fold. Then the production function becomes

$$nQ = f(nL, nM, nN, nK)$$

This is known as linear and homogenous production function, or a homogenous function of the first degree. If the homogenous function is of the kth degree, the production function is

$$n^k \cdot Q = f(nL, nM, nN, nK)$$

If k is equal to 1, it is a case of constant returns to scale, if it is greater than 1, it is a case of increasing returns of scale; and if it is less than 1, it is a case of decreasing returns to scale.

6.4 SUMMARY

The theory of production provides tools and techniques to analyse production conditions and helps in the solution of business issues. The production function expresses a functional relationship between quantities of inputs and outputs. The production function as determined by technical conditions of production is of two types: it may be rigid or flexible. The former relates to the short run and the latter to the long run. The law of production describes the technically possible ways of increasing the level of production. The production function is explained with respect to factors of production. In the short-run, one factor is assumed constant while in the long-run both factors can be changed. Returns to scale refers to the changes in output as all factors change by the same proportion.

6.5 GLOSSARY

- **Production** Transformation of inputs into output.
- **Inputs** Resources used in the production of goods and services.
- **Long-run** The time period when all inputs become variable.
- **Short-run** The time period during which at least one input is fixed.

6.6 CHECK YOUR PROGRESS

1. **Fill in the blanks:**

- (a) A production process requires a variety ofdepending upon the nature of product.
- (b) The production function includes all the technically efficient methods of
- (c) In the short run only, labour is
- (d) The returns to scale are when the increase in output is more than proportional to the increase in inputs.

6.7 ANSWERS TO CHECK YOUR PROGRESS

-
- (a) Inputs (b) Production (c) Variable (d) Increasing (Rising)
-

6.8 TERMINAL QUESTIONS

First, some basis concepts of theory of production are discussed.

1. Explain the nature and managerial uses of production function.
2. Define production function. Differentiate between a short-run and a long-run production function.

6.9 SUGGESTED READINGS

1. Yogesh Maheshwari, Managerial Economics, Prentice Hall of India, New Delhi.
2. D.N. Dwivedi, Managerial Economics, Vikas Publishing House Pvt. Ltd., New Delhi.

3. T.R. Jain, O.P. Khanna and Virsen, Micro Economics and Indian Economy, V.K. Publishers, New Delhi.
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UNIT-7: LAW OF VARIABLE PROPORTIONS AND RETURNS TO SCALE

Unit Structure

7.1 Introduction

7.2 Laws of Production

7.3 Production in the Short-Run

7.3.1 The Three Stages

7.4 Production in the Long-Run

7.4.1 Iso-quant or Equal product Curve

7.4.2 Properties of Iso-quant

7.4.3 Types of Iso-quant

7.5 The Laws of Returns to Scale

7.5.1 Increasing Returns to Scale

7.5.2 Constant Returns to Scale

7.5.3 Decreasing Returns to Scale

7.6 Summary

7.7 Glossary

7.8 Check Your Progress

7.9 Answers to Check Your Progress

7.10 Terminal Questions

7.11 Suggested Readings

OBJECTIVES

After reading this unit, you should be able to:

- Describe the laws of production.
- Explain the iso-quant curve.
- Understand the laws of returns to scale.

7.1 INTRODUCTION

The production function of a firm is a relationship between inputs used and output produced by the firm. For various quantities of inputs used, it gives the maximum quantity of output that can be produced. A production function is defined for a given technology. It is the technological knowledge that determines the maximum levels of output that can be produced using different combinations of inputs. If the technology improves, the maximum levels of output obtainable for different input combinations increase. We then have a new production function. An iso-quant is the set of all possible combinations of the two inputs that yield the same maximum possible level of output. Each isoquant represents a particular level of output and is labelled with that amount of output. In the **long run**, all factors of production can be varied. A firm in order to produce different levels of output in the long run may vary both the inputs simultaneously. So, in the long run, there is no fixed input. In this unit you will study the laws of production, iso-quant curve and laws of returns to scale.

7.2 LAWS OF PRODUCTION

The laws of production describe the technically possible ways of increasing the level of production. Output may increase in various ways. Changing all factors of production can increase output. Clearly this is possible only in the long run. Thus the laws of returns to scale refer to the long run analysis of production. In the short run output may be increased by using more of the variable factor(s) while capital and possibly other factors as well are kept constant. The marginal product of the variable factor(s) will decline eventually as more and more quantities of this factor are combined with the other constant factors. The expansion of output with one factor (at least) constant is described by the law of (eventually) diminishing returns of the variable factor, which is often referred to as the law of variable proportions. We will first examine the short-run laws of variable proportions.

7.3 PRODUCTION IN THE SHORT-RUN

The theory of production studies the input-output relationship under (a) short term and (b) long term. In the short run, the production function is studied with one variable input (labour), other input (capital) remaining fixed. In the long run the input-output relationship is studied with all inputs subject to variation.

If all inputs of a firm are held constant and only the labor input varies, then any change in output is achieved with the help of changes in the amount of labor used. When the firm changes the amount of labor only, it changes the proportion between the fixed input and variable input. As the firm goes on changing this proportion by changing the amount of labor, it experiences the Law of Variable Proportions. It is also called the Law of Diminishing Returns.

The law of variable proportion shows the efficiency of factor combination that tells us how the total output or marginal output is affected by a change in the proportion of the factors

used. It describes the input-output relation in a situation when increasing the quantity of one input, keeping the other inputs constant, increases the output. When the quantity of one factor is increased and the quantities of the other factors of production are kept constant, the proportion between the variable factors and the fixed factor is changed. The ratio of the variable factor to that of the fixed factors goes on increasing as the quantity of the variable factor is increased.

The law of variable proportions is illustrated with the help of data presented in Table 1 and Fig. 4. Assuming that there is given fixed amount of land with which more variable factor labor, is used to produce output.

Table 1

Units of Labor (1)	Total Product (2)	Marginal Product (3)	Average Product (4)
1	80	80	80
2	170	90	85
3	270	100	90
4	368	98	92
5	430	60	86
6	480	50	80
7	504	24	72
8	504	0	63
9	495	-9	55
10	480	-15	48

With other inputs remaining fixed, as the amount of labor is raised from one unit to 7 units, the total product increases from 80 units to 504 units. Beyond the employment of 8 units of labor, total product diminishes. It is significant to note that up to the use of 3 units of labor, total product increases at an increasing rate, for a while remains constant.

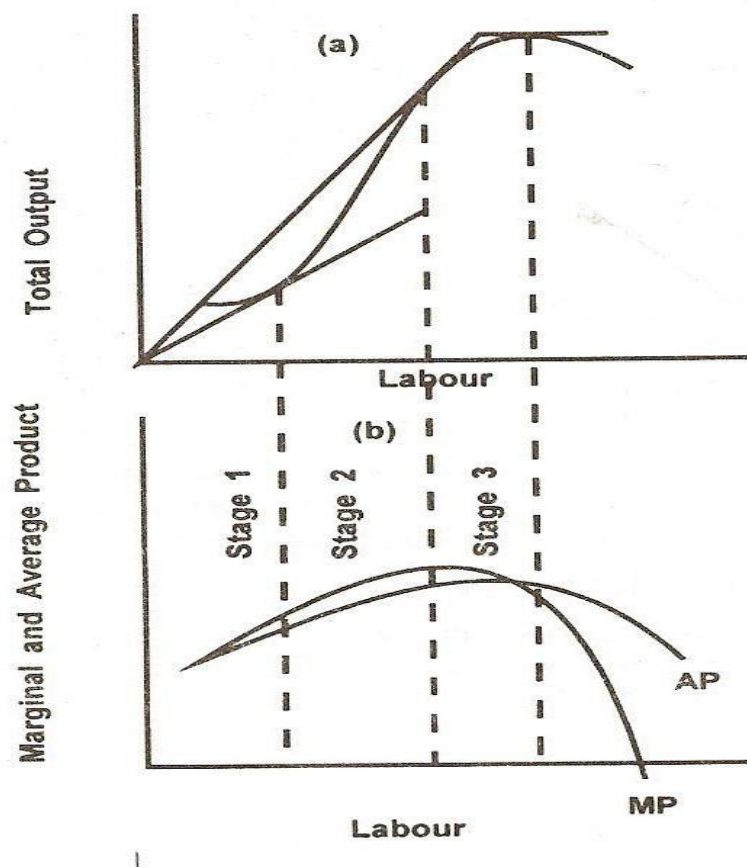


Fig.4

In Fig. 4, Panel (a) presents the total product curve. Total product curve first rises, remains constant for a while and eventually declines. Panel (b) presents marginal product (MP) and average product (AP) curves.

The law states that as more and more of the variable input is employed, all other inputs remaining constant, a point will eventually be reached where additional quantities of varying input will yield diminishing marginal contributions to total product. In general if one of the factors of production (usually capital K) is fixed, the marginal product of the variable factor (labour) will diminish after a certain range of production.

7.3.1 The Three Stages

The complete development of the law of variable proportions consists of three stages. In the first stage, average product per worker increases. The boundary of Stage 1 is where marginal and average products are equal and where average product is at a maximum.

In the second stage, the total product continues to increase, but at a diminishing rate. The maximum right boundary of the second stage is where the total product is largest and the marginal product is zero. In this stage both average and marginal products are declining. Marginal product, being below the average product, pulls the average product down.

In the third stage, the variable factor is too much relative to the fixed factor. This is the stage of negative returns since the marginal product of the variable factor is negative and the total product is declining.

Rational producers always choose a volume of production in stage 2, and never operate in stage 3, because he or she would be producing less and would be using more units of the variable inputs. In stage 3, there is too much labor, in an absolute sense. The boundary between stage 2 and 3 therefore marks one limit of the range of rational production decisions. The other boundary is between stages 1 and 2 where average product is a highest.

A rational producer concentrates on the ranges of output over which the marginal products of the factors are positive but diminishing. The ranges of increasing returns to a factor and the range of negative productivity are not equilibrium ranges of output.

7.4 PRODUCTION IN THE LONG-RUN

The laws of returns to scale can be explained with the help of production and iso-quant curve techniques. We will, therefore, first introduce and elaborate iso-quant and then explain the law of returns to scale through this technique

7.4.1 Iso-quant or Equal-product curve

The word iso-quant simply means equal quantities. It is, therefore, also known as ‘Equal Product Curve’. An iso-quant curve is the locus of points representing different combinations of labour and capital that will produce the same level of output. An iso-quant is indeed analogous to indifference curve with one great difference. Indifferent curves are subjective. What goes on in the consumer’s mind has to be assumed. In contrast, isoquants are objective; they can be measured in practice as well as in principle.

In order to explain the iso-quant curve, the following assumptions are made:

1. There are only two factors of production-labor and capital-that can be substituted for each other.
2. The rate of substitution diminishes as one factor is substituted for another.
3. The technology remains constant.

A given level of output can be produced with a wide variety of different input combinations. The combinations are so constituted that the substitution of one factor for another does not affect the output. The concept of iso-quant can be easily understood from the table given below.

The table 2 gives give combinations of two inputs (labour and capital) that produce 50 units of output.

TABLE 2: THEORY OF PRODUCTION

Combination	Labour	Capital	Output
A	1	12	50
B	2	8	50
C	3	5	50
D	4	3	50
E	5	2	50

This technological relationship is expressed through on Iso-quant curve ($1Q_1 = 50$) in Fig. 5. The curve $1Q_1$ all along its length represents fixed quantity 50 units of the product that can be produced with a number of labour-capital combinations. For example a,b,c,d, and e on the Iso-quant IQ show five different combinations of inputs, labour and capital as given in Table, all providing the same output-50 units. The movement along the iso-quant curve from a to e shows diminishing quantity of K (capital) and increasing number of L (labour) that implies substitution of labor for capital such that all the five input-combinations, yield the same quantity of commodity X i.e. $1Q_1 = 50$.

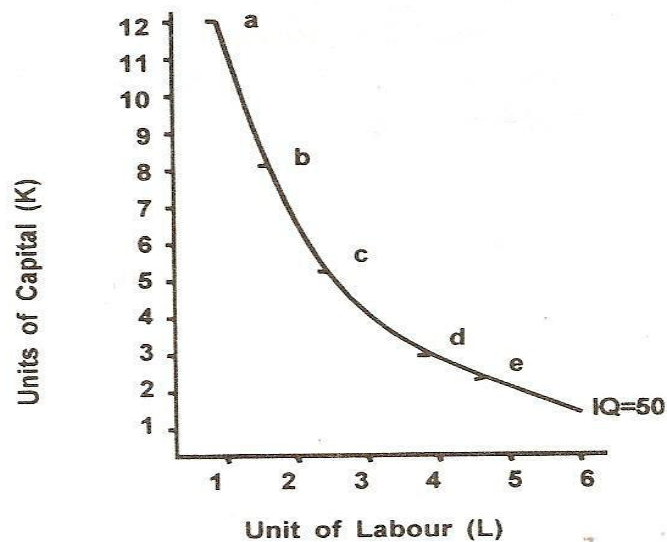


Fig.5

7.4.2 Properties of Iso-quant

Properties of iso-quants are the same as those of indifference curves. The following are the important properties of iso-quants:

1. An Iso-quant has a negative slope

An iso-quant has a negative slope in the economic region. The negative slope of the isoquant implies that the inputs are substitutable one for the other. If one of the inputs is reduced, the other input has to be so increased that the total output remains unchanged.

2. Iso-quants are convex to the origin

The property of convexity implies not only the substitution between the inputs but also diminishing marginal rate of technical substitution (MRTS) between the inputs in the economic region.

3. The iso-quants do not intersect or touch each other

Two iso-quants cannot touch or intersect each other. If the two iso-quants intersect each other, there would be a common factor combination corresponding to the point of intersection. It means the same factor combination that can produce 50 units of output according to one iso-quant can also produce 100 units of output according to the other iso-quant.

4. Upper Iso-quants Represent Higher Level of Output

Iso-quants toward the northeast represent higher levels of output. An upper iso-quant represents a larger input combination, which, generally produces a larger amount of output. Therefore, upper iso-quant represents a higher level of output.

7.4.3 Types of Iso-quant

The production iso-quant may assume various shapes depending on the degree of substitutability of factors.

1. Linear iso-quant

Linear iso-quant assumes perfect substitutability of factors of production: a given commodity may be produced by using only capital, or only labour, or by an infinite combination of K and L. Fig. 6 explain the linear iso-quant.

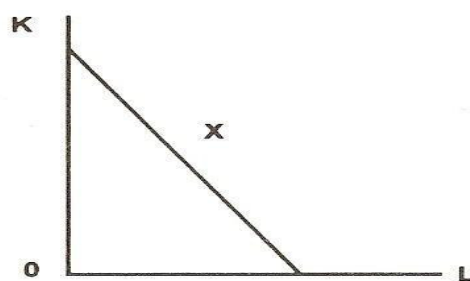


Fig.6

2. Input-Output iso-quant

Input-output iso-quant assumes strict complementarity (that is zero substitutability) of the factors of production. There is only one method of production for any one commodity. The iso-quant takes the shape of a right angle (Fig. 7). This type of iso-quant is also called “Leontief iso-quant” after leontief, who invented the input-output analysis.

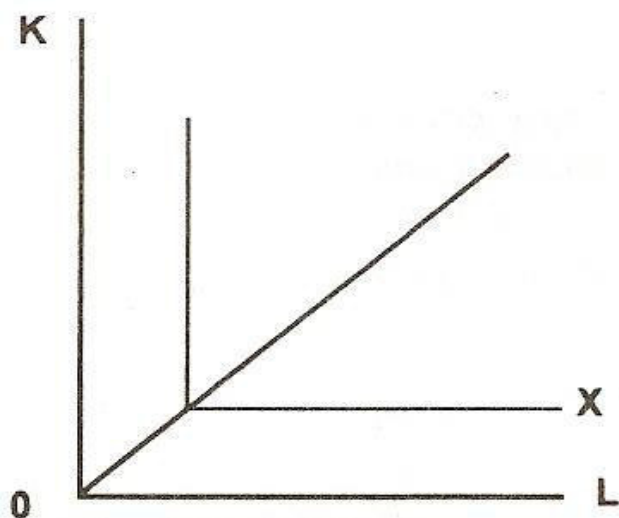


Fig.7

3. Kinked Iso-quant

This assumes limited substitutability of K and L. There are only a few processes for producing any one commodity. Substitutability of all factors is possible only at the kinks (Fig. 8). This form is also called ‘activity analysis iso-quant’ or ‘linear programming iso-quant’ because it is basically used in linear programming.

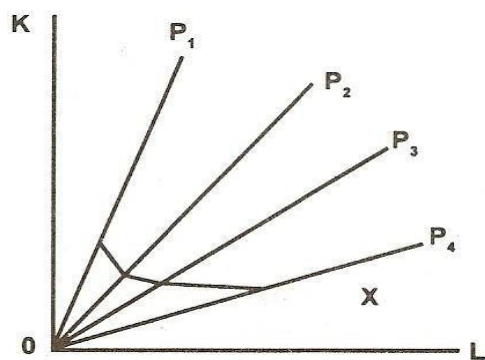


Fig.8

4. Smooth Convex Iso-quant

This form assumes continuous substitutability of K and L only over a certain range, beyond which factors cannot substitute each other. The iso-quant appears as a smooth curve convex to the origin. (Fig. 9).

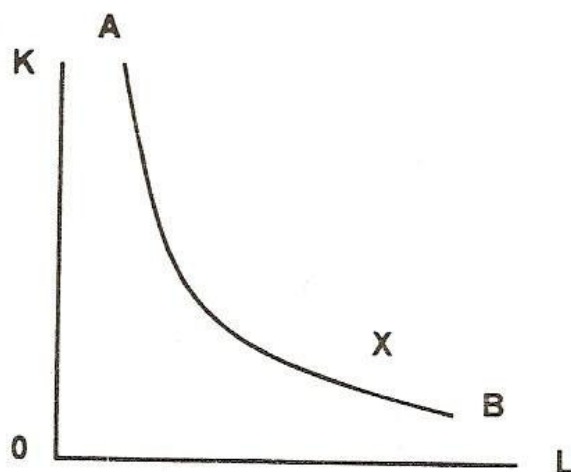


Fig.9

5. Iso-quant Map

Production function describes not only a single iso-quant, but also the whole array of iso-quants each of which shows a different level of output. When the whole array of iso-quants are

represented on a graph, it is termed an Iso-quant Map (Fig. 10). The iso-quant map shows how output vary as the factor inputs change.

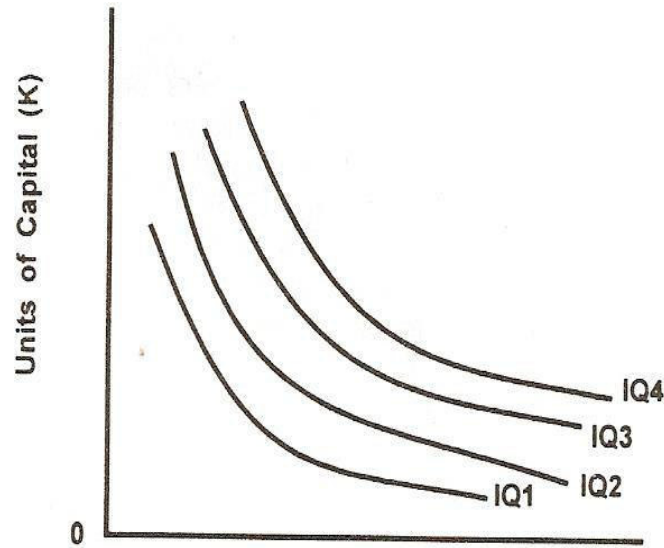


Fig.10

7.5 THE LAWS OF RETURNS TO SCALE

In the long run expansion of output may be achieved by varying all factors. In the long run all factors are variable. The law of returns to scale refers to the effects of scale relationship. In the long run output may be increased by changing all factors by the same proportion or by different proportions. The term 'returns to scale' refers to the changes in output as well factors change by the same proportion.

Suppose a firm starts from an initial level of inputs and output and increases all the inputs proportionately, there are three technical possibilities;

- (i) If output increases more than proportionally, we have increasing returns to scale;

- (ii) If output increases by the same proportion as the inputs increases, we have constant returns to scale;
- (iii) If output increases less than proportionally with the increase in the factors, we have decreasing returns to scale.

7.5.1 Increasing Returns to Scale

If a firm increases both the inputs in a certain proportion and the output results in more than proportion, it exhibits increasing returns to scale. For example, if both the inputs K and L are consecutively doubled, output is more than doubled, the returns to scale is said to be increasing. Fig. 11 illustrates the increasing results to scale. When the

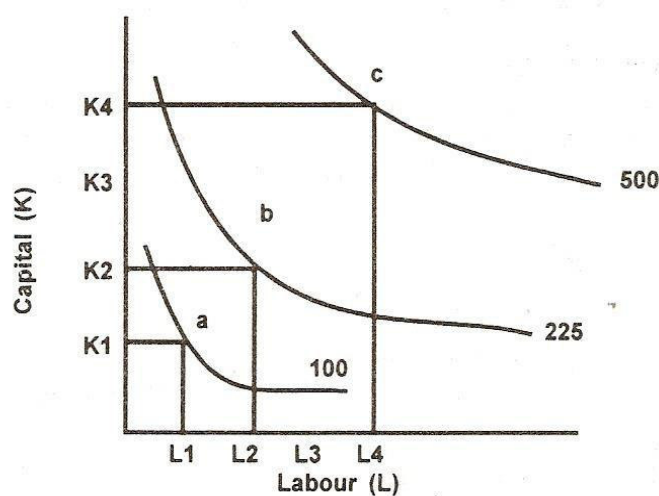


Fig.11

combination of inputs at point a ($1K + 1L$), is doubled to a combination of inputs at point b ($2K + 2L$), the output is more than doubled as it increases from 100 units to 225 units. Further successive doubling the inputs causes more than double increase in output as is illustrated by the movement from point b and c increasing the inputs from ($2K + 2L$) to ($4K + 4L$) output increases

to 500 units. This sort of relationship between inputs and output exhibits increasing returns to scale.

7.5.2 Constant Returns to Scale

When a certain proportionate change in input causes a corresponding proportionate change in output, it exhibits constant returns to scale. For example, doubling the factor inputs achieves double the level of the initial output; trebling inputs achieves treble output (Fig. 12) illustrates constant returns to scale. When inputs are doubled from $1K + 1L$ to $2K + 2L$ the output also increases from 100 to 200 and when inputs are again doubled to $4K + 4L$, the output is doubled to 400.

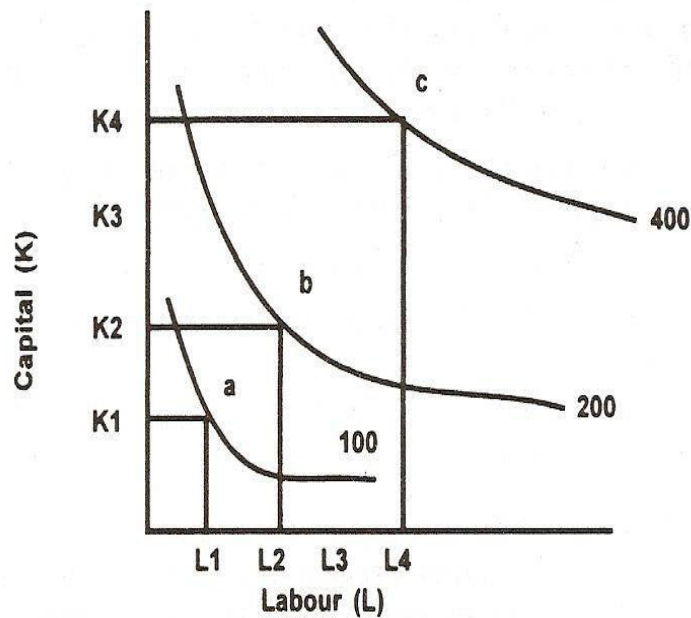


Fig.12

7.5.3 Decreasing Returns to Scale

When a certain proportionate change in inputs causes a less than proportionate change in output, the firm experiences decreasing returns to scale. For example, when both inputs are doubled and output increases less than double, then the decreasing returns to scale operate. Fig. 13 illustrates the decreasing returns to scale. The figure shows that the inputs are increased from $1K + 1L$ to $2K + 2L$, the output increase from 100 to 175 units.

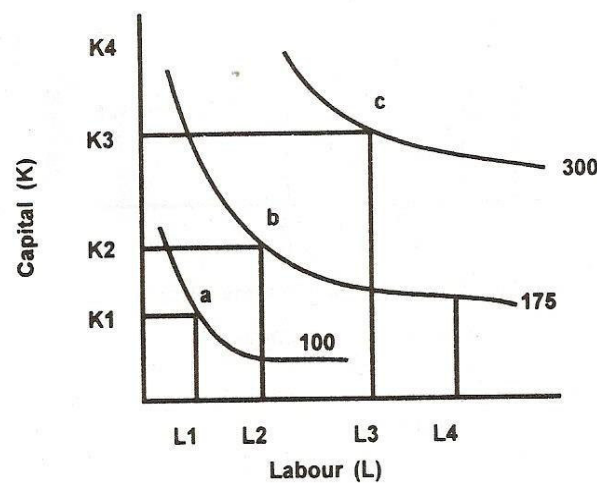


Fig.13

Causes of Increasing Returns to Scale

Returns to scale increase due to the following reasons:

- (i) **Indivisibility of Factors:** Returns to scale increase because of the indivisibility of the factors of production. Indivisibility means that machines, management, labour, finance, etc. cannot be available in very small sizes. They are available only in certain minimum sizes. When a business unit expands, the returns to scale increase because the indivisible factors are employed to their maximum capacity.

(ii) **Specialization and Division of Labour:** Increasing returns to scale also result from specialization and division of labour. When the scale of the firm is expanded there is wide scope of specialization and division of labour. Work can be divided into small tasks and workers can be concentrated to narrower range of processes. For this, specialized equipment can be installed. Thus with specialization, efficiency increases and increasing returns to scale follow.

(iii) **Internal Economies:** As the firm expands, it enjoys internal economies of production. It may be able to install better machines, sell its products more easily, borrow money cheaply, procure the services of more efficient manager and workers, etc. All these economies help in increasing the returns to scale more than proportionately.

(iv) **External Economies:** A firm also enjoys increasing returns to scale due to external economies. When the industry itself expands to meet the increased long-run demand for its product, external economies appear which are shared by all the firms in the industry. When a large number of firms are concentrated at one place, skilled labour, credit and transport facilities are easily available. Subsidiary industries crop up to help the main industry. Trade journals, research and training centres appear which help in increasing the productive efficiency of the firms. Thus these external economies are also the cause of increasing returns to scale.

Causes of Constant Returns to Scale

Returns to scale are constant due to:

(i) **Internal Economies and Diseconomies:** Increasing returns to scale do not continue indefinitely. As the firm expands further, internal economies are counterbalanced by internal diseconomies. Returns increase in the same proportion so that there are constant returns to scale over a large range of output.

(ii) **External Economies and Diseconomies:** The returns to scale are constant when external diseconomies and economies are neutralized and output increase in the same proportion.

(iii) **Divisible Factors:** When factors of production are perfectly divisible, substitutable, and homogeneous with perfectly elastic supplies at given prices, returns to scale are constant.

Causes of Decreasing Returns to Scale

The causes of decreasing returns to scale are:

(i) **Diminishing Returns to Management**

The most common causes of diminishing returns to scale are ‘diminishing returns to management’. The management is responsible for the co-ordination of the activities of the various sections of the firm. Even when authority is delegated to individual managers (production manager, sales manager, etc.) the final decisions have to be taken by the top management. As the output grows, top management becomes eventually overburdened and hence less efficient in its role as coordinator and ultimate decision-maker. In this view, increasing returns to scale are actually a special case of variable proportions.

(b) **Exhaustible Natural Resources**

As the scale of production is increased, it does not result in increase of output in the same proportion due to the exhaustible nature of natural resources. For example, doubling the fishing fleet may not lead to doubling of the catch of fish; or doubling the plant in mining or an oil-extraction field may not lead to a doubling of output.

(c) **Organizational Problems**

Certain organizational problems creep in to the large-scale production. A plant with a very large number of workers is more difficult to manage than a smaller one. The larger the

number of workers, the larger becomes the number of foremen and supervisors creating many layers of middle management causing communication problems. As a result it becomes difficult for manager to make sharp decisions. Owing to the organizational diseconomies that accompany large plant, firms frequently build multiple plants. Automobile assembly plants are kept relatively small by having most components made elsewhere.

7.6 SUMMARY

The production function expresses a functional relationship between quantities of inputs and outputs. The production function as determined by technical conditions of production is of two types: it may be rigid or flexible. For different combinations of inputs, the production function shows the maximum quantity of output that can be produced. In the short run, some inputs cannot be varied. In the long run, all inputs can be varied. Further, total product is the relationship between a variable input and output when all other inputs are held constant.

For any level of employment of an input, the sum of marginal products of every unit of that input up to that level gives the total product of that input at that employment level. In this way, the marginal product and the average product curves are inverse 'U'-shaped. The marginal product curve cuts the average product curve from above at the maximum point of average product curve.

7.7 GLOSSARY

Increasing Returns to Scale	If output increases more proportionate to the increase in all inputs.
Iso-quant	Geometric representation of production function.

7.8 CHECK YOUR PROGRESS

1. State whether the following statements are True or False:
 - (a) The theory of production studies the input-output relationship under short term only.
 - (b) An iso-quant has a negative slope in the economic region.
 - (c) When a certain proportionate change in input causes a corresponding proportionate change in output, it exhibits decreasing returns to scale.
 - (d) Returns of scale increase because of the indivisibility of the factors of production.
2. Complete the following sentences:
 - (a) The complete development of the law of variable proportions consists of.....stages.
 - (b) Two iso-quants intersect each other.
 - (c) As the firm expands, internal economies are by internal diseconomies.
 - (d) When a business unit expands, the returns to scale

7.9 ANSWERS TO CHECK YOUR PROGRESS

1. (a) False (b) True (c) False (d) True
2. (a) Three (b) Cannot (c) Counter balanced (d) Increases

7.10 TERMINAL QUESTIONS

1. What is the law of diminishing marginal product?
2. What is the law of variable proportions?
3. When does a production function satisfy constant returns to scale?

4. Explain the law of diminishing marginal returns and provide an example of this phenomenon.
5. “Economies of scale may be either internal or external; they may be technical, managerial, financial or risk-bearing”. Comment.
6. Write a detailed note on the laws of returns to scale.

7.11 SUGGESTED READINGS

1. Yogesh Maheshwari, Managerial Economics, Prentice Hall of India, New Delhi.
2. D.N. Dwivedi, Managerial Economics, Vikas Publishing House Pvt. Ltd., New Delhi.
3. T.R. Jain, O.P. Khanna and Virsen, Micro Economics and Indian Economy, V.K. Publishers, New Delhi.
4. H.L. Ahuja, Advanced Economic Theory, S. Chand & Co. Ltd., New Delhi.
5. Atmanand, Managerial Economics, Excel Books, Delhi.
6. R.L. Varshney and K.L. Maheshwari, Managerial Economics, Sultan Chand & Sons, New Delhi.

UNIT-8: THEORY OF COSTS

Unit Structure

8.1 Introduction

8.2 Cost Concepts

8.2.1 Accounting Cost Concepts

8.2.2 Analytical Cost Concepts

8.3 The Theory of Cost: Cost-output Relations

8.3.1 Costs in the Short Run

8.3.2 Long-run Costs

8.4 Allocation of Output between Two Plants

8.5 Economies and Diseconomies of Scale

8.5.1 Economies of Scale

8.5.2 Diseconomies of Scale

8.6 Break-even Analysis

8.7 Summary

8.8 Glossary

8.9 Check Your Progress

8.10 Answers to Check Your Progress

8.11 Terminal Questions

8.12 Suggested Reading

OBJECTIVES

After reading this unit, you should be able to:

- Define the cost concepts useful for accounting purposes and analytical cost concepts used in economic analysis.
- Analyze the cost output relationship in the short and long-run framework.
- Explain the economies and diseconomies of scale.
- Describe the break-even analysis.

8.1 INTRODUCTION

Firms in perfectly competitive industries make three specific decisions (a) How much output to supply? (b) Which production technique/technology to use, and (c) What quantity of each input to demand? All these decisions are made in non-competitive industries as well. Because firms in perfectly competitive markets are price-takers in both input and output markets, many decisions depend on prices over which firms have no control. Cost functions are derived functions. They are derived from the production function, which focuses on the cost of production. To calculate costs, a firm must know two things: the quantity and combination of inputs it needs to produce its output and how much these inputs cost.

In this unit you will study the cost concept, costs in the short-term and long-term, allocation of output between two firms and economies and diseconomies of scale and also about break even analysis.

8.2 COST CONCEPTS

There are several useful cost concepts. The cost concepts relevant to business operations and decisions can be grouped, on the basis of their nature and purpose, under two overlapping categories (a) costs concepts useful for accounting purposes and (b) analytical cost concepts used in economic analysis of business activities.

8.2.1 Accounting Cost Concepts

1. Opportunity Cost and Actual Cost

Opportunity cost measures the value of the opportunity that is lost or sacrificed when the choice of one course of action requires that an alternative course of action be given up. In general, if accepting an alternative requires that facilities or other resources must be devoted to that alternative that otherwise could be used for some other purpose, there is an opportunity cost, and it is measured by the profit that would have been earned had the resources been devoted to the other purpose. For example, the opportunity cost of a college education is the income you could have earned by working full time.

Costs actually incurred by the firm in payment for labour, material, plant, building machinery, equipment, traveling and transport, advertisement, etc. are called actual costs. The total money expenses, recorded in the books of accounts are for all practical purposes, are the actual costs.

2. Explicit and Implicit Costs

Economic costs are categorized into two parts: explicit and implicit costs. Explicit costs refer to the payment made to the factors hired from outside the firm, while implicit costs stands

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for the payments made for the self-owned resources used in the production. The implicit costs incurred in producing a specific commodity consist of the amounts that could be earned in the best alternative use of the entrepreneur's time and money. The only difference between the two is in terms of amount spent on hired factor or on self-owned ones.

3. Business Costs and Full Costs

A firm's business costs are its total money expenses as computed by ordinary accounting methods. These expenses include all payments and contractual obligations made by the firm together with the book cost of depreciation on plant and equipment.

The full cost includes business costs, opportunity cost of the firm and normal profits. The opportunity costs of the firm include interest on the funds invested in the firm by its owners and the value of the labour services of the entrepreneur, if working in the firm and receiving no salary as a business expense.

4. Out-of-Pocket and Books Costs

Out-of-Pocket costs refer to costs that involve immediate payments to outsiders as opposed to books costs that do not require current cash expenditure. For example, wages and salaries paid to the employees are out-of-pockets costs while salary of the owner manager, if not paid, is a book cost. The out-of-pocket costs are also called explicit costs and correspondingly book costs are called implicit or imputed costs. Books costs can be converted into out-of-pocket costs by selling assets and leasing them back from the buyer.

5. Economic Cost and Normal Profit

The economic cost in the production of a good refers to the payments it must make to all the factors of production employed by a firm in the production of that good. The factors of

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production includes all the resources owned by a firm as well as those hired from outside. Normal profit is not profit but an item of economic cost. In particular, it stands for the opportunity cost of entrepreneur's time. It is a profit that is just sufficient to ensure that a firm remains in business.

8.2.2. Analytical Cost Concepts

1. Variable and Fixed Costs

Variable costs are items of cost that vary directly and proportionately with volume.

Fixed costs do not vary at all with volume. Building depreciation, property taxes, supervisory salaries, and occupancy costs often behave in this fashion. These costs increase because of the passage of time, rather than because of the volume within a specified period of time.

2. Total, Average and Marginal Costs

Total Cost (TC) includes all cash payments made to hired factors of productions and all cash charges imputed for the use of the owner's factors of production in acquiring or producing a good or service.

Average Cost (AC) is the cost per unit of output obtained by dividing the total cost by the total quantity produced.

$$AC = \text{Total Cost} / \text{Output}$$

Marginal Cost (MC) is the extra cost of producing one additional unit.

$$MC = \Delta \text{ Total Cost} / \Delta \text{ Output}$$

3. Short Run and Long-Run Costs

Short run is defined as period during which at least one element of factor inputs is in fixed supply; the fixed input is plant and equipment. In the long-run, all factor inputs are variable. The short and long-run do not refer to any fixed units of calendar time. Corresponding to this period classification, there are short run and long-run costs. A short run cost is the cost which varies with output when fixed plant and capital equipment remain the same while a long-run cost is that which varies with output when all factor inputs, including plant and equipment vary. Long-run cost assumes variable plant size and it actually consists of short run cost curves for various plant sizes. This is because; in the long run all costs are variable. The plant may be fixed today, but in future decision may be made to increase its size to any desired level within the range of possible alternatives.

4. Historical and Replacement Costs

The historical cost of an asset refers to the actual cost incurred for the acquisition of an asset whereas replacement cost refers to the outlay that has to be made for replacing an old asset.

5. Private and Social costs

The private costs stand for the price that an entrepreneur must pay to get the resources used in production of a commodity. For example, in order to produce a commodity X, the entrepreneur pays a certain amount to purchase resources, uses them, and sells the commodity. The entrepreneur can compare the receipts from sales with the cost of the resources and determine whether there is an accounting profit. Social cost refer to the cost a society incurs when its resources are used to produce a given commodity.

8.3 THE THEORY OF COST: COST – OUTPUT RELATIONS

The cost theory deals with the behaviour of cost in relation to a change in output. It considers cost-output relations such that the total cost varies with variation in output. From the business decision-makers point of view, the absolute change in total cost is not important but the direction of change in the average and marginal costs is of special significance. The direction of change in marginal and average costs is a matter of cost function. A cost function is a symbolic statement of technological relationship between the cost and output.

The more specific form of cost function is relevant to the time chosen for cost analysis – short run or long-run. In the short run, some cost remain fixed, while all costs are variable in the long-run. Thus on the basis of time, there are two kinds of cost functions (a) short run cost functions and (b) long run cost functions.

8.3.1 Costs in the Short Run

Total Costs

In the theory of the firm, total costs are divided into two groups: total fixed costs and total variable costs:

$$TC = TFC + TVC$$

Total Fixed Cost

The fixed costs include salaries of administrative staff, depreciation (wear and tear) of machinery, expenses for building, repair and expenses for land maintenance. Normal profit,

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which is a lump sum including a percentage return on fixed capital and allowance for risk may also be treated as fixed cost.

Total Variable Costs

The variable costs include: the raw materials, the cost of direct labor, the running expenses of fixed capital, such as fuel, ordinary repairs and routine maintenance. The total variable cost of the firm has broadly an inverse-S shape that reflects the law of variable proportions. According to this law, at the initial stages of production with a given plant, as more of the variable factor(s) is employed, its productivity increases and the average variable cost falls. This continues until the optimal combination of the fixed and variable factors is reached. Beyond this point as increased quantities of the variable factor(s) are combined with the fixed factor(s) the productivity of the variable factor(s) declines (and the AVC rises).

By adding the TFC and TVC we obtain the total cost of the firm (Fig. 8.1).

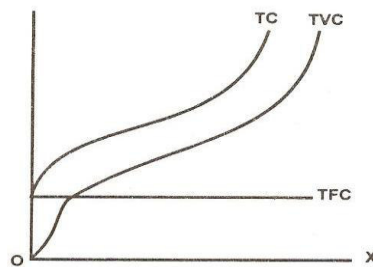


Fig. 8.1 Total Cost

Average Cost (AC)

The AC is obtained by dividing the TC by the corresponding level of output:

$$AC = TC/Q$$

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$$= \text{TFC} + \text{TVC} / Q$$

$$= \text{AFC} + \text{AVC}$$

The shape of the AC is the similar of that of the AVC (both being U-shaped). Initially the AC declines, it reaches a minimum at the level of optimal operation of the plant and subsequently rises again. The U-shape of both the AVC and the AC reflects the law of variable proportions or law of eventually decreasing returns to the variable factor(s) of production. The average cost of a firm in the short run always declines to a minimum; then it rises. How much it declines depends on the proportion of fixed to total costs. If the proportion of fixed costs is high, the decline in average cost is rapid.

Average Fixed Cost

Average Fixed Cost (AFC) is Total Fixed Cost divided by the number of units of output (q).

$$\text{AFC} = \text{TFC}/q$$

Average Fixed Cost falls as output rises, because the same total is being spread over or divided by, a larger number of units. This phenomenon is sometimes called spreading overhead. The AFC curve is a rectangular hyperbola asymptotic to the axes – that is, the curve approaches the vertical and the horizontal at each end. For very small outputs, average fixed cost per unit is high, and for large outputs it is low. The AFC curve is a rectangular hyperbola because average fixed cost multiplied by output is always exactly the same amount. Thus AFC steadily declines as output expands.

Average Variable Cost

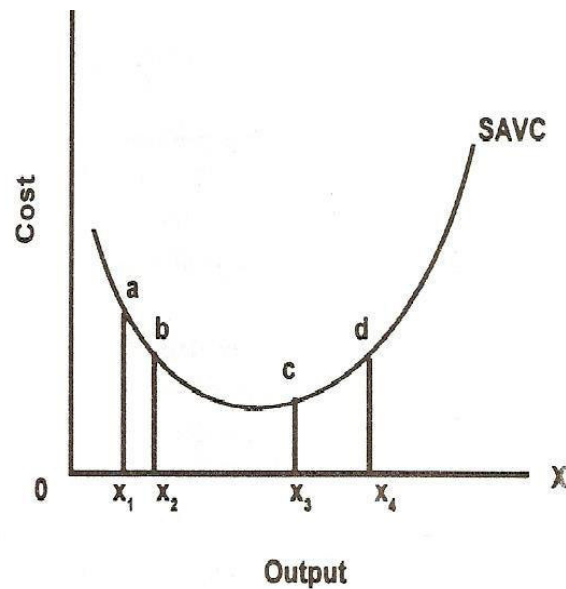


Fig.2 Short run Average Variable Cost

The average variable cost (AVC) is obtained by dividing the TVC with the corresponding level of output.

$$AVC = TVC/Q$$

Figure 2 illustrates that the AVC at each level of output is derived from the slope of a line drawn from the origin to the point on the TVC curve corresponding to the particular level of output. ~~MC curve~~ MC curve falls initially as the productivity of the variable factor(s) increases, reaches a minimum when the plant is operated optimally and rises beyond that point.

Marginal Cost

The most important of all cost concepts is that of marginal cost (MC). The marginal cost is defined as the change in TC that results from a unit change in output. It is the addition to total cost when another unit of output is produced. Marginal cost is independent of the fixed-cost as one more unit causes nothing to be added to the fixed cost. Marginal cost is associated only with

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the variable costs. The area under a marginal cost curve is equal to total variable cost. Expressing mathematically,

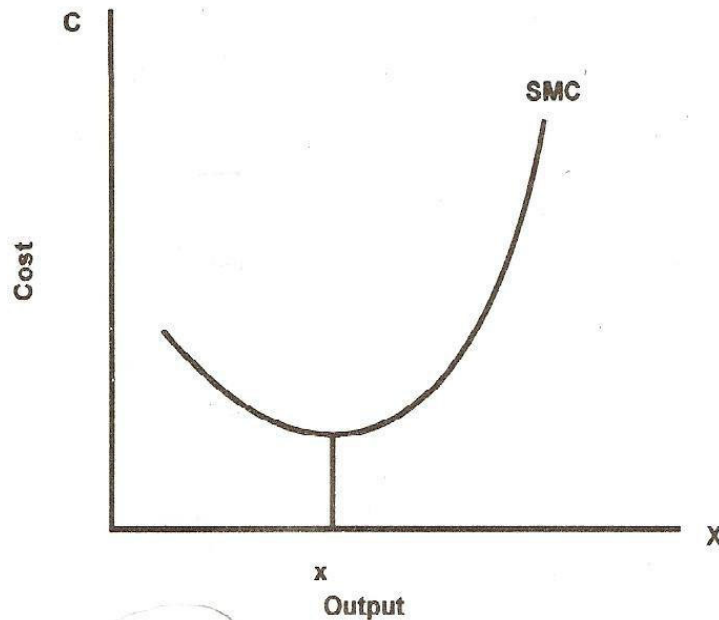


Fig.3 Short Run Marginal Cost

In the short run, every firm is constrained by some fixed input that (a) leads to diminishing returns to variable inputs and (b) limits its capacity to produce. As a firm approaches that capacity, it becomes increasingly costly to produce successively higher level of output. Marginal costs ultimately increase with output in the short run.

In summary, in the short run the cost curves (AVC, AC and MC) are U-shaped, reflecting the law of variable proportions. In the short run with a fixed plant there is a phase of increasing productivity (falling unit costs) and a phase of decreasing productivity (increasing unit costs) of the variable factor(s). Between these two phases of plant operation there is a single point at

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which unit costs are at a minimum. When this point on the AC is reached the plant is utilized optimally.

The relationship between Average Cost and Average Variable Cost

Since $AC = AFC + AVC$, AVC is a part of AC. The U-shape of both the AVC and AC reflects the law of variable proportions. It is important to note that the minimum point of the AC occurs to the right of the minimum point of the AVC (Fig. 4) because the AC includes AFC, and the AFC falls continuously with expansion in output. After the AVC has reached its lowest point and starts rising, its rise is over a certain range offset by the fall in the AFC, so that the AC continues to fall (over that range) despite the increase in AVC. However, the rise in AVC eventually becomes greater than the fall in the AFC so that the AC starts increasing. The AVC approaches the AC asymptotically as output increases.

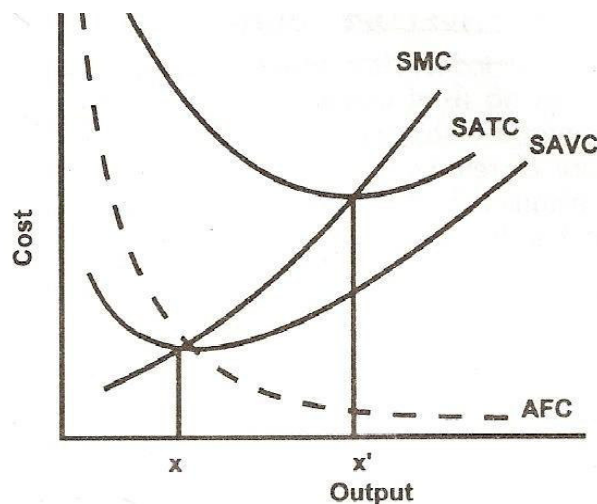


Fig. 4 Relationship of Short run cost curves

Figure 4 illustrates that the AVC reaches its minimum at x while the AC is at its minimum

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at x' . Between x and x' the fall in AFC more than offsets the rise in AVC so that the AC continues to fall. Beyond x' the increases in AVC is not offset by the fall in AFC, so average cost begins to rise.

The relationship between MC and AC

The average variable cost continues to decline so long as the marginal cost is below it, but it starts rising at the point where marginal cost crosses the average variable cost. The marginal cost will always rise more sharply than the average variable cost. Similar relation holds between marginal cost and average cost. Fig. 4 graphically illustrates the relationship between MC and AC.

8.3.2 Long-run Costs – The ‘Envelope’ Curve

The firm's production function has no fixed inputs; the firm has no fixed costs. It expands its output by building and operating a wholly new and larger plant. Input-output relations in the production function are those of returns to scale. Another important aspect of the long-run is that the long run is a 'planning horizon'. In this respect, the long-run cost curve is a guide to the entrepreneur in his decision to plan the future expansion of his output.

Long run average cost curve

The long-run average cost curve is derived from short-run costs curves. Each point on the long-run average cost curve corresponds to a point on a short-run cost curve, which is tangent to the long-run curve at that point.

Let us suppose that there are the three plants operating with the average costs SAC_1 , SAC_2 , SAC_3 respectively shown in Fig. 5.

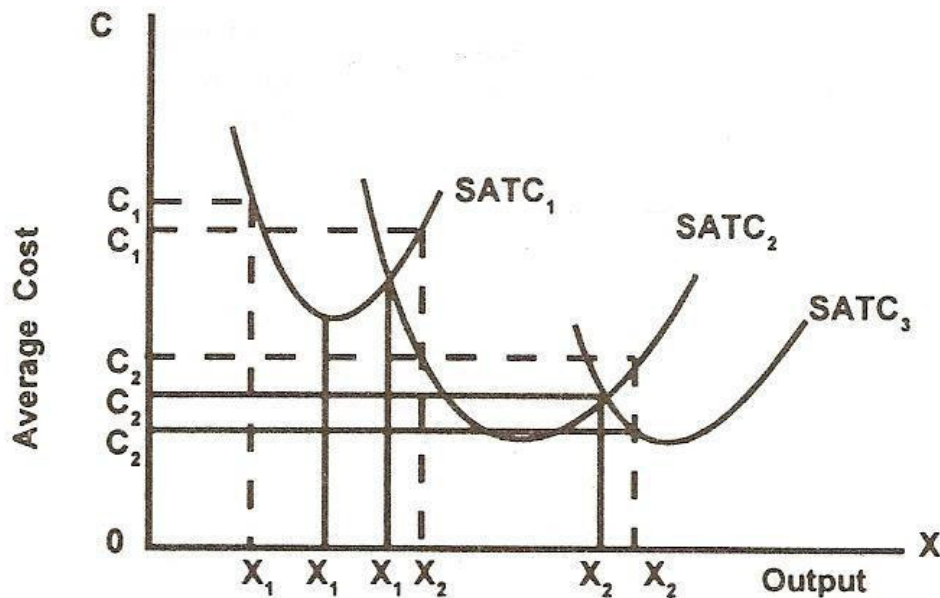


Fig.5 Derivation of Long run Average Cost Curve

If the firm plans to produce output X_1 it will choose the small plant. It will choose medium size plant if it plans to produce X_2 output and will choose the large size plant if it wishes to produce X_3 output. Now if the firm begins with the small plant and faces gradually increasing demand, it will produce with small size plant at lower costs (up to level X_1). X_1 is the firm's lowest cost level of output beyond which average cost starts rising. But the firm will continue producing with small plant even beyond X_1' , a average cost for these levels of output on the small plant is still lower than that on the medium plant. It is only when the demand for its product reaches X_1'' level, the firm chooses to either continue producing with a small plant or install the medium size plant. If the firm anticipates demand to rise beyond X_1'' it will install the medium size plant which will produce output larger than X_1'' at lower average cost than that of the small plant. The firm faces a similar decision when it reaches the level X_2'' . If the firms anticipates the demand to remain constant at X_2'' , the firm chooses not to install the large plant

as it involves a larger investment which is profitable only when the demand expands beyond X_2 ".

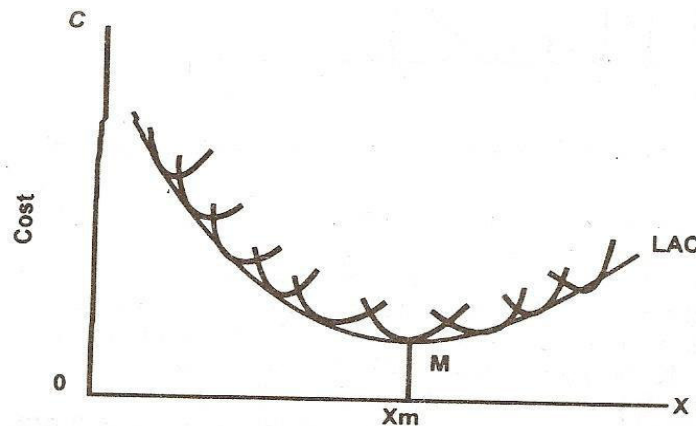


Fig.6 Long run average cost curve

Let us now assume that there is many plant sizes each suitable for a certain level of output as shown in Fig 6. We will have many intersecting point that are crucial for making a choice whether to continue with the existing plant or to install a larger plant. These points may be so close to each other that we get almost a continuous curve. It is known as the “long-run average cost curve” or the “Envelope Curve”. Each point of this curve shows the minimum (optimal) cost or the least cost of producing the corresponding level of output. It is also the planning curve of the firm on the basis of which the firm decides what plant to set up to produce optimally the expected output. The firm chooses the short-run plant that allows it to produce the anticipated output at the least possible cost. The U-shape of the long-run average cost curve reflects the laws of returns to scale. The economies of scale exist only up to a certain size of plant, known as the “optimum plant size” with which all possible economies of scale are fully exploited. Beyond the optimum plant size, diseconomies of scale rise from managerial inefficiencies. This causes the LAC to turn upward. In Fig. 6 the point X_m is the point of

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optimum output and the corresponding plant is the optimum plant size.

Long-run marginal cost curve

The long-run marginal cost is derived from short run marginal cost curve, but does not 'envelope' them. The long-run marginal cost curve is formed from points of intersection of the short run marginal cost curves with vertical lines to the output axis drawn from the points of tangency of the corresponding short run average cost curves and long-run average cost curve. Fig. 7 illustrates this derivation.

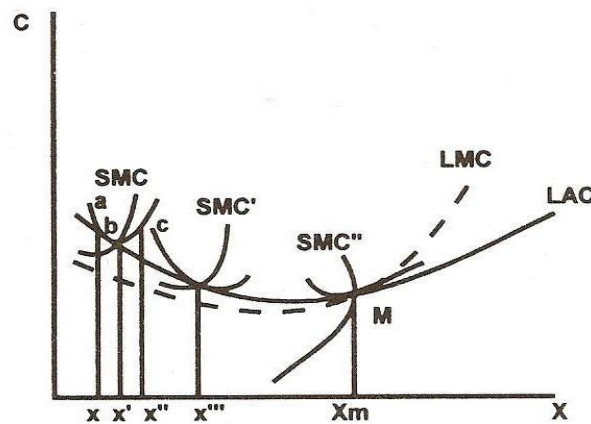


Fig.7 Derivation of Long-run marginal cost curve

The LMC must be equal to the SMC for the output at which the corresponding SAC is tangent to the LAC. For the levels of output to the left of tangency point the SAC is greater than LAC. At the point of tangency $SAC = LAC$. The movement from point a to b, is a movement from a position of inequality to equality of SRAC and LRAC. Hence the change in total cost i.e. the MC must be smaller for the short run curve than for the long-run curve. Thus LMC is greater than SMC to the left of a. For an increase in output beyond X' to X'' the SAC is greater than

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LAC. It is a movement from the position of equality of two costs to the position c where SAC is greater than LAC. Hence the addition to total cost must be larger for the short run curve than for the long run curve. Thus $LMC < SMC$ to the right of a. Since to the left of tangency point a, $LMC > SMC$, and to the right of a, $LMC < SMC$. At a, $LMC = SMC$. If we draw a vertical line from a to the X – axis the point at which it intersects the SMC is a point of LMC. All points of tangency of SRAC and LAC curves to the left of the minimum point of the LAC give us points of the LMC that lies below the LAC. At the minimum point M the LMC intersects the LAC. To the right of M the LMC lies above the LAC curve. At point M

$$SAC = SMC = LAC = LMC$$

This is optimum output in the long run.

8.4 ALLOCATION OF OUTPUT BETWEEN TWO PLANTS

Suppose a firm has two plants. How should the firm allocate output between the two plants so as to minimize cost? The cost to be minimized is the variable cost. The fixed cost cannot be minimized, as it remains fixed in the short run. To minimize its variable cost, the firm allocates output between its two plants so that the two marginal costs are equal.

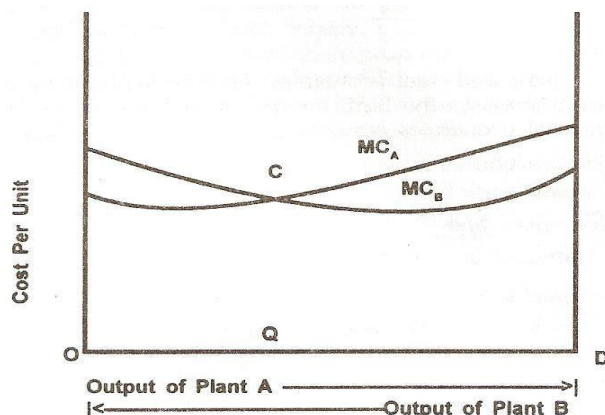


Fig. 8 Allocation of Output from Two Plants

The figure 8 shows that OD is the total output to be allocated. This output can be produced by

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either one of the firm's two plants. The marginal cost of plant A is given by the curve MC_A , which goes from left to right. Plant B's marginal cost curve MC_B goes from right to left. The two curves intersect at point C. When plant A produces the amount OQ and when plant B produces the amount DQ, total variable cost is minimized. If plant A produced more and plant B less, cost would be higher, because the MC_A curve lies above the MC_B curve to the right of point C. Similarly, cost would be higher if plant B produced more and plant A less. The area for the combined output is least when point C defines the allocation of output. The curves are so drawn that plant B has a lower marginal cost for any given output. The curves are so drawn that plant B has a lower marginal cost for any given output. Nevertheless, it is rational to have some output from plant A. Note that both curves are rising at point C. This condition is necessary for the solution.

8.5 ECONOMIES AND DISECONOMIES OF SCALE

8.5.1 Economies of Scale

Economies of scale results in cost saving and diseconomies lead to rise in cost. Economies and diseconomies of scale also determine the returns to scale. Increasing returns to scale operate till economies of scale are greater than the diseconomies of scale, and returns to scale decrease when diseconomies are greater than the economies of scale. When economies and diseconomies are in balance, returns to scale are constant. The economies of scale may be divided into:

- (a) Internal or Real Economies, and
- (b) External or Pecuniary Economies

(a) Internal Economies

Internal economies, also called ‘real economies’ arise from the expansion of the plant size of the firm and are internal to the firm. Internal economies may be classified under the following categories:

(i) Economies in Production

Production economies may arise from the factor labour (labour economies), fixed capital factor (technical economies) or from the inventory requirement of the firm (inventory economies or stochastic economies).

Labour Economies: Labour economies are achieved as the scale of output increases because of specialization, time saving, automation of production process and cumulative volume. Large-scale production permits division of labour and specialization of the labour force with an improvement of the skills and hence of the productivity of the various types of labour. Division of labour not only increases the skills of the labour force but also results in saving of the time.

Technical Economies: Technical economies are associated with the ‘fixed capital’ that includes all types of machinery and other equipment. The main technical economies arise from (i) specialization and indivisibilities of capital, (ii) set-up cost, initial fixed costs, (iii) technical volume/ input relation and (iv) reserve capacity requirement.

Inventory Economies: These are sometimes called ‘stochastic economies’, because the role of inventories is to meet the random changes in the input and the output sides of the operations of the firm. Stocks of raw materials do increase with scale but not proportionately. Random fluctuations in the supply of such inputs are smoothed out with stocks whose size needs change

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by less than the size of the firm.

(ii) Selling or Marketing Economies

Selling economies are associated with the distribution of the product of a firm. The main types of such economies are (a) advertising economies, (b) other large-scale economies, (c) economies from special arrangements with exclusive dealers (representatives or distributors, wholesalers or retailers), and (d) model-change economies.

Advertising economies do exist at least up to a certain scale of output. Advertising space (in newspapers or magazine) and time (on television or radio) increase less than proportionately with scale, so that advertising costs per unit of output fall with scale. Thus the larger the output the smaller the advertising cost per unit. Similar considerations hold for the other types of selling activities, such as the salesman force, the distribution of samples, etc. Such large-scale promotion expenditures increase by less than proportionately with output, at least up to a certain scale.

(iii) Managerial Economies

Managerial costs are partly production costs and partly selling costs, since the managerial team in a firm is concerned with both the production and the distribution activities of the firm. Managerial economies arise for various reasons, the most important being (a) specialization of management, and (b) mechanization of managerial functions.

Specialization of Management: Large firms make possible the division of managerial tasks such as a production manager, a sales manager, a finance manager, and a personnel manager and so on, while all or most managerial decisions are taken by a single manager (possibly the owner)

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in a small firm. This specialization of management increased the experience of managers in their own areas of responsibility and leads to the more efficient working of the firm.

Mechanization of Managerial Functions: Large firms apply techniques of management involving a high degree of mechanization, such as telephones, telex machines, television screens and computers. These techniques save time in the decision-making process and speed up the processing of information, as well as increasing its amount and its accuracy.

(iv) Economies in Transport and Storage

Economies in transportation and storage costs arise from fuller utilization of transport and storage facilities. Transport costs are incurred both on production and sales sides. Similarly, storage costs are incurred on the raw materials and finished products. The large-size firms may acquire their own means of transport and they can, thereby reduce the unit cost of transportation compared to the market rate, at least to the extent of profit margin of the transport companies. Besides, own transport facility prevents delays in transporting goods. Some large-scale firms have their own railway tracks from the nearest railway point to the factory, and thus they reduce the cost of transporting goods in and out. For example, Bombay Port Trust has its own railway – tracks; oil companies have their own fleet of tankers. Similarly, large-scale firms can create their own godowns in the various centers of product distribution and can save on cost of storage.

(b) Pecuniary Economies of Scale or External Economies

These are economies accruing to the firm due to discounts that it can obtain due to its large scale operations. The larger firm may achieve:

- (i) Lower prices of its raw materials, bought at special discounts from its suppliers.

- (ii) Lower cost of external finance. Banks usually offer loans to large corporations at a lower rate of interest and other favourable terms.
- (iii) Lower advertising prices may be granted to larger firms if they advertise at larger scales.
- (iv) Transport rates are often lower if the amounts of commodities transported are large.
- (v) Finally, larger firms may be able to pay lower earnings to their workers if they attain a size, which gives them monopsonistic power (for example, extraction industries in some areas), or due to the prestige associated with the employment by a large, well-known firm.

8.5.2 Diseconomies of Scale

Diseconomies of scale are disadvantages that arise due to the expansion of production scale and lead to a rise in the cost of production. Like economies, diseconomies of scale also may be internal and external.

(a) Internal Diseconomies

Internal diseconomies arise within the firm and external diseconomies arise outside the firms, mainly in the input markets. Economies of scale have their limit. A point is reached when the advantages of specialization of labour and managerial staff, have been fully utilized. A limit is arrived when excess capacity of the plant, warehouses, transport and communication systems etc, is fully used; and advertising cost tapers off. Diseconomies begin to overweigh the economies and the cost begin to rise. The internal diseconomies of scale arise mainly because of managerial inefficiency and labour inefficiency.

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Managerial Inefficiency: With the fast expansion of the scale of production, managerial inefficiencies arise. Personal contacts and communication between owner and managers and managers and labour get rapidly reduced. Remote control management takes the place of close control and supervision. The increase in the layers of management leads to complexity and delay in decision-making. Implementation decisions are delayed due to coordination problems. The owner's objective function of profit maximization gradually gets reduced and is replaced by manager's utility function, like high salary, reasonable profit target, satisfying function and job security. All these lead to laxity in management and, hence to a rise in diseconomies.

Labour Inefficiency: Increase in the number of workers employed encourages to labour union activities, reduction in output per unit of time, and thus leads to loss of control over labour productivity.

(b) External Diseconomies

The disadvantages that arise outside the firm are known as external diseconomies. They arise in the input markets and due to natural constraints, especially in agriculture and extractive industries. With the expansion of the firm, particularly when most of the firms in the industry are expanding, the concessions and discounts available on bulk purchases of inputs and concession finance come to an end. Increasing demand for inputs puts pressure on the input markets and their prices begin to rise leading a rise in the cost of production. These are pecuniary diseconomies.

8.6 BREAK-EVEN ANALYSIS

The break-even analysis is derived from price-output decision-making in the short-run.

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The break-even analysis makes certain assumptions:

- (a) That fixed and variable costs can be distinguished.
- (b) Assumes linearity through the analysis
- (c) Assumes perfect competition as the price is considered to be the same regardless of volume.
- (d) The straight line cost curve implies that marginal product is neither increasing nor decreasing and that the entire range of the graph exhibits constant returns to scale.

The break-even analysis studies the relationship among the total revenue, total costs and total profits of the firm at various levels of output. It is used to determine the sales volume required for the firm to break-even and the total profits and losses at other sales levels. Break-even is a method of determining the output at which a firm breaks-even or earns a target profit from the total revenue and total cost functions of the firm. A break-even analysis indicates at what level of output, cost and revenue are in equilibrium. In break-even analysis, break-even point is of particular importance. It is a point where losses cease to occur while profits have not yet begun. It is the point of zero profit.

The break-even chart shows the profit and loss to a firm at different level of output. A break-even chart may be defined as an analysis in graphic form of the relationship of production and sales to profit. The break-even analysis utilizes a break-even chart in which the total revenue (TR) and the total cost curves are represented by straight lines.

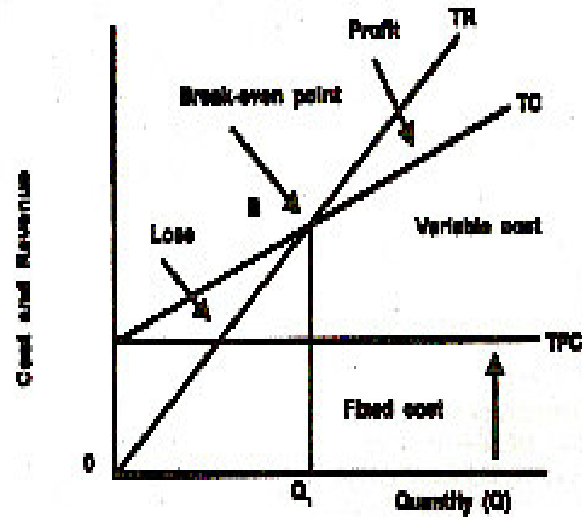


Fig. 9

In Fig. 9 total revenue and total costs are shown on the vertical axis and output is represented on the horizontal axis. The slope of the TR curve assumes the constant price at which the firm can sell its output. The total cost (TC) curve indicates total fixed costs (TFC) plus a constant average variable cost. This is often the case for many firms for small changes in output or sales. The firm breaks-even at the point (B) where total revenue is equal to total cost ($TR = TC$) and the break-even output is Q_1 .

Break-even charts are usually drawn with straight lines, though they need not be. The straight lines mean the linear assumption that changes in total costs is proportional to changes in output. For small changes in output above or below the break-even point, the assumption is often correct or so close to the true relation that it can be justified. A firm is not likely to be much interested in cost-output relations for very small or very large outputs when they lie outside the realms of experience and expectation. When not then draw straight lines over the whole range? The profit area grows and grows without limit as output rises above the breakeven level.

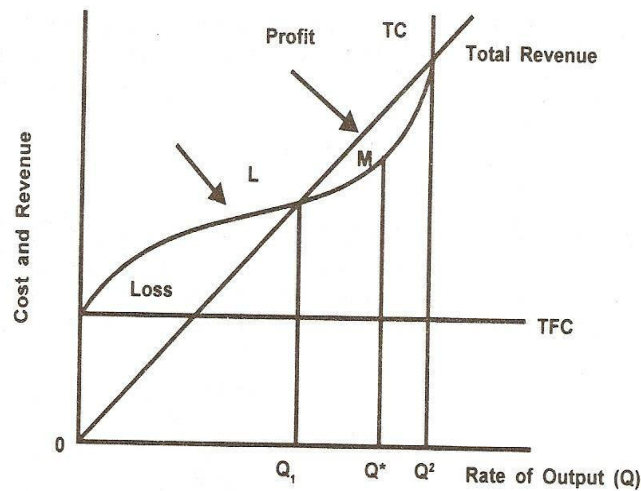


Fig.10 Non-linear break-even analysis

Fig. 10 illustrates the break-even analysis under non-linear cost and revenue functions. The TFC line represents the fixed cost. The vertical distance between TC and TFC measures the total variable cost (TVC). The curve TR shows the total revenue (TR) at different levels of output and price. The vertical distance between the TR and TC measures the profit or loss for various levels of output.

The TR and TC curve intersect each other at two points, L and N where $TR = TC$. These are the lower and upper break-even points. For the whole range of output between Q_1 and Q_2 , $TR > TC$. The implication is that a firm producing more than OQ_1 and less than OQ_2 will make profit. The profitable range of output lies between OQ_1 and OQ_2 units of output. Producing less or more than these limits will result in losses.

8.7 SUMMARY

Firms make decisions in their quest for profit and many decisions on prices over which firms have no control. A firm must know the quantity and combination of input it needs to produce its output and how much these inputs cost to calculate costs. The cost concepts relevant to business operations and decisions can be grouped into two categories namely cost concepts useful for accounting purposes and analytical cost concepts used in economic analysis of business activities. Cost theory deals with the behaviour of cost in relation to a change in output. The more specific form of cost function is relevant to the time chosen for cost analysis—short-run and long-run. In the short run, AVC, AC and MC are U-shaped, reflecting the law of variable proportions. The marginal cost will always rise more sharply than the average variable cost. Similar relation holds between marginal cost and average cost. In the long-run, all factors of production are variable, hence there is no distinction between fixed and variable costs. The long-run average cost curve is derived from short-run cost curves and the long-run marginal cost curve is derived from short-run marginal cost curves. Economies of scale result in cost saving and diseconomies of scale lead to rise in cost. The break-even analysis studies the relationship among the total revenue, total costs and total profits of the firm at various levels of output.

8.8 GLOSSARY

- **Explicit Costs-** Expenses which are actually paid by the firm.
- **Implicit Costs-** Theoretical costs, which go unrecognized by the accounting system.
- **Social Cost-** The total cost to the society on account of production of a good.

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- **Fixed Costs**-Costs which are independent of output, i.e. they do not change with changes in output.
- **Variable Costs**-Cost which are incurred on the employment of variable factors of production whose amount can be altered in the short-run.
- **Long-run**- A period of time in which the quantities of all factors may be varied.

Production Function-Function which describes the available efficient methods of production at any one time.

- **Increasing Returns to Scale**-When inputs are increasing less than in proportion to increases in output.
- **Economies of Scale**-Cost advantages which follow from the increase in volume of production.

8.9 CHECK YOUR PROGRESS

1. **Fill in the blanks:**

- (a).....costs refer to the payment made to the factors hired from outside the firm.
- (b) The cost theory deals with the behaviour of cost in relation to a change in
- (c) The cost curves (AVC, AC and MC) are U-shaped in the short run reflecting the law of
- (d) The marginal cost will always rise..... sharply than the average variable cost.
- (e) The fixed cost cannot be, as it remains fixed in the short run.
- (f) Technical economies are associated with
- (g) Transport costs are incurred both on production and..... sides.

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- (h) With the fast expansion of the scale of production, managerial inefficiencies

2. State whether the following statements are True or False:

- (a) Out-of-pocket costs are also called implicit costs.
- (b) The shape of the AC is inverse to that of the AVC.
- (c) The average variable cost continues to decline so long as the marginal cost is below it.
- (d) The U-shape of the long run average cost curve reflects the laws of returns to scale.
- (e) Increasing returns to scale operate till economies of scale are less than the diseconomies of scale.
- (f) Diseconomies of scale are disadvantages that arise due to the expansion of production scale.
- (g) Economies of scale do not have their limit.
- (h) Break-even point is that point where losses cease to occur while profits have not yet begin.

8.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress A

- (a) Explicit (b) Output (c) Variable proportions (d) More (e) Minimized (f) Fixed Capital (g) Sales (h) Arise

Check Your Progress B

- (a) False (b) False (c) True (d) True (e) False (f) True (g) False
- (h) True

8.11 TERMINAL QUESTIONS

1. Distinguish between (a) fixed costs and variable costs, (b) opportunity cost and actual cost.
2. Explain the relationship between marginal cost, average cost, and total cost assuming short run non-linear cost functions.
3. What is Opportunity Cost? Give some examples of opportunity cost. How are these costs relevant for managerial decisions?
4. Explain why long run average cost first falls and then rises. Why does short-run average variable cost first falls and then rises?
5. What is break-even point? What are its assumption?

8.12 SUGGESTED READINGS

1. Yogesh Maheshwari, Managerial Economics, Prentice Hall of India, New Delhi.
2. D.N. Dwivedi, Managerial Economics, Vikas Publishing House Pvt. Ltd., New Delhi.
3. T.R. Jain, O.P. Khanna and Virsen, Micro Economics and Indian Economy, V.K. Publishers, New Delhi.
4. H.L. Ahuja, Advanced Economic Theory, S. Chand & Co. Ltd., New Delhi.
5. Atmanand, Managerial Economics, Excel Books, Delhi.
6. R.L. Varshney and K.L. Maheshwari, Managerial Economics, Sultan Chand & Sons, New Delhi.

UNIT-9: SUPPLY AND ELASTICITY OF SUPPLY

Unit Structure

- 9.1 Introduction**
- 9.2 Meaning of Supply**
- 9.3 The Law of Supply**
- 9.4 Elasticity of Supply**
- 9.5 Measurement of Elasticity of Supply**
- 9.6 Factors Influencing Elasticity of Supply**
- 9.7 Importance of Elasticity of Supply**
- 9.8 Summary**
- 9.9 Glossary**
- 9.10 Check Your Progress**
- 9.11 Answers to Check Your Progress**
- 9.12 Terminal Questions**
- 9.13 Suggested Readings**

OBJECTIVES

After reading this unit, you should be able to:

- Define supply and explain the factors affecting supply.
- Discuss the various degrees of elasticity of supply.
- Describe the methods of the measurement of elasticity of supply.

- Highlight the factors influencing elasticity of supply and explain the importance of elasticity of supply.

9.1 INTRODUCTION

The Theory of Supply is the fundamental principle that follows demand analysis. Supply refers to the quantity of goods that producers are willing to sell at a given price during a specified period. The theory of supply is an analytical tool used to study price determination as well as the production of goods and services. In this unit, you will study the concept of supply, the law of supply, the determinants of supply, and the importance of the law of supply.

9.2 MEANING OF SUPPLY

By supply is meant the quantities of a commodity or service which a seller is willing and able to offer for sale at various price during a given period of time. Thus supply is always at a price and in relation to a period of time. The higher the price, the greater will be the quantity of a commodity that will be supplied by a producer, and vice versa. Therefore, the relation between price and quantity supplied is direct and positive.

Factors Influencing Supply

The quantity supplied of a commodity is not dependent upon its price alone but on a number of factors such as the prices of other commodities, the price of factor used in its production, the goals of producers and the state of technology.

The important factors which determine the supply of a commodity are as follows:

1. **The Price of the Commodity in Question:** The supply of a commodity depends upon the price of that commodity other things being equal, sellers of a commodity are normally willing to sell more of it if its price is higher than if it is low.
2. **Prices of Related Goods:** Supply of a commodity also depends upon the prices of the related goods. If the price of a substitute goes up producers would be tempted to divert their resources to the production of that substitute. For example, if the price of tea rises relatively to the price of coffee, land shall be used in the cultivation of tea in place of coffee. Supply of coffee will fall. We thus expect, other things remaining the same, the supply of the commodity falls as the price of other commodities increase.
3. **Cost of Production or Price of Factor Inputs:** If there is increase in the cost of production due to the increase in the costs of various factors of production like raw materials and intermediate products, this will result a decrease in supply, conversely a fall in the prices of such factor inputs will lead to large production and consequently an increase in supply.
4. **Improved Technology:** Improvement in techniques of production, lowers the cost of production and in turn increases the supply overtime, technical know how changes, discoveries and the innovations help raise the productivity of the factors and this contribute to the raising of the supply upward.
5. **Means of Transport and Communication:** Improvement in the means of transport and communication may increase the supply of a particular commodity, if imports from foreign countries are encouraged. Or in case of short supply goods can be rushed from the surplus areas to the deficient areas. But if the developed means of transportation are used to export goods, it will create the scarcity of goods in the domestic market.

6. Goals or Objectives of Firms: Supply of a commodity depends upon the goals or objectives of the firms producing that commodity. Ordinarily, every firm tries to attain maximum profits. But, at times, individual producers may be induced to increase the supply of a commodity, not because it brings more profits for them, but because its supply in the market is a source of goodwill to them in the society. If the firm's aim is to maximise sales or revenue rather than profits, the supply in the market would be larger.

7. Number of Sellers: The supply also depends upon the number of sellers. Entry of more sellers will increase and the exit will decrease supply.

8. Price Expectations: If the sellers fear that the trend of fall in price will continue in future also, they will adopt panic-selling, thereby the supply will increase. On the other hand, expectations of rise in future prices will induce them to withhold the supply and, thereby, the supply will contract.

9. Supply of Agricultural Produce: As regards agricultural commodities, better rainfall, improved irrigation means, chemical fertilizers, improved seeds and better methods of cultivation, naturally would increase supply. On the contrary, failure of monsoons, floods, droughts, fires, dust storms, pests, earthquakes etc. will decrease the supply.

10. Political Disturbances: Political disturbances or a war may disorganize or divert channels of trade and thus create scarcity of certain kinds of goods, which causes decrease in supply.

11. Taxation and Subsidies: Taxation on output, sales, imports etc. also affect the supply of goods. By levying high import duties, a Government may restrict the supply of a foreign

commodity to encourage its production at home. Government may also restrict production of certain articles for reasons of health e.g. opium etc., on the contrary, subsidies will reduce the costs and induce the producers to increase the supply.

12. Government Policies: The policies of the Government are also important determinants of supply. A reduction in quotas and tariffs on foreign goods will open up the market to foreign producers and will tend to increase the supply. Conversely, the policy of protection will reduce the supply whereas the policy of liberalization would increase the supply.

9.3 THE LAW OF SUPPLY

The law of supply states that, other things being equal, the quantity supplied varies directly with the price of the commodity. When price rises, the quantity supplied rises, and when price falls, the quantity supplied also falls. ‘Other things being equal’ refer to the factors that influence the market supply of a commodity, such as the prices of other commodities, the prices of factors of production, the state of technology and the goals of producers. All these factors are assumed to be constant. These are the assumptions of the law of supply.

The law of supply is explained with the help of a schedule and a curve. A supply schedule is a statement of the various quantities of a given commodity offered for sale at various prices per unit of time. Table 1 shows a hypothetical supply schedule for apples.

Table 1

Price in Rs. Per kg.	Quantity Supplied in Kg.
50	400

40	300
30	200
20	100
10	50

If we depict this supply schedule on a diagram, we have a supply curve S as in Figure 1. The supply curve has a positive slope. It moves upward to the right. The curve S_1 shows an increased supply OQ_1 at OP price. It is a curve to the right of and below the original curve S where more is sold at all prices. The curve S_2 portrays a decreased supply OQ_2 at OP price. It is a curve to the left of and above the original curve S and shows less supply at all prices.

Exceptions

There are, however, certain exceptions of the law of supply:

- (1) When prices are expected to fall much, sellers will more in order to clear their stocks.
This is not in the short-run.
- (2) Over the long-run, the supply is influenced by changes in costs which are, in turn, affected by changes in technology.
- (3) Changes in habits, tastes, fashions, weather, and national and international disturbances also affect the supplies of commodities.

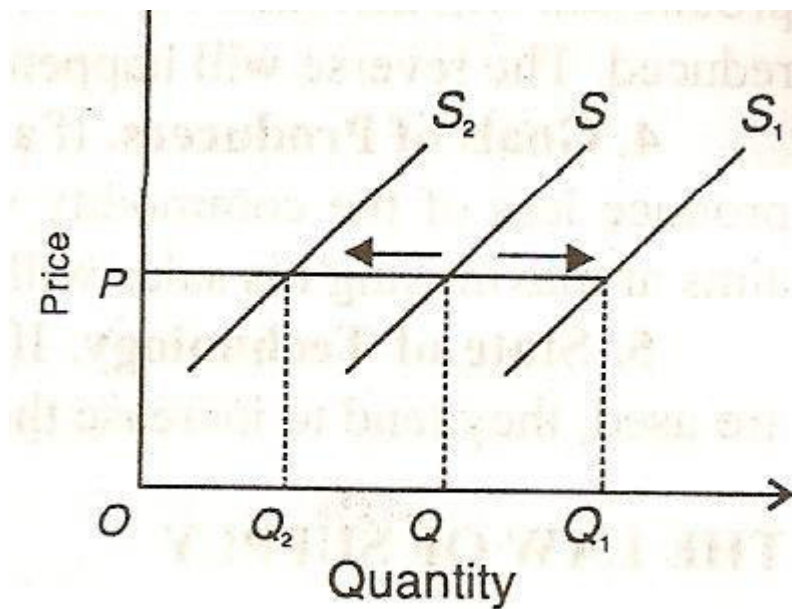


Fig. 1

Lastly, the rise in the price of a good or service sometimes leads to a fall in its supply. This happens particularly in the case of labour-service. When wages rise to a level where the workers feel satisfied, they will work less than before in order to have more leisure. They will also have a tendency to educate their children rather than send them to work. The supply curve in such a situation is backward sloping SS_1 curve, as illustrated in Figure 2. At WN wage rate, the supply of labour is ON . But when wages start rising, the supply of labour is reduced. At W_1M wage rate, the supply of labour is reduced to OM .

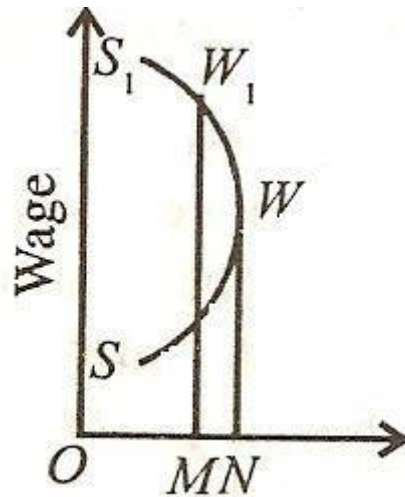


Fig.2

9.4 ELASTICITY OF SUPPLY

The concept of elasticity of supply is a parallel concept to the concept of elasticity of demand. It may be defined as the responsiveness of the sellers to change in the price of the commodity. It points out reactions of the sellers to a particular change in the price of the commodity. The supply of a commodity may increase or decrease consequent upon the change in price. The extent to which the supply of the commodity increases or decreases as a result of change in price is referred to as elasticity of supply. Elasticity of supply, thus, is the measure of change in supply due to change in price.

Degrees of Elasticity of Supply

There are five degrees of elasticity of supply:

1. **Perfectly Elastic Supply:** When with a minute change or without any change in price, supply may change to any extent, then the supply is perfectly elastic. Here the supply curve will be horizontal and parallel to x-axis. It is illustrated in Fig.3.

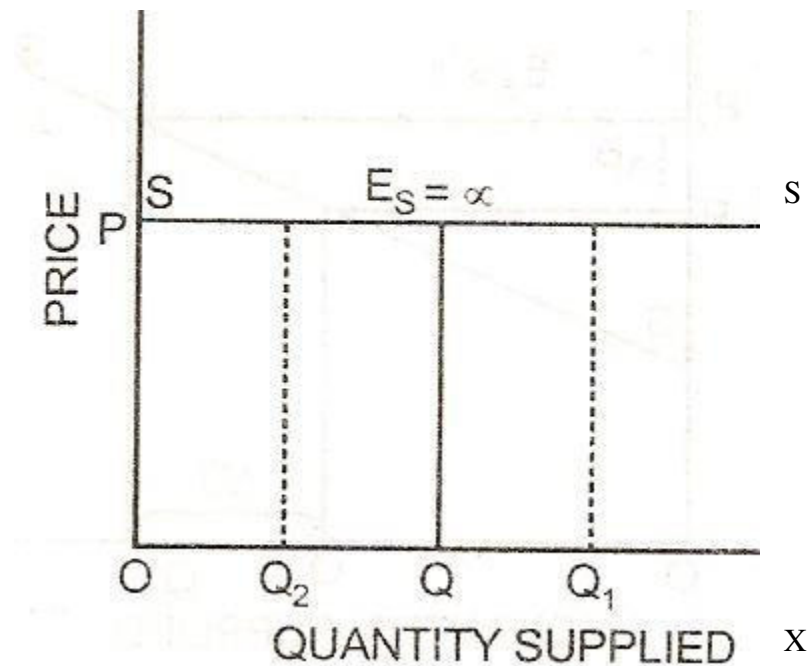


Fig. 3

In this figure, SS is perfectly elastic supply curve. It is parallel to x-axis. At price OP supply may be OQ₁ or OQ₂. Symbolically, it can be said that $E_s = \infty$ or elasticity of supply is infinity. It is purely an imaginary concept.

2. Perfectly Inelastic Supply: Supply is perfectly inelastic when a change in the price causes no change in supply. In other words, price has no influence on supply. Here, the supply curve will be a vertical line parallel to y-axis. As shown in Fig.4 SS is perfectly inelastic supply curve and is parallel to y-axis. It signifies that even price changes to OP₁ or OP₂, supply remains unchanged i.e., OQ. In this case, elasticity of supply is said to be zero (or $E_s=0$). Supply of rare books, paintings, stamps and coins is of this type.

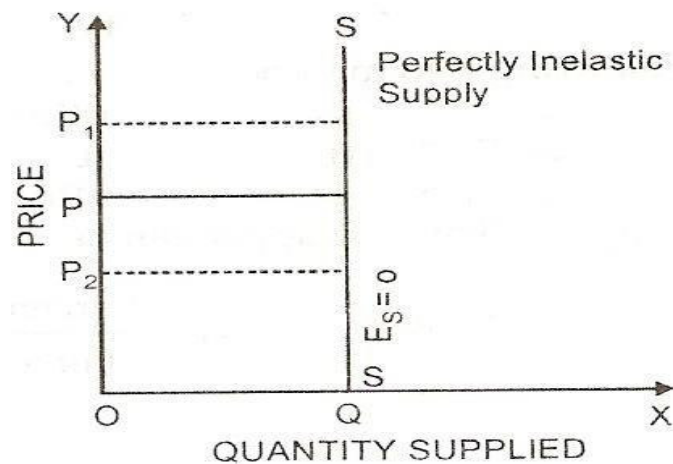


Fig.4

3. **Unitary Elastic Supply:** Elasticity of supply is unitary when the change in the amount supplied is in exact proportion to the change in price. Any straight line passing through the origin will give a unitary elastic supply curve. The supply curve SS , which is a 45° line represents unitary elastic supply curve is Fig. 5. Herein a change in price PP_1 brings about an equal change in quantity supplied OQ_1 . (or $\Delta P = \Delta Q$). Symbolically,

$$E_s = 1.$$

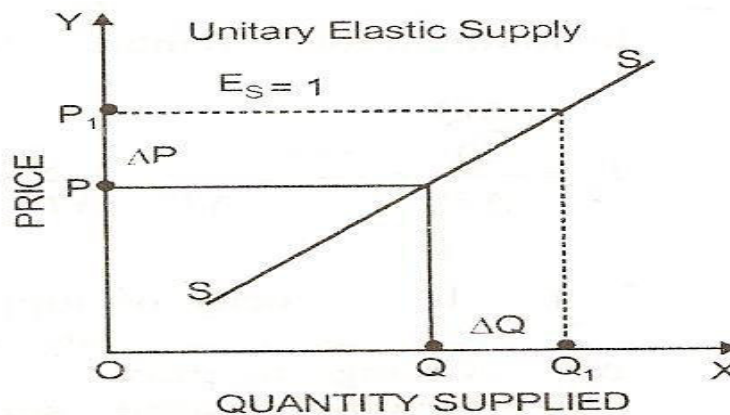


Fig.5

4. **More Elastic Supply:** Supply is said to be more elastic when a small change in price brings about a large change in quantity supplied. A small rise in price leads to a great fall in supply and small rise in price brings about great rise in supply. Supply curve SS is more elastic supply curve in Fig.6. It originates from the y-axis. In this case $\Delta P < \Delta Q$. Mathematically more elastic supply can be represented as $E_s > 1$.

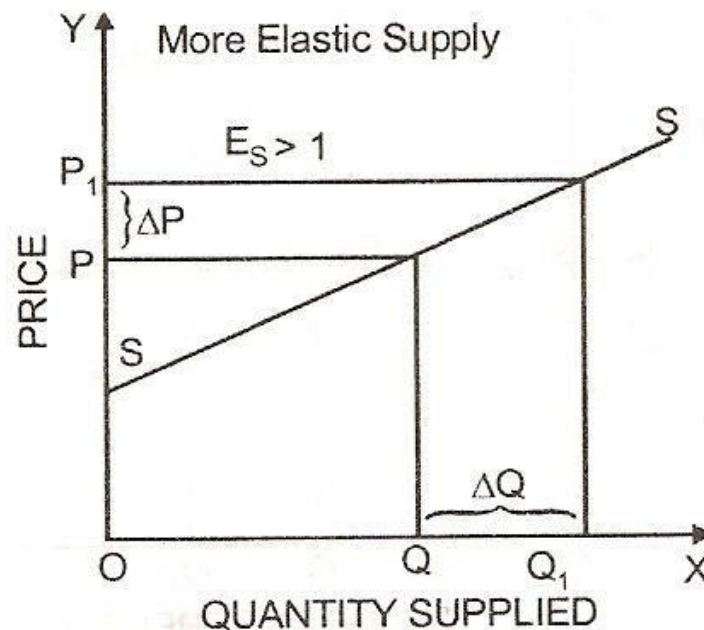


Fig.6

5. **Less Elastic Supply:** Supply is said to be less elastic when a big change in price brings about a small change in supply. A big fall in price brings about a small fall in supply and a big rise in price brings about a small rise in supply. Supply curve SS is less elastic supply curve SS in Fig. 7 is less elastic. It originates from x-axis. In this case $\Delta P > \Delta Q$. Symbolically, less elastic supply or inelastic supply is represented as $E_s < 1$.

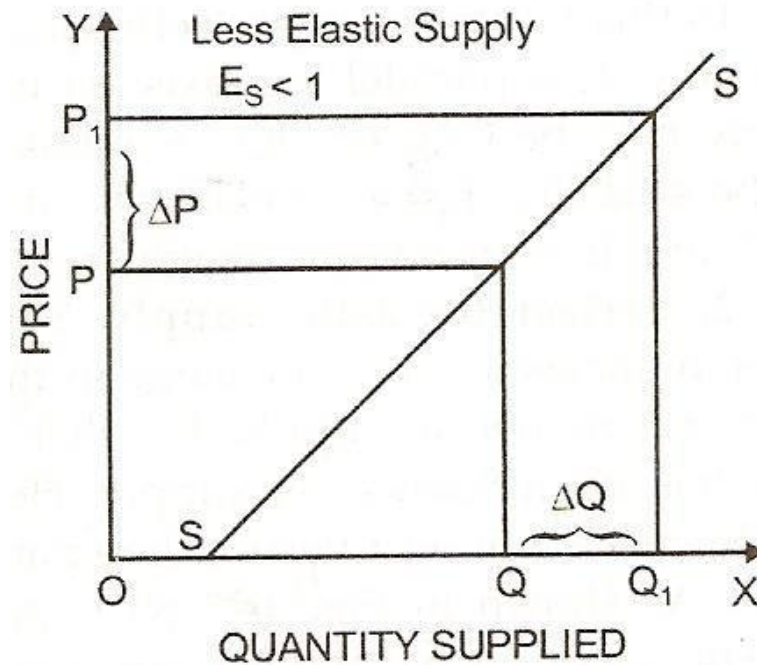


Fig.7

9.5 MEASUREMENT OF ELASTICITY OF SUPPLY

Following two methods of the measurement of elasticity of supply are discussed:

1. Percentage or Proportionate Method
2. Diagrammatic Method

1. Percentage or Proportionate Method

Elasticity of supply can be measured with the help of the following formula:

Supply and Elasticity of Supply

$$\text{Elasticity of Supply} = \frac{\text{Percentage Change in Supply}}{\text{Percentage Change in Price}}$$

OR

$$\text{Elasticity of Supply} = \frac{\text{Proportionate Change in Supply}}{\text{Proportionate Change in Price}}$$

In mathematical symbols elasticity of supply can be expressed as:

$$E_s = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Where E_s = Elasticity of Supply

ΔQ = Change in quantity supplied

ΔP = Change in Price

Q = Original quantity supplied

P = Original price.

Now, since the price and quantity supplied generally move in the same direction, the coefficient of elasticity of supply, viz., E_s , has a positive sign.

If the numerical result of this formula is equal to one, we say it is unitary elasticity. If it is more than one, supply is said to be more elastic and if it is less than one, supply is less elastic.

Example. This method of measurement of elasticity of supply can be illustrated as

Supply and Elasticity of Supply

follows:

Suppose, a producer is willing to supply 100 quintals of wheat at the price of Rs. 510 per quintal; if the price increases to Rs. 520 per quintal, he is willing to supply 125 quintals of wheat. Calculate the elasticity of supply of wheat.

Elasticity of supply of wheat will be calculated as follows:

$$E_s = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} = \frac{25}{10} \times \frac{510}{500} = 2.55$$

$E_s = 2.55$ will mean that if the price of wheat goes up by one per cent, supply of wheat will increase by 2.55 per cent.

The value of the coefficient of elasticity of supply varies between zero and infinity. The various results are tabulated below:

Numerical Measure of Elasticity of Supply	Terminology	Description
1. $E_s=0$	Perfectly inelastic	Quantity supplied does not change as price changes.

2. $E_s < 1$	Less elastic or Inelastic	Quantity supplied changes by a smaller percentage than price change.
3. $E_s = 1$	Unitary Elastic	Quantity supplied changes in the same proportion as the price.
4. $E_s > 1$	More Elastic	Quantity supplied changes by a large percentage than price.
5. $E_s = 0 \text{ } \infty$	Perfectly Elastic	Supply changes are immeasurable.

2. Diagrammatic Method

The following diagrammatic method is adopted for the measurement of the elasticity of supply:

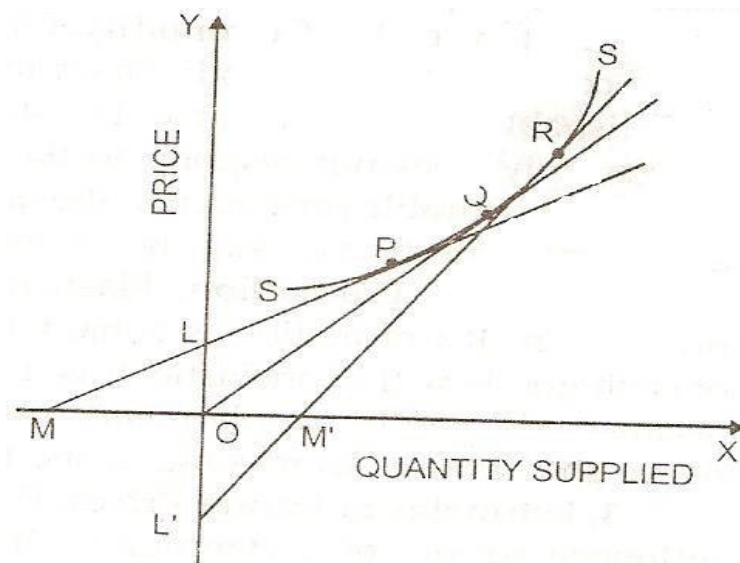


Fig.8

In Fig.8 SS is the supply curve and three tangents are drawn touching it at P,Q and R and are extended to intersect both axis. For example, the tangent at P cuts the horizontal axis at M and the vertical axis at L; the tangent at Q cuts both at the origin O, whereas the tangent at R cuts

Supply and Elasticity of Supply

horizontal axis at M_1 and vertical axis at L_1 . The price elasticity of supply at a point is measured by the distance along a tangent to the horizontal axis divided by the distance along it to the vertical axis. Thus, $PM E_s$ at P is which is greater than unity, since PM is greater than PL . $PQO E_s$ at Q is which is equal to unity. $QO RM_1 E_s$ at R is which is less than unity since RM_1 is less than RL_1 .

Generally, speaking, if a supply curve originates from y-axis it will show more elastic supply, of the curve originates from x-axis it shows inelastic supply, and a curve originate from the point of origin O shows unit elasticity.

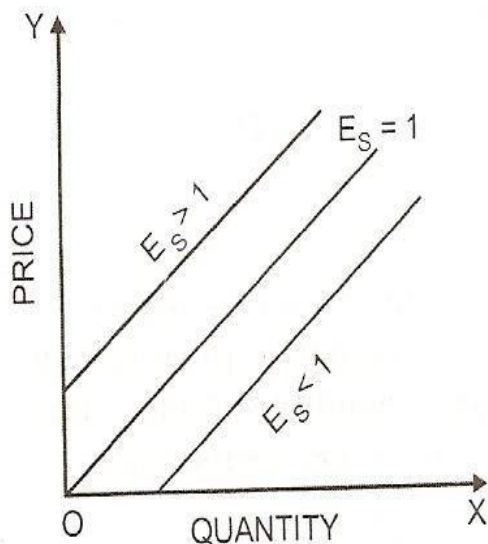


Fig. 9

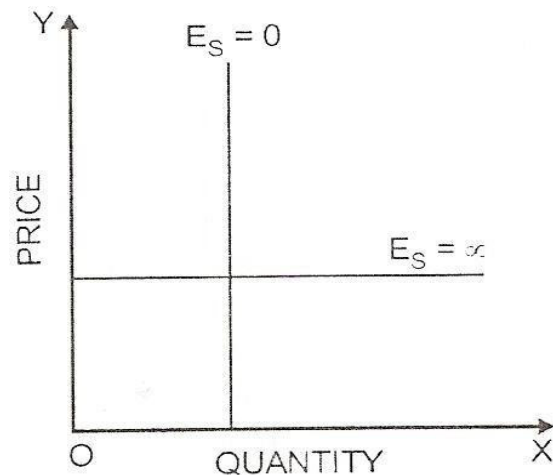


Fig. 10

A horizontal curve shows perfectly elastic supply, while a vertical curve shows perfectly inelastic supply.

9.6 FACTORS INFLUENCING ELASTICITY OF SUPPLY

Elasticity of supply depends upon of a number of factors, which are as follows:

1. **Nature of the Commodity:** Elasticity of supply depends upon the nature of the

commodity. Commodities on the basis of their nature can be classified as (i) Perishable and (ii) Durable. Perishable products cannot be stored and hence their supply does not respond to the change in their price. Hence their supply is inelastic. Durable products on the other hand, can be stored, hence their supply is generally elastic i.e., supply responds to the change in prices.

2. Cost of Production: Elasticity of supply is also influenced by cost of production. If production is subject to law of increasing costs, then the supply of such goods will be inelastic. It is difficult to extent supply due to rise in price, because addition to supply means rise in the cost. On the contrary, if production obeys the law of decreasing costs, then its supply will be elastic.

3. Estimates of Future Prices: Future expectations of price changes may also influence supply of a commodity. If the producers expect the prices to rise in future they may hold on the stocks of the commodities and may not make the product available for sale in the market. Supply in such a situation would be inelastic in nature. On the contrary, supply would acquire elasticity if the prices are expected to fall in future.

4. Techniques of Production: Simple techniques of production are, by and large, less expensive in nature. Supply of such like commodities, as involve simple techniques of production, is generally elastic. On the other hand, if the techniques of production of a commodity is cumbersome, complex and time-consuming in nature, supply of such commodities would generally be less elastic.

5. Time: The element of time exercises an important influence on elasticity of supply. The longer the period of time the more elastic is the supply. On the other hand, shorter the time period lesser will be the elasticity of supply. In analyzing the impact of time upon elasticity of supply, economists distinguish between:

(a) **Very Short Period:** In very short period the supply is fixed as time is too short to enable the supply to be changes so supply is perfectly inelastic.

(b) **Short Period:** In short period the plant's capacity is fixed but output can be altered by making full use of plants capacity, supply is therefore, relatively more elastic.

(c) **Long Period:** In long period, time is long enough to enable the fullest adjustment to be made in the supply position, and supply therefore, becomes more elastic.

6. **Nature of Inputs:** The elasticity of supply depends upon the nature of inputs used for the production of the product. If the production of a commodity uses inputs that are commonly used to produce other goods, it will tend to have a more elastic supply. If, on the other hand, it uses specialized inputs suited only for its production, its supply will be relatively inelastic.

7. **Risk Taking:** The elasticity of supply is also influenced by risk-taking capacity of entrepreneurs. If they are willing to take risk, the supply will be more elastic, on the other hand, if entrepreneurs hesitate to take risks, the supply will be inelastic. Their risk taking will be partly influenced by the system of incentives and taxation in the production. The high rate of taxation will reduce the elasticity of supply on the other hand, in case of high rate of subsidies, the supply will be more elastic.

9.7 IMPORTANCE OF ELASTICITY OF SUPPLY

The following are the points of the importance of elasticity of supply:

1. **Price Determination and Elasticity of Supply:** The concept of time element with reference to price determination as propounded by Dr. Marshall depends on elasticity of supply. In market period (or in very short period) since the supply is inelastic, hence demand plays an

active role in the determination of the price of a product. Whereas in the long-run, supply being more elastic, it plays an active role in the determination of price.

2. Factor Pricing and Elasticity of Supply: Modern theory of Rent states that a factor earns rent only if its supply is inelastic or less than perfectly elastic. Since the supply of land is inelastic, hence the entire income of land is Rent. When supply of factors like labour or capital etc. becomes inelastic in short-period, then the extra income earned by these factors, due to increase in their demand, is of the kind of rent. It is called 'Quasi Rent'. When the supply of factor is perfectly elastic, then it does not earn any extra income as rent.

3. Taxation and Elasticity of Supply: The concept of elasticity of supply is also very useful for the Finance Minister. It tells the Finance Minister that high taxes should be levied on those goods whose supply is inelastic, as heavy dose of tax on such commodities will have much effect on their supply. On the contrary where the supply of a commodity is elastic, less tax should be imposed.

9.8 SUMMARY

Supply means the amount offered for sale at a given price during a certain period of time. The quantity supplied of a commodity is not dependent upon its price alone but on a number of other factors. The law of supply expresses the relation between the price of a commodity and its supply. The elasticity of supply is the degree of responsiveness of a change in supply to a change in price on the part of sellers. There are five degrees of elasticity of supply namely perfectly elastic supply, perfect inelastic supply, unitary elastic supply, more elastic supply and less elastic supply. Percentage method and diagrammatic method are the two methods of measurement of elasticity of supply.

9.9 GLOSSARY

- **Supply-** Supply is the amount offered for sale at a given price during a certain period of time.
- **Law of Supply-** It expressed the relation between the price of a commodity and its supply.
- **Elasticity of Supply-**It is the responsiveness of the sellers to change in the price of the commodity.
- **Unitary Elastic Supply-**Elasticity of supply is unitary when the change in the amount supplied is in exact proportion to the change in price.
- **Quasi Rent-** When supply of factors becomes inelastic in short-period, then the extra income earned by these factors due to increase in their demand is called quasi rent.

9.10 CHECK YOUR PROGRESS

1. Complete the following sentences:

- (a) Commodities on the basis of their nature can be classified as perishable and
- (b) If production is subject to law of increasing costs, then the supply of such goods will be
- (c) The concept of time element with reference to depends on elasticity of supply.
- (d) Elasticity of supply is very useful for the.....Minister.

- (e) The relation between price and quantity supplied is direct and
- (f) Elasticity of supply is the measure of change in supply due to change in
- (g) Supply is said to be more elastic when a small change in price brings about a large change in supplied.
- (h) Supply is perfectly inelastic when a change in the price causes no change in

State whether the following statements are True or False:

- (a) The longer the period of time the more elastic is the supply.
- (b) Future expectations of price changes do not influence supply of a commodity.
- (c) The elasticity of supply is also influenced by risk-taking capacity of entrepreneurs.
- (d) When the supply of a commodity is elastic, more tax should be imposed.

9.11 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress A

- (a) Positive (b) Price (c) Quantity (d) Supply (e) Durable (f) Inelastic
- (g) Time element (h) Finance

Check Your Progress B

- 1. (a) True (b) False (c) True (d) False

9.12 TERMINAL QUESTIONS

- 1. What is meant by 'Supply'? Explain the factors affecting supply.

2. What is meant by elasticity of supply? How elasticity of supply can be measured?
3. Discuss the various factors affecting elasticity of supply.
4. Explain how elasticity of supply is measured? Also discuss its importance.

9.13 SUGGESTED READINGS

1. Yogesh Maheshwari, Managerial Economics, Prentice Hall of India, New Delhi.
2. D.N. Dwivedi, Managerial Economics, Vikas Publishing House Pvt. Ltd., New Delhi.
3. T.R. Jain, O.P. Khanna and Virsen, Micro Economics and Indian Economy, V.K. Publishers, New Delhi.
4. H.L. Ahuja, Advanced Economic Theory, S. Chand & Co. Ltd., New Delhi.
5. Atmanand, Managerial Economics, Excel Books, Delhi.
6. R.L. Varshney and K.L. Maheshwari, Managerial Economics, Sultan Chand & Sons, New Delhi.

UNIT 10: MARGINAL UTILITY THEORY

Unit Structure

10.1 Introduction

10.2 Subject Matter of the Theory

10.3 Assumptions

10.4 Cardinal and Ordinal Approaches

10.5 Indifference

10.6 Conditions

10.7 Applications

10.8 Criticism

10.9 Summary

10.10 Glossary

10.11 Objective Questions

10.12 Answers to Objective Questions

10.13 Terminal Questions

10.14 Suggested Readings

OBJECTIVES

After studying this unit, you will be able to:

- Explain the Law of Variable Proportions.
 - Describe the returns to scale and economies of scale.
 - Explain the applications of the Law of Diminishing Marginal Utility.
-

10.1 INTRODUCTION

Theorem of DMU has evolved itself through several versions in the past. The doctrine of ‘Final Utility’ was the centre of fidelity of psychological school in its early phase. This was somewhat closer to the idea of ‘Value in use’. Vilfredo Pareto (1902) was closer to Jevons in explaining ‘Final Utility’ of a product. American experts named it as ‘marginal utility’. ‘Intensity of last satisfied want’ was the wording coined by Walras. He referred to ‘Scarcity’ and inadequate supply. Dupuit in (1844) called it a final utility’. Gossen was, however, very clear on declining utility in uninterrupted consumption. Jevous and Karl Merger (1871) supported the trend of diminishing ‘use value’ due to scarcity. J B Clark, Bohm Bawerk (1886) Irving Fisher etc. contributed towards sophistication of DMU theorem. They felt that the utility of each unit depends upon the intensity of the immediate needs that requires satisfaction while ‘intensity’ depends upon the quantity already possessed. Each need is limited by nature and it grows less as amount possessed increases till the zero point is reached. This is the point of satiety. The first condition of utility is limitation of supply.

Primary objective of economists has ever been the maximization of human satisfaction and welfare by deeper understanding of the pattern and constraints of consumption by the consumers. The consumer’s behavior, once known, facilitates the producers as well as the welfare state in making proper policies and in taking appropriate decisions. Seen from the angle of commodity, the concept of ‘utility’ is often used as source of ‘want satisfying merit’ as psycho-satisfaction pleasure, wellbeing, and happiness of consumer. Utility is subjective, also relative and ethically neutral. Utility may be marginal, sub marginal or total. Utility gained from an additional unit is marginal. The utility can be added together making the total utility. As additional units of commodity are consumed the utility earned from successive unit tends to fall. This applies to all types of goods under consumption. Knowledge to this tendency helps the consumers, producers, distributors, policy makers and even the welfare-oriented organizations to frame their course of

action to personal, corporate or social gain. The DMU theory is universal by application barring the exceptions and assumed conditionalities.

This lesson on the theorem of DMU is a basic tool to understand how the consumer's act and with which constraints. In daily household related consumption also, the principle applies and helps reaping of utmost advantage in terms of utility or psychological pleasure. We will discuss the different aspects of DMU theorem including measurability attribute of Utility and the assumptions underlying DMU theorem. We will attempt to illustrate the DMU by diagrammatic figures and charts or tables. We will also evaluate the theorem from the viewpoints of critics and behaviors of ordinal approach in this reference. All wants are satiable and incremental utility declines sooner or later if consumer repeats consumption of same commodity for long. The objective here is to analyse DMU theorem in Marshallian version. Here, we try to learn how DMU works as the basis of various other theories of Economics.

10.2. CONTENT OF THE THEOREM

Marginal Utility analysis has changed several hands in the past. Menger (1840) Gossen (1854) Jevons (1871) Walras(1874) Alfred Marshall (1890) and several other distinguished thinkers contributed in the development of this concept of cardinal utility theory. Marshall's version, however, is the most popular interpretation. This theory was criticized by economists on the ground that cardinal approach is imprecise, unquantifiable and introspective. The emphasis later came to be focused on 'ordinal approach' in hands of experts like J.R.Hicks, Samuelson and Allen. The idea of diminishing Marginal Utility underlines a statement of tendency of consumer's behavior under some given conditions. It assumes homogeneity of units of commodity being bought and consumer's natural preference to buy goods having greater intensity of want. Tendency is more or less proved by practical experience.

Marginal Utility analysis applies to the consumption of consumer goods rather than to heavily priced producer's machines. There are some given assumptions or conditions under which this tendency is well marked. Purchase must be big enough or sizeable requiring some-thinking before decision making. The consumer must be knowledgeable and alert rather than

ignorant and he must be working with rationality. Alchian (1968) Baumol (1980), Samuelson (1964), Mishan (1968) and several other scholars discussed the usefulness and drawbacks of utility analysis. Tapas Majumdar (1966) also elaborately discussed new dimensions of utility analysis.

There are two prominent questions explained by marginal utility analysis. The first relates to what determines the demand of the consumers? And the second is what determines the price behavior. The former is determined by marginal utility obtained by the consumer and the later is decided by supply status of a commodity.

Marginal utility means a change in total utility resulting from one unit change in consumption per unit of time. It is an addition made to total utility by consumption of the last unit, while marginal utility decides the course of demand it does not make the price. Rather it changes with price. Supply of a thing is important for determination of price and of utility. Where there is unlimited supply, the marginal utility is zero. It is the scarcity which makes the marginal utility positive. It attains scarcity by every contraction of supply.

10.3. INTROSPECTION

Alfred Marshall worked out utility hypothesis to explain the root-determinant of demand function. Why an individual consumer is inclined to buy a commodity or service unit and 'how much of its quantity' is determined by the utility expected from this purchase. Utility is a feel of a sense of satisfaction or psycho-pleasure of the consumer derived from consumption or possession. Higher the utility, higher is the demand provided the other things influencing consumer's willingness keep constant. These influencing factors are several, including the price of commodity, competitive goods, substitutes, fashion and popularity, income level, etc. The marginal utility is abstract sense of pleasure measured by mental imagination of the consumer. How after all do, we precisely know the amount of pleasure or utility? It is a mental process of introspection or guess-work and not a smooth scale of precise assessment and tends to vary person to person and situation to situation.

In fact, demand for a good is explained by the reaction of the consumer to a change in

price of the commodity. What causes this reaction and what makes the pattern of reaction is set by the consumption function determined by the marginal utility. Generally, the consumer behaves in a pattern showing inverse relationship between price of commodity and quantity of commodity demanded at a point of time. Pattern of demand depends on the gain of utility from buying the commodity. Consumer always compares the prevalent price with the possible gain of utility from next unit of commodity.

Marginal utility analysis is actually a traditional theory of demand. It explains as to what prompts the consumer to demand a good. This theory does not offer a final and conclusive answer to the question. There are several other explanations advanced by economists, Hicks and Samuelson etc. presented 'logical weak ordering' theory and 'Revealed preference' theory to explain the demand behavior logically. Marshallian approach is still highly relevant and simple method to understand the consumer behavior in reaction of the price behavior. Most part of welfare economics, today, is based on utility theory of demand.

Why are the commodities demanded? The obvious answer is that the commodities are demanded for their characteristics of satisfying the high intensity wants. Utility obtained by consumption is a feel of pleasure in the mind of consumer. It is a subjective entity. It is a satisfaction felt in the mental process of the consumer. All consumers do not have similar utility by consuming a thing. This may vary extensively because the intensity of want varies person to person.

The want of each consumer is not of the same intensity. The degree of acuteness of want is different for different consumers. If a buyer feels that a commodity would add enormously to his satisfaction, his desire gets sharpened and acuter so he demands this commodity in preference. In exchange he has to sacrifice money units having a constant utility for the holding consumer.

In neo-classical form Utility is claimed to be precisely measureable and quantifiable. The quantities may be closely compared. The comparison makes the decision of the consumer much easier. Decision has to be on whether he should demand this commodity or also the next dose of the same, or another thing in order of priority over other things. If consumption or possession of the next dose makes the consumer in better off or worse off state is his own decision based on expected utility gain. Money holds equal command over the alternate goods bearing need

satisfying merit. It can be spent on any other thing bearing greater need intensity yielding higher utility. Consumer implements his purchase by carefully comparing probable utility yields. It may be different quantity of a single commodity or two different goods under comparison. Since utility is additive and can be added to a single total, the difference appearing in total utility by buying the last unit can be known. This is marginal utility.

This theory treats utility of money or monetary units as constant. While utility obtained by consuming goods tends to change in every next number or dose, money keeps its utility unchanged. This constancy of utility of money is very crucial for this theory. Utility is measurable in terms of money. This is assumed to be a constant value in this analysis because the measuring scale or rod has to be stable and not changing.

Money is a command on goods and services. When prices fall in the market the command of money increases and when prices raise the command of money decreases. But marginal utility theory assumes the constancy in the value of money. This is possible only when money spent on anything by consumer is practically insignificant part of income. This assumption is highly arbitrary and illogical.

The concept of utility, itself, is arbitrary and imaginary and is not logically unchallengeable. Utility is known by introspection method which is an inner feel rationalized by self-realization. It is an intuition or guess –work of general nature about how other person is gaining in terms of satisfaction. The assumption that what one person feels like in a situation is necessarily other person's experience is highly arbitrary. The logic of diminishing utility is derived from a logical speculation in human mind and is verifiable by experience. A thing may be highly satisfying to one and of no satisfaction or even a disutility to another.

There may be some commonality existing between two experiences. It sounds a real truth that if a consumer goes on consuming additional doses or units of a thing, his yield of marginal satisfaction from continuing consumption keeps on growing but at every next stage the yield rate is slower, declining with every additional dose. The net addition to total utility by every next dose is at a diminishing rate, because consumer approaches his point of satiety if he continues. The core idea is that the intensity of want tends to decline, as additional units of commodity are consumed. When he no more demands any unit, his want is saturated. Proceeding further for consumption of something may bring him even disutility or negative satisfaction.

MARGINAL UTILITY THEORY

Every rational consumer is inclined to maximize his yield of satisfaction or utility, he adopts a policy of equi-marginal utility. All money units carry similar buying capacity and money is scarce to buy all, consumer economizes the use of money to buy goods which fetch highest amount of satisfaction. A repetition of consumption of additional units results in addition to total utility. It is notable that marginal addition of utility tends to decline in case of successive units. If repetition continues, marginal utility may even be negative. To understand the logic of diminishing marginal utility, we can draw a table as below:

TABLE-1

Declining pace of Marginal Utility in continuous consumption

Coffee consumption per day (cups)	Utility obtained by marginal coffee cup	total utility yield
1	10	10
2	9	19
3	8	27
4	6	33
5	4	37
6	1	38
7	(-)3	35
8	(-)4	31

It may be noted that the yield of satisfaction per unit of coffee is 10 when marginal and total utility is the same. Initially the intensity of want for coffee is high. As more successive cups per day are consumed, the marginal utility tends to decline while the total utility is growing but successively at lesser pace. The 6th cup per day yields only 1 utility. Proceeding still further the marginal utility of coffee becomes negative. This also reduces the total utility successively. There may be some exceptions in case of consumption of alcohol. Even a drunkard would get unconscious having consumed successively several bottles. This is an irrational behavior of consumer, which is excluded. The theory holds good in consumer goods.

The tendency of falling marginal utility also applies to the number of children born to a

couple. It is argued that though money –possession enables the owner to hold all goods yet marginal utility of money is also likely to diminish, like other things, at slower rate. The saturation point is likely to emerge when additional money would be more of a burden than an advantage. If money accumulation reaches that height when it no more remains scarce. Price emerges only when a thing is scarce. In abundance, money would not hold command on other goods. Want for money is an exception rather than a rule. Money is always desirable because it has the capacity to satisfy all needs. The wants are numerous and have tendency of multiplication like expanding universe. Therefore, still more money is required to satisfy those emerging wants.

We know that a commodity would not have any utility unless it is wanted for meeting a demand. Utility is want satisfying talent emerging due to a situation. It sounds as if utility is inherent property of the consumed commodity. It is the demand that makes the good utility yielding. Utility is a subjective pleasurable experience which settles in human mind. It is a feel of satisfaction. Therefore introspection & not a physical count which measures the satisfaction level. The theory of Diminishing utility assumes that human being always this to reap greater satisfaction & maximization of utility, substituting a low utility commodity.

This theory has multiple uses in the science of the economics. For instances, in theory of price determination, explaining paradoxical situations of water & diamond price & utility variation, mapping of demand curve, consumer behavior & consumer's surplus motions. The theory of equimarginal utility is a derivation from law of diminishing marginal utility. Consumer's equilibrium concept is understood with reference to diminishing marginal utility.

Diminishing Marginal utility can be illustrated with a help of curve which can be drawn by plotting the diminishing marginal utility. On vertical axis we show the price & utility & quantity consumed on horizontal axis. When price equals utility the satisfaction of consumer reaches the heights point. The relationships indicate that lower the price of commodity, higher is the demand for that good & vice-versa. When the market price equals to the marginal utility consumer reaches the equilibrium. Equilibrium is the state where from any deviation would cause loss to the consumer so he stops further purchase. At this point consumer attains his satiety. Consumer would feel it profitable to buy more till his marginal utility equals the price. Marginal utility is declining at every further purchase. Till the price falls, purchase would continue while marginal utility is declining. When utility & price are equal, further purchase

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would halt. Because it would yield negative utility. The law of demand is the derivation from this law of diminishing marginal utility.



10.4. CARDINAL V/S ORDINAL APPROACH

Experts believe that in its actual application, diminishing marginal utility analysis tries to assess utility of consumed or bought goods treating the marginal utility of money constant. Cardinal measurement of utility is imprecise & arbitrary. HR Hicks, Allen, & several other theorists made an effort to substitute cardinal approach by use of 'ordinal approach'. Indifference curve analysis is the true substitute for diminishing marginal utility analysis. Samuelson & others have propounded still better approaches, to explain preference ordering.

Indivisibility of goods poses a serious challenge to marginal utility analysis. Quantities of two things are not always divisible in equivalent units. It poses a problem as to how do we compare oranges with refrigerators in terms of money. The comparison would be 'ridiculous' between a 'sewing machine' & the 'basket of grapes'. The prices are not comparable nor can we break the sewing machine into smaller pieces & keep it salable. It can well be

compared with other brand-sewing machine. It can well be a substitute.

Some experts opine that the marginal utility of money may also be changing. This shall change the real income level of the consumer. Rising Price level leads to diminishing of consumer real income. Marginal utility of money may keep unchanged, only if price elasticity of demand is equal to unity or when the weight of change in price is only in significant. The theory of diminishing marginal utility relates to the behavior of consumer's regarding the choice of quantity to be bought. Every consumer tries to maximize his total utility by wise behavior. It is so due to his rational behavior, that he maximizes his total utility.

The Consumer so distributes is scanty resource among various alternatives that his total earned utility is the highest. Jevons (1871) Leon walras (1874) Gosses (1884) Manger (1840) & Marshall (1890) had engaged in this theoretical discussion very extensively. All of these were associated with cardinal approach. Consumers vary in intensity of their needs so the consumer behavior tends to vary person to person.

10.5. ETHICAL NEUTRALITY

Utility is treated ethically neutral. The utility is counted in terms of 'utils' as smallest unit of psychological pleasure emerging from consumption. Ordinal utility concept is expression of utility of goods in relative terms of consumer's preference. The order of preference marks utility level. The diminishing marginal utility suggests that the repetition of consumption of same commodity may reduce the consumption led satisfaction from every next unit of commodity. The cardinal approach underlines the tendency of falling rate of addition to total utility by every successive unit of commodity. The theory applies more accurately in consumer goods. It is by far simpler & easier to understand. But the assumptions of this law are very cumbersome and complicated. Some of these are below:

1. Units of consumption should be well defined, standard and uniform.
2. The tastes, fashion, likes and dislikes should not change;
3. The commodity should not be typically rare in kind like rare paintings, coins of rare historical significance, idols or statues of religious relevance etc.
4. The income level & living standard & style should not change abruptly;

5. The buyer or consumer must behave in economically rational pattern while making a choice & he must try to maximize the total utility instead of being swept away with emotions on way.
6. The money units should have constant utility even if the stock of money undergoes a change.

The buying behavior is certainly guided by economic rationality which requires preference for consuming a commodity if it brings more satisfaction or utility. A commodity has a price because it meets the dire need of the consumer. In this process, the utility is created or satisfaction is obtained. Human needs vary by their felt intensity; therefore, the consumer is willing to pay a higher price. He might not pay as much of the price if consumed thing does not yield adequate satisfaction or pleasure to meet need of greater intensity. What makes the customer alert enough to pay more. Are the constraint of limited income & several unattended needs pressurizing the consumer to act rationally. If the consumers want to earn highest amount of satisfaction by spending his meager income, he has to compare the yield of satisfaction & also the price he has to pay for greatest total utility. Marginal utility declines as the consumer buys more units. Consumer stops fetching different units long before the marginal utility of the good diminishes down to zero. He keeps on buying till the utility of newly added unit is greater than the price. If price falls. Purchases may be prolonged till marginal utility is equal to price. The price demand relationship is an inverse relationship.

A consumer is in the state of equilibrium when price equals his marginal utility. If he stops purchase one unit earlier, he loses his possibility of earning more utility & if he proceeds further even after the zero point when price equals marginal utility, he has to suffer a loss because here utility is below the price. This means disutility. Therefore the consumer does not want a change any further.

10.6. CONDITIONALITIES

The theory of diminishing marginal utility is acceptable only under the governing assumption discussed earlier. It takes for granted that utility is a measurable & quantifiable notion in so far as

utility can be assigned numbers. There is no qualitative difference among the obtained utils. Utility obtained from different things is separable. It is independent of one another. Satisfaction earned from one good is not affected by the consumption of another commodity. The utilities got from all goods can be easily added to a single total of utilities. It can be plotted on a graph to make a diagram. The prices are expressed in money units. Marginal utility of money is believed to be always constant even if the amount of the money diminishes with consumer as his purchases goes on successively. This is technically unsound assumption because change in price may cause a change in status of the consumers' income. Diminishing marginal utility analysis is based on introspection method which means judgment by observation or experience, emerging in the mind of the buyers. This judgment gives the analyst a clue as to what the other person feels like in similar situation. It is also claimed that marginal utility diminishes because each want of the consumer is satiable & goods are imperfect substitutes of another.

10.7. APPLICATION

The principle of diminishing marginal utility is based on practical experience of mankind. Therefore, it applies universally. It is often said that all things do not always reach zero utility when marginal utility diminishes successively. There may be such goods which have ever ready need & are even in demand. These never reach zero utility stage; Money is one of such things. Money has command over all goods so its demand never reaches zero. Money has command over all goods. It is not one thing. Marginal utility of money does not fall. The fiscal policy also draws its design from the diminishing marginal utility. Distribution policy also benefits from the law of diminishing Marginal utility. All governments try to redistribute income among 'Haves' & 'Have not. The difference in preferences for consumption actually explains why the poor chooses to buy irrespective of marginal utility which means an irrational decision. The theorem suggests that a proper selection based on marginal utility would certainly maximize the total utility. But goods are not always similar where a comparison is possible. If dissimilar goods compete for selection like a ship & basket of grapes. There is no small dose of ship. Here 'indivisibility' question appears which a main hurdle in comparison is. Principle of diminishing utility is highly useful in taxation, price determination, household, purchase, law of demand, elasticity, consumer's surplus, law of Equi marginal utility & substitution etc.

It is certainly true that economics is a social science & its laws are labeled as hypothetical. Imaginary, imprecise, & suggestive rather than precise like that of physical sciences. But we have justification for having economic laws because these give us a clue to understand a phenomenon & predict the further course of events. The laws of economics like diminishing marginal utility help in making proper policies & in directing the economy, understanding social needs, & attaining social goals. These help in promoting logical thinking. The rational behavior of firms, consumers, entrepreneurs, & workers is developed by understanding the laws; rational spending pattern has to be understood by all economic entities.

There is a psychological tendency underlined in the behavior of consumers. The understanding of this tendency is necessary to seek maximization of total utility from consumption. This theory is also termed as neo-classical marginal utility theorem. A fundamental constraint on consumer is of the scar city of money. To understand the nature of utility-earning by consumers at a time only one commodity model is assumed, but in practice, there is multiplicity of things where the choice has to be exercised. Diminishing marginal utility is a tendency in the consumer's behavior of consumption. Marshall believed that the additional benefits which a consumer derives from a given rise in his stock of the thing tends to grow but it increases at a reduced pace by every newly added marginal dose. The total utility reaches its peak when marginal utility is zero. If this unit of consumption is too small, the marginal utility may be rising initially with every additional & later on, the utility shall increase at diminishing rate. The total utility shall keep on rising to the point where the price is equal to utility from marginal addition. Before reaching its maximum, the total utility rises but at diminishing rate.

We can summarize by stating that the concept of utility raised a great controversy among theorists in Eighteenth & nineteenth century. It had been used as concept by Jeremy Bentham. His contemporary utilitarian's like Jevons, Walras, Menger; Marshall etc elaborated the concept in later years. After Marshall & Pigou further sophisticated this concept, in Neo-classical version of cardinal approach. They used utility as the expression as the measurable, standard & objectively quantifiable notion. Even money, as a standard, could measure the sentiment of pleasure of the consumer in precise quantities. J.R. Hicks, Slutsky, Pareto, Arrow, Samuelson etc expressed serious doubts on measurability of utility as per claims of Pigou & Marshall. They believe that a consumer can, however, rank good in the scale of utility. A consumer tries to arrange various combinations of opted goods in a scale of preference. This

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approach was termed as ‘ordinal approach’ which rejected ‘cardinal approach’ of Neo-classical. Ordinalists did not agree with the point that utility is easily measurable as water in liters’ & distance in standard measure of kilometers. To classicists’ marginal utility meant an increase in total utility by consuming an additional unit. It may pass through 3 stages; positive stage, zero stage & even negative stage. Since utility is believed to be additive, one can add up marginal utility to an aggregate called total utility. Every new addition to consumption of a thing yields marginal utility at a decreasing rate till marginal utility reaches zero where after, if consumption continues, the marginal utility is reduced to negative which also tends to reduce total utility. At zero level, the consumer reaches the point of satiety.

The law of diminishing marginal utility is a well-established truth, holding common experience regarding the consumer behavior. It applies universally if its assumed conditions are well taken care of. Consumer behavior, everywhere, suggests that if a consumer keeps on consuming additional units of a things, in continuity, successively one after other, the benefit, advantage, satisfaction or utility obtained from additional unit tends to decline (as compared to the former unit) ultimately reaching zero or even negative after the point of satiety which is shown by zero utility.

This law can be illustrated by a diagram on a graph paper, utility being represented by simple bars or pillars, even if the consumed commodity is of indivisible nature. This means that the commodity does lose its value, if it is divided in small bits. The divisible goods are those which can be reduced to any smallest bits without losing their value. It is like a kg of potato, 1 liter of milk, 250gm of lentil, etc.

Table-2

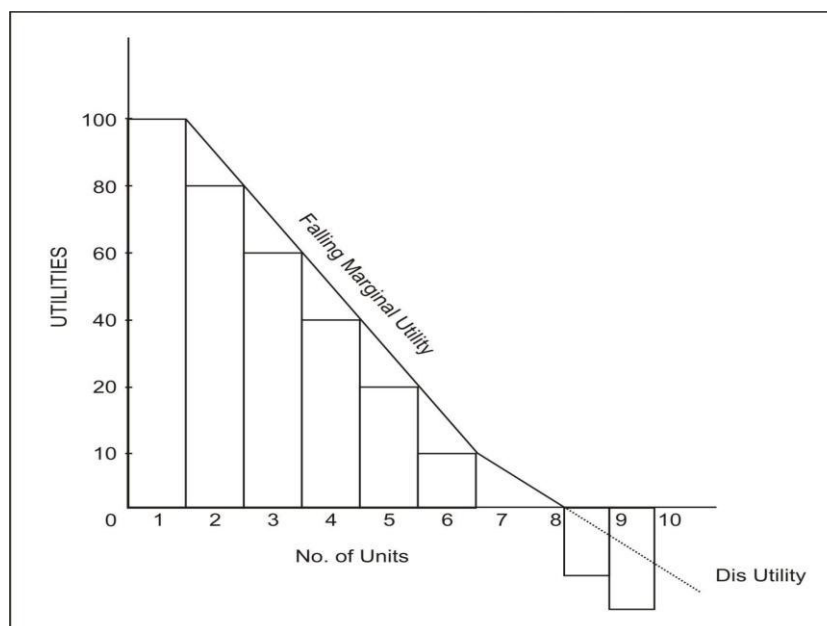
Diminishing Marginal Utility feature of indivisible goods

Number of units of bread	Obtained Marginal Utility from unit of consumption
1	100
2	80
3	60

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4	40
5	20
6	10
7	5
8	0
9	(-)20
10	(-)40

For making the diagram on the basis of above table, the bread is shown on x-axis & marginal utility on the y-axis. The bar shows the marginal utility obtained by the additional unit. The first bread yields 100 units which is the tallest bar. From second bread to eighth bread marginal utility are shown dwindling downwards & the height of bar also decreases successively. The eighth bread has zero marginal utility. It is the point of consumer's satiety. Consumer must stop consumption here but if he chooses to continue his marginal utility may be negative (-20) & next shall yield 40 disutility. Zero utility is shown on 0 x-axes.

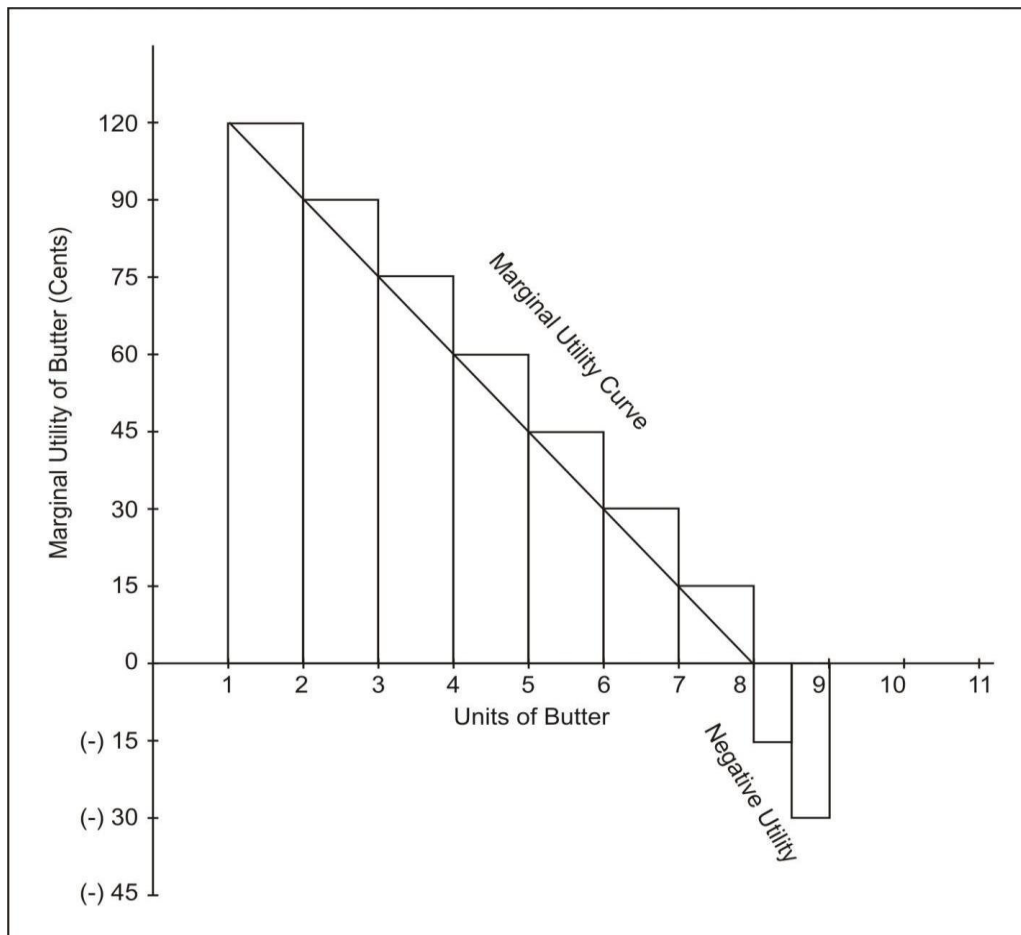


Pillar diagram showing diminishing marginal utility obtained from consumption of bread.
(Indivisibles)

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Goods under consumption may be of divisible nature which means those can be reduced to smaller or higher units without loss to the value of the thing. An illustration may be of joggers & butter. These can be broken to smaller or larger units without any loss of value. The following would be the shape of diagram showing diminishing marginal utility of butter.

Diagram showing diminishing marginal utility of Butter (Divisible)



The consumer is inclined to stop purchasing more of salt after two or three units of salt packs have already been purchased. Its point of satiety is attained much faster than packs of sweets. In case of items of show-off or conspicuous consumption goods, more units are bought because of special feature of the product is every next edition or model of design, on repetition of

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the same the diminishing utility applies as usual. Divisible goods have diminishing marginal utility as shown on table 3.

Table-3

D.M.U. of divisible items of consumption

Packs of Butter	Marginal Utility
1	120
2	90
3	75
4	60
5	45
6	30
7	15
8	0
9	(-)15
10	(-)30
11	(-)45

The concept of demand & its characteristics of sloping downward from left to right is based on utility schedule of consumer which is based on law of diminishing marginal utility. This law is said to bring out the practical relevance of product diversification & consumption diversification. In its modern connotation, the law of diminishing marginal utility explains that the value which any consumer attaches to successive units of a commodity tends to fall steadily as its total consumption rises. This applies only when the successive units are one & of uniform quality & other features. A millionaire continues buying brand new cars for his private use for 'show off' & prestige & his marginal utility for fresh car does not seem to diminish. This impression is false, because he purchases a recently developed new brand for its being special in comfort & powerful engine & low consumption of fuel. It is a different product not the earlier one. Economics suggests the behavior of rational buyer who certainly goes for assessing the marginal utility while the extra rich hardly care for probable utilities because their purpose of

buying may be different from that of an ordinary person.

Scarcity of resources for meeting unlimited wants is at the centre of Economics. Economic problem has its birth in scarcity. All wants would be fulfilled in case of abundant resources. The shortage of resource presses the consumer to satisfy only those wants which are more intense & satisfaction of which yield greater utility. Preference is given to greater utility bearing uses. In fact, law of Equi marginal utility emphasizes that resources have alternative uses & rational consumer distributes resources among uses in a style that the resources is used for equal marginal utility. Equalization is practiced by substitution of low utility yielding uses by high utility yielding uses. Thus, the theory reveals a truth regarding consumer behavior.

FEED-BACK

Clarification on Questions:

- 1- Some obvious questions emerge in minds of students regarding concepts used in this lesson. What is the precise difference between cardinal & ordinal approaches? We have learnt that cardinal lists regard utility as precisely measurable in quantifiable terms. While ordinalists regard utility as an unmeasurable sentiment of pleasure or satisfaction. Its consumers rank goods in order of their order of reality; the purpose of rational consumers behavior can be served. Cardinality & the ordinality are regarding precision of measurement. If we can measure a thing quantitatively like length, temperature, altitude, volume etc, it is cardinal. It assigns a number serial to the set of experience. When we can compare the magnitude of utility difference, we move towards ordinality. Hirshleifer & glazer (1992) rightly opined that..." Utility is the variable whose relative magnitude indicates direction of preference & most professed position is maximization of utility." Utility is said to be of ordinal magnitude if the consumer says that two billion is preferable to one billion but does not spell on the degree of preference. Total utility in diminishing Marginal utility law is an ordinal magnitude but the measurement of marginal utility is uncertain & imprecise. The ordinal measure is adequate for the analysis of consumption behavior including quantitative decisions. Use of professed consumption baskets also leads us to maximum total utility. The ranking of all

conceivable consumption baskets in order of preference is most convenient in deriving policy decisions for public welfare.

- 2- You would like to know as to why the point of satiety of consumer is at zero value of marginal utility?

We must remember that marginal utility declines at every next purchase or dose of consumption & reaches zero when consumption of next unit yields no utility at all. Here the consumer reaches his maximum total utility. This is his point of satiety & here he stops further purchase. Beyond this any further transaction would incur a loss or disutility.

- 3- Which are the main areas where the law of diminishing marginal utility can find a useful application in Economics?

You have already learnt that the law of demand is directly derived from diminishing marginal utility. This considerably helps the rational consumer behavior. He tries his level best to diversify his consumption over greater items which win greater utilities to the consumer on road to maximization of utilities. Manufacturing concerns adopt the production diversification by introducing new products, brands, designs, varieties, & technical innovations occur due to the lesson learnt from Diminishing Marginal Utility which guides the consumers. They avoid indiscriminate repetition of purchase of something at the same price. In the sphere of public finance, the theorem of diminishing marginal utility helps the policy makers & scheme designers considerably. The incentive weaving is knitted with the consumer's behavior & its rationality. The principle of declining utility of money helps the exchequer to conclude that a tax burden is not equal on all the strata of society if it is only proportional. It has to be progressive along the income differentials. A subsidy can help the poorest due to inter strata variations in utility of money. The art of wise-spending is drawn from diminishing Marginal Utility where consumer emphasizes on Equi marginal utility from all doses of spending.

- 4- The law of D.M.U. is based on several assumptions. Why these assumption & 'other things remaining the same' phrase are used in this theorem?

The law applies in its true form only under some given conditions. All experiments are subject to the laboratory conditions. This theorem also has a large numbers of exceptions like cases of rare goods, antiques, things of show-off & status-goods, irrational and unstable state of mind of consumer eroding value of money, etc. But by & large, the law is universal in character & application. The Diminishing Marginal utility has various assumptions like rational behavior of consumer, cardinal measure of utility, constancy of marginal utility of money, uniformity of the items of consumption, continuity in consumption, unchanged status of income, preferences, aptitudes & popular fashions.

5. At which point of spending do you think the consumer attains his demand saturation or point of satiety? This saturation comes when the marginal utility equals the price. The total utility of the consumer is at its highest peak. Beyond this the consumer, if continues buying further incurs loss or negative utility. Marginal utility becomes zero at the point of satiety & beyond this, total utility starts declining.

10.9 SUMMARY

Jeremy Bentham introduced the concept of utility in modern context of seeking maximization of pleasure by taking consistent choices of consumption. Utility reflects act ordering of preferences. It is the variable where relative magnitude indicates the direction of preference. In search for the preferred position, the individual maximizes utility. The critics were opposed to treat utility as a cardinal entity which is measurable & precisely quantifiable. The magnitude of utility differences can well be compared even if any zero point is not indicated. Utility quantification is uneasy exercise for anybody to attempt. At the most, it may be guess-work. The critics are the ordinalists who want the 'utility' to be substituted by precisely quantifiable measure like altitude,

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rainfall, temperature, etc. The cardinalists treat utility measurable. The theorem of diminishing utility suggests that generally, as a consumer continues consumption he earns a sense of pleasure per commodity per point of time. Every next dose of consumption yields this pleasure or satisfaction but the marginal yield rate fall still it reaches zero or even negative. Such a zero point is the point of satiety of consumer. The marginal utility gained from all doses of consumption can be added together to express total utility. The tendency operates with perfection under some given assumption & exceptions. This theory helps the producers, entrepreneurs, corporate, managers & policy framers in designing their course of action. Various other theories in economics are drawn from this theory of consumer behavior.

Theory of diminishing Marginal Utility has several versions like Marshallian, Hicksian, Samuelson, Carl Managers etc. Revealed preference theory is more popular, easy & clear. If we understand the pattern & constraints of consumer behavior, it helps us in making appropriate policy for sales & marketing diversification of output, & consumption, & technical innovations & consumption, & technical innovations for bringing out new models & brands.

10.10 GLOSSARY

- **Utility:** The ability of a commodity to satisfy a human want.
- **Law of Diminishing Marginal Utility:** According to this law, when a person satisfies a particular want continuously by consuming the same commodity, the marginal utility derived from each additional unit gradually decreases.
- **Marginal Utility:** The utility derived from the last (additional) unit of a commodity consumed.

10.11 CHECK YOUR PROGRESS

Fill in the blanks:

1. Utility can be measured only in _____ words.
2. The utility of a consumer from a commodity depends on the _____.

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3. If the availability of one commodity reduces the utility of another, then the two goods are _____ to each other.

4. In the case of related goods, the law of equi-marginal utility loses its _____.

10.12 ANSWERS TO CHECK YOUR PROGRESS

1. Cardinal 2. Utility 3. Substitutes 4. Validity

10.13 TERMINAL QUESTIONS

1. Explain clearly the difference between total utility, average utility, and marginal utility.
 2. Explain the law of diminishing marginal utility and discuss its limitations.
 3. Explain the concept of consumer surplus. What are its limitations?
 4. Critically analyze the law of equi-marginal utility.
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10.14 SUGGESTED READINGS

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UNIT-11: PRICING STRATEGIES AND PRACTICES

Unit Structure

11.1 Introduction

11.2 Objectives of Pricing Strategy

11.3 Price Reduction

11.4 Price Increase

11.5 Price Discounts

11.6 Industrial and Consumer Goods

11.7 Pricing Systems

11.8 Guidelines for Pricing Practices

11.9 Summary

11.10 Glossary

11.11 Check Your Progress

11.12 Answers to Check Your Progress

11.13 Terminal Questions

11.14 Suggested Readings

OBJECTIVES:

After studying this unit, you will be able to:

- Explain the objectives of pricing policy.
- Explain the definition of pricing policy.

- Describe various pricing methods.
- Explain the guidelines for pricing practices.

11.1 INTRODUCTION

Pricing strategies and setting the price are the most important aspects of managerial decision-making. In fact, this is the source of revenue which the firm seeks to maximize, and it is the most important device a firm can use to expand its market. If the price is set too high, a seller may price himself out of the market. If it is too low, his income may not cover costs, or at best, fall short of what it could be. However, setting prices is a complex problem and there is no cut and dried formula for doing so. Whether to set a low price or a high price, would depend upon a number of factors and a wide variety of conditions. Moreover, the pricing strategy decision is critical not only in the beginning but it must be reviewed and reformulated from time to time.

Certain general considerations which must be kept in view while formulating the price strategy are given below:

Objectives of business. Pricing is not an end and never be established without full consideration as to its impact on the other policies and practices of the firm.

- **Competitive Situation** in which the company is placed. An effective solution of the pricing problems requires an understanding of the competitive environment. In perfect competition, sellers have no pricing problems because they have no pricing discretion. Under the present competitive conditions, it is more important for the firm to offer the product which best satisfies the wants and desires of the consumers than the one which sells at the lowest possible price. As a result, pricing policy should be governed more by the relative than by the absolute height of prices.
- **Product and promotional policies.** Pricing is only one aspect of market strategy and a firm must consider it together with its product and promotional policies. Thus, before making a price change, the firm must be sure that the price is at fault and not its sales promotion programme, the quality of the product, or some other element.

- **Nature of price sensitivity.** Businessman often tends to exaggerate the importance of price sensitivity and ignore the many identifiable factors at work which tend to minimize it. The various factors which may generate insensitivity to price changes are variability in consumer behaviour, variation in the effectiveness of marketing effort, nature of the product, importance of service after sales, the existence of highly differentiated products difficult to compare and multiple dimensions of product quality.
- **Conflicting interests of manufacturers and middlemen .** The interests of manufacturers and middlemen through whom the former often sell are sometimes in conflict. For instance, the manufacturer would desire that the middlemen should sell his product at a minimum mark-up, whereas the middlemen would like his margin to be large enough to stimulate him push up the product.
- **Routinization of pricing.** Pricing in practice is often routinized though its extent may differ from company to company and product to product. For example, the management may prefer to depend on suggested prices, mechanical formulae or price followership. The degree of routinization, however, depends on the following factors:
 - (i) **Number of pricing decisions.** A firm which may have to take thousands of pricing decisions on a wide range of products, none of which provides a substantial proportion of sales, will find that the costs of separate analyses on each product are too high. It would, therefore, find it economical to adopt relatively mechanical routines for pricing.
 - (ii) **Speed required by pricing decisions.** Mechanical formulae, such as a pre-determined mark-up on full cost, have the advantage of speed though flexibility and adaptability to special conditions is thereby lost.
 - (iii) **Quality of available information.** If the data on demand and costs are highly conjectural, the best the firm may be able to do is to rely on some mechanical formula such as cost plus.
 - (iv) **Competitive market.** If a firm is selling its product in a highly competitive market, it will have little scope for pricing discretion. This will pave the way for routinized pricing.
- **Active entry of non-business groups into the determination of prices .** The

Government acting on behalf of the public seeks to prevent the abuse of monopolistic power and collusion among businessmen. There is a complex body of laws and even more confusing series of judicial decisions. Very often, the Government elects to control certain prices. Collective bargaining and strikes by the labour unions attempt to raise wages. The entry of the Government into the pricing process, in alliance with farmer and labour interests, tends to inject politics in price determination.

11.2 OBJECTIVES OF PRICING STRATEGY

Pricing decisions are usually considered a part of the general strategy for achieving a broadly defined goal. While setting the price, the firm may aim at one or more of the following objectives:

- A. Maximization of profits for the entire product line. In this connection Kotler has pointed out, firms set a price which would enhance the sale of the entire product line rather than yield a profit on one product only.
- B. Promotion of the long-range welfare of the firm, e.g., discouraging the entry of competitors.
- C. Adaptation of prices to fit the diverse competitive situations faced by different products.
- D. Flexibility to vary prices to meet changes in economic conditions affecting the various consumer industries.

11.3 REDUCTION IN PRICES

After discussing the objectives and effect of a reduction in prices, one point to be noted that as one would not lose all his customers with a price increase, he would not win all the customers with a price cut. A reduction in price may be made to achieve the following objectives:

- 1. Prices may be reduced to offset a possible loss of sales resulting from a lower advertising budget.
- 2. When a firm is expanding its capacity, temporary price cut may help the new plant

to reach capacity operation more quickly.

3. Lower prices may help the firm to broaden the market for its products.
4. Prices may have to be reduced to meet competitive pressures from domestic or foreign companies producing the same product or substitute products.
5. Prices may be reduced drastically to prevent the entry of a potential competitor.
6. Technological developments may lead to reduce costs and manufacturers may wish to pass on the benefit to the consumers.

Price reductions in individual drugs have always been a normal feature of the operations of the drug industry both in India and abroad. Competition among drug manufacturers is becoming an increasingly important factor leading to voluntary price reductions wherever cost reduction or greater efficiency has made them possible.

Whether a reduction in price would help a firm to increase sales depends upon how the consumers react to the reduction. As has been pointed out earlier, consumers rely on prices as an indicator of quality. Reduction in price may give rise to an apprehension that quality has gone down. And a reduction in price may decrease sales unless special steps are taken to prove that the quality is maintained.

A price determination will probably lead to increased sales if consumers expect the price to return to normal after the reduction. A price reduction will depress sales if it is thought to be the first of a continuous series of reductions to a new lower level. So also, a price increase will lead to increased sales if it is seen as the first of an inflationary series. Hence, *if a reduction in price is deemed necessary, it would be advisable to make a decisive and final cut.*

It is very important to note that when there are abundant supplies of goods and the demand is falling, a reduction in price will probably not bring about a change in conditions, and will not be able to push up sales.

However, a low-price policy may result in such a volume of business and low unit costs that profits are maximized without raising prices.

11.4 INCREASE IN PRICES

Very often a company might be forced with a situation where costs may have increased and it might be considered whether to increase prices or not. The decision would depend upon how the demand would be affected by such an increase in prices. In fact, prices are usually increased where the market demand is strong and the business is having a boom. Prices are never increased during periods of depression and falling incomes. Thus, while it may be true that costs may be rising at the time prices are increased, it is the rising demand which makes it possible to pass on the increase in costs to customers without any adverse effect on sales. Manufacturers are often accused of increasing prices unjustifiably. To some extent, it may be true that they behave irresponsible and exploit the consumers. But on an impartial analysis, it would be found that in many a case, price increases were justified.

11.5 PRICE DEALS

The purpose of price deals is to sell more and more product, both during and after the promotional period, at a profit. Both consumer and trade deals are geared to achieve impact at the point of sales. Consumer deals offer past, present and prospective users the opportunity to obtain the item at a bargain price. Trade incentives, on the other hand, are meant to increase sales to retailers, which presumably lead to a larger sale, special displays and other retailers, which presumably lead to a larger sale, special displays and other favourable conditions which encourage greater purchases by the consumers. Trade and consumer deals are increasingly familiar phenomena in the marketing of most low-priced, frequently purchased, non-durable products. Charles Hinkle revealed a number of specific findings concerning the strength and shortcomings of price deals. Some of the findings are:

1. Off-season price reductions seem to be more profitable.
2. A high frequency of price reductions seems to make consumers too much price-

conscious. Even regular customers stock up and wait for the next deal before repurchasing. So, also retailers may be inclined to buy on a shorter turnover basis than is customary in anticipation of the next deal on the same or other brands.

3. Deals do not seem to be a good way to counter new brands offered by competitors, and they are not necessarily more effective even if accompanied by product package innovations.
4. Price deals are more effective for new brands than for established ones, and they are almost always more effective if kept in proper balance with advertising.
5. No brand, even a well-established, luxury brand, not subject to deal, is invulnerable to price deal competition if it has basic marketing problems, and price deal promotion is never a cure for marketing problems.
6. When special promotional campaigns fall short of expectations, the manufacturer would do better to question his own planning and policy-making than to blame the retailers for the failure.

11.6 INDUSTRIAL AND CONSUMER GOODS

The number of buyers of industrial goods is comparatively very small and one of them may take the bulk of the production. They also act more rationally than an average buyer of consumer goods. Their knowledge of markets is more extensive and exact, if not perfect. Very often, the buyer of an industrial product knows, or at least can make a guess of, the cost of manufacture. Again, he is more keen to check what he gets for the price he pays than an average consumer.

Price leadership is a very common phenomenon in the industrial goods market. Market research is more useful and a more reliable guide in the pricing of industrial goods than in the case of consumer goods. But test marketing is neither possible nor widely used in the case of industrial goods because (a) the number of buyers is small and hence test marketing will not give useful results, (b) it becomes a common knowledge to all buyers. This may create ill-will if a low price is being offered to some buyers and not to others.

Many industrial products are bulky and heavy. Thus, expense of transport is a much more important item in their final cost to the buyer than in the case of consumer

goods. Hence, industrial marketers would prefer ex-factory pricing. But that would make them uncompetitive in many parts of the country. Hence, they usually adopt delivered pricing policy.

The price elasticity of the demand for an industrial product would depend to some extent on how important its price is in the general cost structure of the using firm. If it represents a significant element, a reduction in price may not lead to a change in demand. The demand for equipment, however, is much less price elastic because the price of the equipment is a part of the overhead cost which cannot be readily identified.

Pricing Strategies

An important prerequisite for scientific pricing decision is the regular availability of authentic basic data relating to the product and its substitutes, and the relevant markets including foreign markets. The details of information requirements vary from product to product, market to market, and firm to firm. In general, information in the following areas is considered necessary for facilitating correct pricing decisions:

(a) Product Information: (i) production cost details, (ii) excise duties, cesses, etc., (iii) floor price and ceiling price regulations, if any, (iv) packing requirements, (v) product guarantees and after-sale service requirements, and (iv) percentage incidence of rejects/seconds.

(b) Market Information: (i) Ruling market price including prices of substitutes, (ii) terms of payment, (iii) major competitors, (iv) production statistic, (v) consumption pattern — seasonal variations, if any, (vi) brand image, brand loyalty and consumer preferences, (vii) sales promotion requirements including media and cost, and (viii) channels of distribution and the margins allowed to the various intermediaries.

(c) Information at the micro level: (i) Production capacity of the firm — installed and utilized, and (ii) the market share of the firm — total and regional.

The collection of necessary pricing information at the micro level will depend upon the individual firm's set-up and its requirements. The more important sources of published information are the Economic Adviser's Office and the economic dailies and periodicals such as the 'Economic Times' the 'Business Standard', the 'Financial

Express', 'Business Line', 'Capital', 'Bombay Market', etc. Each firm has to make necessary efforts to get adequate information having regard to its requirements. The past records of the firm will provide complete details about costs incurred and the final price realised. This would provide post mortem information on cost vs. prices and also serve as guide for the future.

Very often, individual manufacturers cannot afford to have their own agencies for collecting the necessary information. Nor may they be capable of doing so. In such cases, an agency at the industry level, for example, trade associations, may pool information and supply it to the members on nominal payment. Trade associations also publish their own trade journals giving the necessary product and market information.

Fundamentals Affect Price Decisions

Consumer Situation	Utility to the buyer
	Comparable and substitute product — actual and anticipated
	Custom and Customary prices
	Prestige position of product and brand
	Buying habits and motives
	Psychological appeals — actual or cultivated

Cost Considerations

Cost of production — historical and future

Volume anticipated — extent of plant utilization

Contribution to overhead

By items in multi-line production
joint-cost production

Break-even points

Extent of vertical integration and horizontal
integration

Competitive and
Market Considerations

Market position of product

Market position of competitors

Market position of substitutes

Share of market

Meeting market

Underselling market

Overselling market

Leader or follower

Actions of competitors

Price and related actions

Service policies

Design and product or developments

Channels used and distributor margins needed

Geographical distribution sought

Advertising position and plans

Nature of distribution structure

Utilization conventional outlets

Development of new distributors

Promotional programme

Sales plans

Distributor relations

Exclusive dealers

Full-line dealers

Market Structure and
Promotional Policies

Possibilities of more effective trade co-operation

Trade in practices

Other Considerations	Eliminate slack periods
— Individual, Firm or	Introduce new products
General Economic	Enter product into new markets and uses
	Extend territory
	Provide continuous employment
	Provide socially needed goods or services —
	Medicine, hospital, housing
	Maintain national income
	Adjust to cyclical changes

Strategy Choices and Limitations in Following Price Decisions

Manner of Quoting	Use of price lists
Prices	Net price quotations
	Discount quotations
	Use of negotiated prices
	Making price estimates
	Price contracts
	Influencing resale prices
	Advertising resale prices
	Suggesting resale prices
	Resale of price maintenance contracts
	Relation of prices to
	Models in a line
	Items in a family of products
	Pricing extras
	Separately
	Included with major item
	Pricing replacement parts and repairs
	Separately

Included in original purchase
Other values to be included
Delivery

		Guarantee
		Installation
		Services
		Allowances
	Discount structure and basis	
		Quantity
		Cash
		Trade position
		Seasonal
		Special
	Transportation	
		Prepaid
		Allowed
		Basing point
		FOB
Changing Prices	Directly:	
		Time of change
		Notification of change
		Protection on change
	Indirectly:	
		Changing discounts
		Combination offers
		Free goods and deals
		Premiums
		Coupon offers
		Advertising allowances
		Service allowances
		Trade-in allowances

Legal Limitations

The Essential Commodities Act

Monopolies and Restrictive Trade Practices Act

Industries (Development and Regulation) Act

The Forward Contracts Regulation Act

Drugs (Price control) Order

Competition Act.

11.7 PRICING METHODS

After discussing the various considerations affecting pricing policies, it would be useful to discuss the alternative pricing methods usually employed by businessmen. These methods are:

1. Cost-plus or Full-cost pricing
2. Pricing for a rate of return, also called target pricing
3. Marginal cost pricing
4. Going rate pricing, and
5. Customary prices

1. Cost-Plus or Full-cost Pricing

This is the most common method used for pricing. Under this method, the price is set to cover costs (materials, labour and overhead) and a predetermined percentage for profit. The percentage differs strikingly among industries, among member-firms and even among products of the same firm. This may reflect differences in competitive intensity, differences in cost base and differences in the rate of turnover and risk. In fact, it denotes some vague notion of *just* profit. What determines the normal profit? Ordinarily margins charged are highly sensitive to the market situation. They may, however, tend to be inflexible in the following cases: (i) They may become merely a matter of common practice. (ii) Mark-ups may be determined by trade associations either by means of advisory price lists or by actual lists of mark-ups distributed to

members. (iii) Profits sanctioned under price control as the maximum profit margins remain the same even after the price control is discounted. These margins are considered ethical as well as reasonable. Usually profit margins under price controls are so set as to make it possible for even the least efficient firms to survive. Thus, the margin of profits tends to be higher than what would be possible under competitive conditions.

Limitations

1. It ignores demand — there is no necessary relationship between cost and what people will pay for a product.
2. It fails to reflect the forces of competition adequately. Regardless of the margin of profit added, no profit is made unless what is produced is actually sold.
3. Any method of allocating overheads is arbitrary and may be unrealistic given the nature of the product and the market in which it is being sold. Insofar as different prices would give rise to different sales volumes, unit costs are function of price, and, therefore, cannot provide a suitable basis for fixing prices. The situation becomes more difficult in multi-product firms.
4. It may be based on a concept of cost which may not be relevant for the pricing decision. Full cost pricing ignores marginal or incremental costs and uses average costs instead.

Utility/ Advantages

A clear explanation cannot be given for the widespread use of full cost-pricing as firms vary so greatly in size, product characteristics and product range, and face varying degrees of competition in markets for their product. However, the following points may explain its popularity:

1. Full-cost pricing offers a means by which fair and plausible prices can be found with ease and speed, no matter how many products the firm handles.
2. Prices based on full cost look factual and precise and may be more defensible on moral grounds than prices established by other means.
3. Firms preferring stability use full cost as a guide to pricing in an uncertain market where knowledge is incomplete. In cases where costs and getting information are high and the process of trial and error is costly, they use it to reduce the cost of

decision-making.

4. In practice, firms are uncertain about the shape of their demand curve and about the probable response to any price change. This makes it too risk to move away from full-cost pricing.
5. Fixed cost must be covered in the long run and firms feel that if they are not covered in the short run, they will not be covered in the long run either.
6. A major uncertainty in setting a price is the unknown reaction of rivals competitors of that price. When products and production processes are similar, cost-plus pricing may offer a source of competitive stability by setting a price that is more likely to yield acceptable profit to most other members of the industry also.
7. Management tends to know more about product costs than other factors which are relevant to pricing.
8. Cost-plus pricing is especially useful in the following cases:

(a) Public-utility pricing

(b) Product tailoring, *i.e.*, determining the product design when the selling price is determined. By working back from this price, the product design and the permissible cost is decided upon. This approach takes into account the market realities by looking from the viewpoint of the buyer in terms of what he wants and what he will pay.

(c) Pricing products that are designed to the specification of a single buyer — the basis of pricing is the estimated cost-plus gross margin that the firm could have got by using facilities otherwise.

(d) Monospony buying where the buyers know a great deal about supplier's costs. They may make the products themselves, if they do not like the price. The more relevant cost is the cost that the buying company, say, the automobile manufacturer, would incur if it made the product itself.

These reasons provide some explanation but do not justify it as the logical approach to pricing. It provides no escape from the great difficulties of cost identification and allocation. There are, moreover, difficulties in relating the mark-up to cover overheads to the (unknown) future volume of sales. According to the full -

cost formula, if one expected business activity to decline, one should logically increase his mark-up and, therefore, price. Commonsense suggests that in a depression, this price policy would be highly imprudent.

In India, too, cost-plus method is widely used. There are two special reasons which could explain its use in India:

1. The prevalence of sellers' market in India till recently made it possible for the manufacturers to pass on the increases in costs to the consumers.
2. Costs plus a reasonable margin of profit are taken into consideration for the purposes of price fixation in the price-controlled industries in India. Thus, this method has the tacit approval of the Government.

To conclude, cost-plus is a pricing convention relying on arbitrary costs and arbitrary mark-ups. It is adopted because it is simpler to apply.

2. Pricing for a Rate of Return

An important problem that a firm might have to face is one of adjusting the prices to changes in costs. For this purpose the popular policies that are often followed are as under:

1. Revise prices to maintain a constant percentage mark-up over costs.
2. Revise prices to maintain profits as a constant percentage of total sales.
3. Revise price to maintain a constant return on invested capital.

The use of the above method is as follows:

Example

A firm sells 1,00,000 units per year at a factory price of Rs. 12 per unit.

The various costs are given below:

Variable Costs	Materials	Rs. 3,60,000
	Labour	Rs. 4,20,000
Fixed Costs	Overhead	Rs. 1,20,000
	Selling and Administrative	Rs. 1,80,000

Total investment in case, inventory and equipment Rs. 8,00,000

Suppose that the labour and materials cost increases by 10 per cent. The question is how to revise price according to the three policies.

The above data reveal that costs are Rs. 10,80,000, the sales are Rs. 12,00,000 and the profit is Rs. 1,20,000. The profit percentages according to the three policies are:

1. Percentage over costs	$\frac{1,20,000}{10,80,000}$	= 11.1
2. Percentage on sales	$\frac{1,20,000}{12,00,000}$	= 10
3. Percentage on capital employed	$\frac{1,20,000}{8,00,000}$	= 15

The revised costs are Rs. 1,05,8000 [Rs. 10,80,000 + 36,000 + 42,000].

According to the first formula, we have to earn a profit of 11.1 per cent on over costs. Our revised profits should be Rs. 1,28,667 and the sales volume on this basis be Rs. 12,86,667. The selling price would, therefore, be Rs. 12.87 per unit.

Under the **second formula**, the profit should be 10 per cent on sales are S, the profit would be S/10 and the cost would be 9S/10. That is known to us and we have to find out the sales.

If $9S/10 = \text{Rs. } 11,58,000$ $S = \text{Rs. } 12,86,667$.

Therefore, the price per unit is Rs. 12.87.

Under the third formula, we assume that the capital investment same. Therefore, the required profit is Rs. 1,20,000 (15 per cent of 8,00,000). The sales value would then be Rs. 12,78,000 and the selling cost per unit would be Rs. 12.78.

A firm starts with a rate of return they consider satisfactory then set a price that will allow them to earn that return when their utilization is at some “standard rate”—say 80 per cent. In other words, determine standard costs at standard volume and add the margin need to return a target rate of profit over the long run.

Rate of return pricing is a refined variant of full cost pricing. Naturally, the same inadequacies, *viz.*, it tends to ignore demand and fails to compete adequately. It is based upon a concept of cost which may be relevant to the pricing decision at hand and overplays the precision of all fixed costs and capital employed.

Marginal Cost Pricing

Under full cost pricing and the rate of return pricing, pricing is based on total costs comprising fixed and variable costs. Under marginal pricing, fixed costs are ignored and prices are determined on the basis of marginal cost. The firm uses only those costs that are directly attributing the output of a specific product. A pricing decision involves planning in future, and as such it should deal solely with the anticipated and, the estimated revenues, expenses, and capital outlays. All past outlays which rise to fixed costs are historical and sunk.

Advantages

1. Marginal costs more accurately reflect future as distinct from present cost levels and cost relationships. When making a pricing decision one is more interested in the changes in cost that will result from that decision. Marginal cost represents these changes, while total costs include fixed costs which are not incurred as a result of the pricing decision.
2. Marginal cost pricing permits a manufacturer to develop a far more aggressive pricing policy than does full-cost pricing. An aggressive pricing policy should lead to higher sales and possibly reduced marginal costs through increased marginal physical productivity and lower input factor prices. However, before entering into a more differentiated and a more flexible pricing policy. It would be necessary to consider the impact of unstable prices on consumer goodwill.
3. Marginal cost pricing is more useful for pricing over the life cycle of a product, which requires short-run marginal cost and separable fixed cost data relevant to each particular stage of the cycle, not long-run full-cost data.

Marginal cost pricing is more effective than full-cost pricing because of two characteristics of modern business:

- (a) The prevalence of multi-product, multi-process and multi-market concerns makes

the absorption of fixed costs into product costs absurd. The total costs of separate products can never be estimated satisfactorily, and the optimal relationships between costs and prices will vary substantially both among different products and between different markets. If markets are to be segmented successfully, it is necessary to know the variable costs and specific fixed costs attributable to each segment. In this type of business, one is constantly considering proposals for changing selling prices, or terms of sales, for segmenting the market to gain advantage of the different layers of the consumer demand and for selecting the most profitable business when capacity is limited. These are usually short-run problems because the underlying conditions are always changing, and marginal cost pricing is the most suitable method of short-run pricing.

- (b) In many businesses, the dominant force is innovation combined with constant scientific and technological development and the long-run situation is often highly unpredictable. There is a series of short runs and one must aim at maximizing contribution in each short run. When rapid developments are taking place, fixed costs and demand conditions may change from one short run to another, and only by maximizing contribution in each short-run will the profit be maximized in the long run.

Limitations

1. Some accountants are not fully conversant with the marginal cost techniques themselves, and are not, therefore, capable of explaining their use to management.
2. The encouragement to take on business which makes only a small contribution may be so strong that when an opportunity for higher contribution business arises, such business may have to be forgone because of inadequate free capacity, unless there is an expansion in organization and facilities with the attendant increase in fixed costs.
3. In a period of business recession, firms using marginal cost pricing may lower prices in order to maintain business and this may lead other firms to reduce their prices leading to cut-throat competition. With the existence of idle capacity and the pressure of fixed costs, firms may successively cut down prices to a point at which no one is earning sufficient total contribution to cover its fixed costs and earn a fair return on capital employed.

In spite of its advantages, due to its inherent weakness of not ensuring the coverage of fixed costs, marginal cost pricing has usually been confined to pricing decisions relating to special orders. In practice, full cost pricing still forms the basis of most pricing decisions. Of course, marginal cost data have been used to supplement the total costs in pricing decisions.

3. Going-Rate Pricing

Instead of the cost, the emphasis here is on the market. The firm adjusts its own price policy to the general pricing structure in the industry. Where costs are particularly difficult to measure, this may seem to be the logical first step in a rational pricing policy. It may also reflect the collective wisdom of the industry. Many cases of this type are situations of price leadership where price leadership is well established, charging according to what competitors are charging may be the only safe policy. It may simply be a way in which firms try to escape the hazards or price rivalry in an oligopolistic market. It may be less costly and troublesome to the business than the exact calculation of costs and demand and superficially seems to have practical advantage over a highly individualistic pricing policy. Many American corporations MNC have adopted a policy of following competitors usually implying that they follow a price set either by the market or by a price leader.

It must be noted that 'going-rate pricing' is not quite the same as accepting a price impersonally set by a near perfect market. Rather, it would seem that the firm has same power to set its own price and could be a price maker if it chooses to face all the consequences. It prefers, however, to take the safe course and conform to the policy of others.

Customary Prices

Prices of certain goods become more or less fixed, not by deliberate action on the sellers' part but as a result of their having prevailed for a considerable period of time. For such goods, changes in costs are usually reflected in changes in quality or quantity. Only when the costs change significantly, the customary prices of these goods are changed.

Customary prices may be maintained even when products are changed. For example, the new model of an electric fan may be priced at the same level as

discounted model. This is usually so even in the face of lower cost. Perhaps, *going along with the old price* is the easiest thing to do. Whatever be the reasons, the maintenance of existing prices as long as possible is a factor in the pricing of many products.

If a change in customary prices is intended, the pricing executive must study the pricing policies and practices of competing firms and the behaviour and emotional make-up of his opposite number in those firms. Another possible way out, specially when an upward move is sought, is to test the new prices in a limited market to determine the consumer reaction.

11.8 GUIDELINES FOR PRICEING PRACTICES

The following general guidelines for pricing in practice:

1. Find out what your costs are over the range of output that is relevant, distinguishing between prime costs that vary with output and overhead costs that are comparatively insensitive to change in output.
2. Take prime costs as your starting point and consider what the price would be if you add to this an allowance for overhead costs sufficient to keep you in business and the amount of profit necessary to keep your shareholders happy.
3. Find out how your costs compare with those of your competitors. If they are much the same as yours, your competitors are likely to be thinking along the same lines, but if they are thought to be markedly higher or lower, there may be reason to increase or decrease your estimated price.
4. Keep an eye on the market; if orders are hard to get, the chances are that the price will have to drop a bit and competitors are likely to find themselves in much the same position. If orders come easily, there is very likely to be an opportunity to raise prices a bit without running much risk of losing your market.
5. If the costs of your raw materials and labour increase, this may present you with an opportunity to raise your prices because your competitors may be expected to follow suit.
6. If, on the other hand, costs are rising at a time when sales are hard to get, you may be able to refrain from raising your prices without setting off a price war.

In any case, your rivals may do the same.

7. Keep an eye on how you are using your factory. Production should be concentrated on the profitable lines or the prices of the less profitable lines increased.
8. The goodwill of customers is probably better developed by an advertising campaign than by keeping prices below costs.
9. If your prices seem to be higher than your competitors' although they scarcely cover costs, this may indicate that your costs are too high and your production method or factory organization is defective.
10. If you can sell all your output at prices that give you a substantial profit, consider expansion.
11. If you find that your sales vary seasonally, consider whether demand can be smoothed and profits increased by charging higher prices when demand is high and low prices when demand is low. It is likely to be more profitable to do this when prime costs are smaller in relation to total costs.
12. If you are one of a limited number of producers in an industry your competitors are likely to do may well be a more important consider in fixing prices than any question of costs.

11.9 SUMMARY

Price determination and pricing are important aspects of managerial decision-making. Pricing decisions are generally considered a part of normal business activities, aimed at achieving the goal of sales expansion. Price discounts are used to promote sales. The objective is to sell as much output as possible, ensure continuity over time, and simultaneously satisfy both consumers and business concerns within the organization. To achieve this balance, it is necessary to consider various factors that influence pricing policies. After evaluating these factors, it becomes appropriate to analyze the pricing methods commonly used in practice. These methods include:

- Cost-oriented pricing methods

- Total cost and full-cost pricing
 - Break-even pricing (also called no-profit no-loss pricing)
 - Marginal cost pricing
 - Going-rate pricing
 - Administered pricing
-

11.10 GLOSSARY

- **Industrial Goods:** Goods whose demand depends on the demand for consumer goods; they assist in production.
 - **Consumer Goods:** Goods that are final in nature and are produced to satisfy consumer needs directly.
 - **Pricing Policy:** A policy formulated by a firm by considering factors such as cost calculation, consumers' ability to pay, market conditions, competitors' reactions, business environment, and long-term costs.
-

11.11 CHECK YOUR PROGRESS

(A) Fill in the blanks

1. _____method determines price to cover cost and earn normal profit.
 2. Under marginal pricing method, _____cost is considered and pricing is done on the basis of marginal cost.
 3. In the currently prevailing pricing method, _____is considered, not cost.
 4. Leader pricing _____is a very common phenomenon in the market.
-

11.12 ANSWERS TO CHECK YOUR PROGRESS

1. Full Cost Pricing
 2. Fixed
 3. Market
 4. Industrial
-

11.13 TERMINAL QUESTIONS

1. What do you mean by pricing strategy, and what are its objectives?
 2. Explain the objective of pricing strategy.
 3. Briefly explain the pricing strategies.
 4. Explain the factors affecting pricing strategy.
 5. Discuss the various methods of pricing.
 6. What are guidelines for pricing practices?
-

11.14 SUGGESTED READINGS

1. Yogesh Maheshwari, *Managerial Economics*, Prentice Hall of India, New Delhi.
2. D. N. Dwivedi, *Managerial Economics*, Vikas Publishing House Pvt. Ltd., New Delhi.
3. T. R. Jain and O. P. Khanna, *Microeconomics and Indian Economy*, V. K. Publishers, New Delhi.
4. M. L. Jhingan, *Modern Managerial Theories*, S. Chand & Company Ltd., New Delhi.
5. Atmanand, *Managerial Economics*, Excel Books, Delhi.
6. R. L. Varshney and K. L. Maheshwari, *Managerial Economics*, Sultan Chand & Sons, New Delhi.

UNIT – 12: FORMS OF MARKET STRUCTURE AND EQUILIBRIUM

Unit Structure

12.1 Introduction

12.2 Market structure

12.3 Classification of market

12.4 Comparison Between Different Forms of Market: An Overview

12.5 Summary

12.6 Glossary

12.7 Check Your Progress

12.8 Answers to Check Your Progress

12.9 Terminal Questions

12.10 Reference Books

OBJECTIVES

After studying this unit, you will be able to:

- Explain market structure.
- Classify the market.
- Differentiate between various forms of markets.

12.1 INTRODUCTION

In the ordinary sense, the word ‘market’ refers to a physical place where commodities are bought and sold. The concept of market in this common usage gives an idea of a single place to which people go to buy something. Thus, we refer to Connaught Place or Chandni Chowk in Delhi, vegetable market or fish market in Kolkata. However, development in the means of transport and communication and the modern banking system has extended the concept of market well beyond the idea of a single physical

place. Thus, in case of many commodities like wheat or gold, there may be a world market as these goods can be purchased anywhere in the world.

In economics, however, the term market does not necessarily refer to a particular place, but to the **mechanism or arrangement by which buyers and sellers of a commodity are able to contact each other for having economic exchange and are able to strike a deal about the price and the quantity to be bought and sold.** There are two distinguishing features of a market so defined:

- The market need not be a particular place. The geographical area of a market may be large or small depending on how scattered the buyers and sellers are. It may be small market like a local market, or as large as the world market for wheat, computers, aeroplanes etc.
- The essential feature of a market is that the buyers and the sellers should be able to strike a deal about the price and the quantity to be bought and sold. For this, buyers and sellers need not have a personal contact with each other. They need to have a system of communication with each other through correspondence, telephones, etc. so as to be able to strike a bargain.

12.2 MARKET STRUCTURE

Market structure refers to the types of market in which the producers or firms operate. It indicates how the market is organized. Various market forms are broadly classified on the basis of competitiveness of the market structure. The competitiveness of the market structure refers to the extent to which individual firms have the power to influence the market price of the commodity. Lesser is the power an individual firm has in influencing the price of the commodity, the more competitive is the market structure. One of the extreme forms of market structure is perfect competition where a firm has absolutely no power to influence the price of the commodity. In such a market, there are so many firms that none of them has any control on the price; each one of them is a price-taker. The other extreme form of market structure is monopoly, where there is only one producer of a good who enjoys a considerable power to influence the price of the commodity. In this most extreme

case, there is no competition. For example, the electricity board of a city has the power of influencing the price of the electricity there.

Factors Determining Market Forms

What are the characteristic features of market form? What are the factors on the basis of which we differentiate between different market structures? The number of sellers of a commodity, the nature of the product, the number of buyers of the product, degree of restrictions on the entry into the industry, the knowledge about the market and the extent of advertisement are some of the important characteristics on the basis of which we can distinguish between different forms of market. A brief discussion of these characteristics is as follows:

1. Number of Buyers and Sellers

The power of a seller to influence the market depends upon its share in the total supply. Smaller is the number of sellers, larger would be the share of each firm in total supply and, therefore, larger would be the power of the firm to influence the price because it produces a larger proportion of total supply. On the other hand, if the number of sellers in the market is large, the power of a seller to influence the market would be less because its share in the total supply is less. On the basis of number of sellers in the market we distinguish between monopoly, where there is only one seller; perfect competition and monopolistic competition, where there are large number of sellers and oligopoly, where there are a few sellers.

Similarly, the number of buyers determines the degree of control a buyer has on the market. If there is only one buyer of a commodity, which is known as ‘*monopsony*’, it would exercise a large control on the market.

2. Nature of the Product

Different market forms are distinguished from each other on the basis of nature of the product. The amount of competition in a market depends on how similar are the goods produced by different firms. In a perfectly competitive market, goods produced by different firms are homogeneous. Therefore, no single firm in such a situation is able to influence the price. But different producers in a monopolistic competitive market produce differentiated products. As a result, different producers of similar (but not identical) goods are in a position to charge different prices for the goods they produce.

3. Knowledge about Market:

Different forms of market are differentiated from each other in terms of the knowledge or lack of knowledge (ignorance) about the market conditions. If buyers and sellers have full information about market conditions, the price at which the product is being sold by other sellers and the nature and the quality of the product, then a single price would prevail in the market. So, perfect knowledge about the market conditions ensures uniform price in the market. This is the characteristic feature of perfect competition. But under monopolistic competition, consumers may be ignorant about the quality of different brands. This may result in different prices being charged for the same on similar product.

4. Freedom of Entry or Exit of the Firms

Different forms of market are differentiated from each other in terms of the nature of the entry (or exit) of the firms into the industry. Freedom of entry or exit of the firms means that there are not restrictions — natural or man made — on the entry of new or prospective firms or on exit of the existing firms. Freedom of entry (or exit) ensures that producers end up earning minimum profits or normal profits. If the existing producers are earning abnormal profits, new firms would enter into the industry. This would lead to an increase in total output of the industry. This would lead to an increase in total output of the industry, resulting in a fall in the market, price and wiping out of the abnormal profit. Free entry or exit is the characteristic feature of perfect competition and monopolistic competition.

However, if there are restrictions on the entry of new producers or firms, the existing firms may continue to earn abnormal profits without any fear of rival producers. As a result, the existing firms may start enjoying monopoly power. The essence of monopoly form of market is the condition of closed entry or exit of the firms.

5. Degree of Price Influence

Different forms of market may differ from each other in terms of their influence on price determination. A perfectly competitive firm cannot have any influence on the market price; it is considered to be a price-taker. A monopolist, on the other hand, has a great power in influencing the price of the commodity; a monopolist is a price-maker. The position of the firm under monopolistic competition

is in-between these two extremes. A firm under monopolistic competition has some power to influence the price of the product, but it has to take into consideration the pricing policy of the rival firms while deciding its pricing policy. It is a price-maker but within certain limits.

12.3 CLASSIFICATION OF MARKET

On the basis of some of the above-mentioned criteria, markets may be classified into four types:

- (i) Perfect competition
- (ii) Monopoly
- (iii) Monopolistic competition
- (iv) Oligopoly

(i) Perfect Competition

Perfect competition is a market structure in which there are a large number of producers (firms) producing a homogeneous product so that no individual firm can influence the price of the commodity. In this type of market, the price is determined by the industry, *i.e.*, by all the firms taken together, by the forces of market demand and supply. A perfectly competitive firm is such a small part of the total industry in which it operates that it cannot affect the price of the product. The firm has no control over the product price. An individual firm takes the price as given and it has to take decision about the amount of output to be sold at that price. This means that the firm under perfect competition is assumed to be a *price-taker* rather than a *price-maker*. A firm is said to be the price-taker that must sell its output at the market price.

Features of Perfect Competition

A market to be perfectly competitive must satisfy the following features:

1. Large number of Buyers and Sellers: There are a large number of buyers and sellers of the commodity under perfect competition, each too small to exert any influence on the price of the commodity by his actions. This means that under perfect competition, a firm produces such a small part of the total market output that a change in its output will have no noticeable effect on the market supply and, hence, the price of the

commodity. A competitive firm has no market power to influence the price. It means that a firm under perfect competition cannot influence the market price by increasing or decreasing the quantity of output it produces. *A firm is, therefore, a price-taker rather than a price-maker.*

Likewise, the number of buyers is so large that no single buyer can influence the market price by changing his demand for the commodity. An individual buyer buys such a small quantity of the total output of the product that any change in the quantity demanded by him has negligible impact on the total market demand and, hence, no influence on the market price of the commodity.

2. Homogeneous Product: All the firms under perfect competition produce homogeneous or perfectly standardized commodity. The homogeneity of the product refers not only to the '*physical characteristics*' of the commodity, such as colour, size, chemical components etc. but also to the '*environmental factors*', such as location of the seller, credit-facilities, etc. It is important to note that it is the total conditions surrounding the sale of the product which we must consider. A customer will be prepared to pay more for the product sold in more luxurious surroundings or by pleasant sales staff than otherwise. Therefore, homogeneity of the product implies both the physical characteristics of the product and the conditions surrounding the sale, *i.e.*, environmental factors.

The products of various firms under perfect competition are indistinguishable from one another, *i.e.*, they are perfect substitutes for one another. The implication of this characteristic is that a uniform price will rule throughout the market. No firm has any basis of charging higher price for its product. If any one firm tries to raise the price of its product above the market price, it would lose all its customers to other firms selling the same product at the market price. Similarly, the buyer has no reason to express his preference for the product of one particular firm, and so he is indifferent to the firm from which he buys.

3. Freedom of Entry and Exit: Perfect competition is characterised by the freedom of entry and exit. This means that new firms are free to enter the industry and existing firms are free to leave the industry if they desire so. There are no restrictions, legal, natural, or man-made on the entry of new firms into and the exit of old firms from the industry. The condition of free entry and free exit ensures that all the firms under

perfect competition end up earning only normal profits in the long-run. If the existing firms are earning super-normal profits, new firms would enter the industry and increase the total supply by the industry. This would reduce the market price and wipe out the super-normal profits. On the other hand, if existing firms are incurring losses, some of them would start leaving the industry, leading to decrease in supply and rise in the price till the losses are wiped out.

4. Perfect Mobility of Resources: Another important characteristic of perfect competition is that resources are perfectly mobile. This characteristic ensures that resources or factors of production can enter or quit a firm or the industry at will. This characteristic implies that resources are able to switch over from one use to another without any restriction. This condition is essential to make the entry of the firms into and exit of the firms from the industry possible.

5. Perfect Knowledge: Consumers, firms and resource owners under perfect competition have perfect knowledge about the market conditions. Each firm knows the price prevailing in the market, and it would not sell the commodity at a price below the market price. Similarly, each buyer has perfect knowledge about the prevailing price and he is not prepared to pay higher price than the price prevailing in the market. This characteristic of perfect knowledge would ensure that price differences are quickly eliminated and a single price for the commodity would ultimately prevail throughout the market.

In the same way, firms have perfect knowledge about the available techniques of production. Each firm is, therefore, able to make use of the best available techniques of production. This implies that all firms have similar cost conditions leading to same per unit cost of production.

6. Absence of Transport Costs: Another feature of perfect competition is that the buyers and sellers incur no transport costs in purchasing and selling goods. In other words, there is no cost of transport. This assumption is necessary to maintain uniform price throughout the market. Otherwise, prices for identical goods would differ.

Pure Vs Perfect Competition

Sometimes a distinction is drawn between *perfect competition* and *pure competition*, but the difference is only a matter of degree.

The competition is said to be pure when the first three conditions explained above are satisfied. It means that pure competition exists when there are large number of buyers and sellers who deal in the homogeneous product and the industry is characterised by free entry and exit. Pure competition is free from any monopolistic element.

The competition is said to be perfect when all the six conditions explained above are satisfied. This means that perfect competition refers to that market structure when there are large number of buyers and sellers; all producers produce homogeneous products; there is freedom of entry and exit of firms; producers, consumers and resource owners have perfect knowledge about the market condition; there is perfect mobility of resources; and there is no cost of transportation. This implies that perfect competition is a much wider term as compared to pure competition, which is a narrower one.

Perfect competition, as defined above, does not really exist. Perhaps agricultural commodities, such as wheat, come somewhat close to the situation of perfect competition. In spite of this, perfect competition model is useful in providing an ideal model in terms of which other forms of market structure can be compared.

Features of Perfect Competition

1. Large number of Buyers and Sellers
2. Homogeneous Product
3. Free Entry and Exit
4. Perfect Mobility of Resources
5. Perfect Knowledge
6. Absence of Transport Cost

MONOPOLY

Meaning

The term monopoly is derived from two Greek words, viz, 'Monos' and 'polus'. 'Monos' means single, and 'polus' means a seller. Thus, *monopoly is a market*

structure in which there exists only a single seller of a product who is the sole producer of the product which has no close substitutes. For example, we get our electricity supply from one agency, that is, State Electricity Board like Punjab Electric Board in Punjab. Similarly, we travel by railway trains owned and run by the Government of India. All these are examples of monopoly.

Features of Monopoly

Main features of monopoly are as follows:

1. Single Seller:

Monopoly is a market situation where there is only one seller or producer of a commodity. It is a case of one firm or producer controlling the supply of the product. Since, there is only one seller any change in the amount of output produced by the monopolist would have significant influence over the market price. Since, there is only one firm in monopoly, therefore, the difference between the firm and the industry disappears.

However, the number of buyers of the product is large. Consequently, no buyer can influence the price of the product under monopoly.

2. No Close Substitute:

A second feature of monopoly is that a monopolist produces such a commodity which has no close substitutes. The goods which can be easily used for each other and are available at nearly the same price are known as *close substitutes*. An essential condition for the existence of monopoly is that no close substitutes should be available for the product or service that the monopolist offers. Monopoly is a market devoid of competition. If there are some other producers who are producing close substitutes for the product produced by the monopolist, there will be competition between them. Monopoly will not exist in case there is competition among producers. Remember, we are emphasizing the absence of 'close' substitutes. So long as the firm does not have close substitutes, it does not face any competition. However, the product may have distant substitutes, *i.e.*, substitutes which are costly, inconvenient and poor. For instance, Electricity Board in a particular city may have the monopoly of

supplying electricity in that city because there are no close substitutes of electricity. But distant substitutes may be available in the form of generator sets.

3. Closed Entry

A monopoly market is characterised by closed entry to the prospective producers. Monopoly is caused by very high *barriers to entry*, which exist when entrepreneurs find obstacles to join a profitable industry. There are some barriers or restrictions on the entry of new firms into the monopoly industry. The closed entry may result from natural, legal or man-made restrictions. These restrictions may take several forms, such as patent rights, copy rights, government laws and economies of scale. In view of this, there is no competitor of a monopoly firm. Barriers to entry bring about market power.

4. Price-Maker

A monopoly firm is a 'price-maker' or 'price-setter'. It is the sole producer of a product. It can exercise considerable influence on the market supply of the commodity. Therefore, price of the commodity is fully under control of the monopolist. Monopoly represents the most market power. A firm with market power is called a price-maker. This is in contrast to a competitive firm, which is a price-taker.

5. Possibility of Price Discrimination:

A monopolist may charge single price for the product he sells or in certain cases he may charge different prices for his product from different sets of consumers. The later is a case of price discrimination. *Price discrimination refers to a situation when a producer sells the same product to different buyers at two or more different prices for reasons not associated with difference in the cost of supplying the product to different consumers* . For instance, many hospitals charge lower operation fees from the poor patients and higher fees from the rich patients. Similarly, Indian Railways charge lower freight rates for transporting essential products like food products, coal, etc. as compared to transportation of other products. In the same way, Electricity Board sells electricity at a cheaper rate for agricultural use than for home use. All these are examples of price discrimination.

The extreme case of pure monopoly does not exist in real world. Therefore, it is an extreme model of market structure. In fact, monopoly is the opposite extreme of perfect competition.

Features of Monopoly

1. A Single Seller
2. No Close Substitutes
3. Closed Entry
4. Price-maker
5. Possibility of Price Discrimination

MONOPOLISTIC COMPETITION

So far, we have discussed two extreme market structures of perfect competition and monopoly. Both these forms of market structure are rarely used in actual practice. In the real world it is imperfect competition which laminates the market structure. The main form of imperfect competition is monopolistic competition.

Meaning

Monopolistic competition is the form of market in which there is large number of sellers of a particular product with each seller selling somewhat differentiated but close product.

Monopolistic competition has some elements of monopoly, and some elements of competition. In view of the blending of monopoly and competitive elements, this type of market form is known as monopolistic competition. We can understand the meaning of monopolistic competition fully by looking at its basic characteristic features.

Features of Monopolistic Competition

The main features of monopolistic competition are:

1. Large Number of Buyers and Sellers:

The first characteristic of monopolistic competition is that the number of sellers is large, but it is not unusually large. The implication of fairly large number

of firms is that each firm produces a small share of the market. Therefore, the firm under monopolistic competition can reasonably assume that any action on its part will affect the rival firms so insignificantly that it need not bother about the reactions of the rival firms. This means that the firm can follow independent price policy. For example, the firm can lower its price without taking into account the reaction of the rival firms. It is partly for this reason that *firms under monopolistic competition are not price-takers*. They set their own prices. It is a situation of *administered prices*, i.e., a situation where prices are set by the decisions of the individual firms rather than by impersonal market forces. Therefore, a monopolistically competitive firm has a slight market power to influence price.

In monopolistic competition, the number of buyers is very large, so large that no individual buyer can influence the price of the product by changing his demand.

2. Differentiated Products:

Product differentiation is the key element of monopolistic competition. Under monopolistic competition firms produce differentiated products. Here each firm produces a product that is somewhat different from the products of its competitors, but it is not entirely distinct. Product produced by different firms is substitute for each other, but not perfect substitutes. These products are not homogeneous, but they are not altogether different as well. They are similar enough to be regarded as the same commodity, but are sufficiently different so that consumers tend to regard them different from each other.

Products under monopolistic competition may be different from each other in two ways. Firstly, products may be differentiated on the basis of *physical characteristics of the product* itself, such as the physical and chemical components of the products, difference in quality, size, design, colour or difference in packaging. For instance, the calorie content of different drinks may differ or different brands of shirt may differ from each other in terms of cotton and polyester mix. Sometimes, these differences may be only imaginary or fancied, such as different packaging, different trade marks, different brands. Secondly, products may be differentiated on the basis of *conditions surrounding the sale of the product*. These conditions surrounding the sale of the product relate to the location of the seller, his reputation, efficiency, courtesy, trustworthiness, credit facility etc. For instance you, must be willing to pay more for a shirt at the neighbourhood store than the store located ten kilometers away.

When there is difference with regard to these conditions, the products of different sellers may be differentiated.

It is in view of these differences that the individual firm has monopoly of its own differentiated product. To differentiate the products, different sellers sell their products under different brand names. It is this which gives an individual firm some monopoly of its own differentiated product — its own brand name. This is monopoly component of monopolistic competition. But each firm has also to compete with other firms producing similar product with different brand names. Thus, the firm producing Colgate toothpaste has the monopoly of this particular brand, but it has also to compete with other firms producing toothpaste under different brand names, such as Cibaca, Forhans etc. This is competition part of monopolistic competition. Thus, *under monopolistic competition, there is monopoly of the brand, but competition from the rival sellers selling close substitutes of his product.*

3. Free Entry and Free Exit:

Monopolistic competition, like perfect competition is characterised by free entry and free exit. There are no restrictions on the entry of new firms. There is freedom of entry in the sense that new firms are free to produce the close substitutes. Similarly, there are no restrictions on firms deciding to leave the industry. The implication of this characteristic is that firms under monopolistic competition earn only normal profits in the long-run. Free entry would ensure that there are no abnormal (or super-normal) profits. Similarly, free exit would ensure that no firm incurs losses in the long-run.

4. Selling Cost:

An important characteristic of monopolistic competition is that firms under monopolistic competition compete with each other by incurring selling cost or expenditure on sales promotion. *Selling cost is the expenditure incurred by the firm to promote the sale of its product through various sales promotion measures.* The sales promotion measures may take the form of persuasive or competitive advertisement like advertisement in newspapers, T.V. commercials etc. They may take the form of door-to-door campaign, offering discounts, etc. The purpose of these sales promotion measures by the producer of a particular brand is to lure away consumers from other brands by persuading them to buy his brand rather than other brands. There is no place for sales promotion measures both in perfect competition and monopoly. In perfect competition, the product is perfectly homogeneous

and, hence, there is no scope to engage in advertisement. In monopoly, there is no need to engage in advertisement and other sales promotion measures since there is no competition.

5. Non-price Competition:

Non-price competition is an essential part of monopolistic competition. Firms under monopolistic competition compete with each other not merely by price - cutting, but also on the basis of non-price competition, *i.e.*, producing differentiated products, incurring advertisement expenditure etc.

6. Independent Price Policy:

A firm under monopolist competition can follow an independent price policy. It can influence the price of the commodity to some extent. It means that a firm under monopolistic competition is the price-maker for its product. From the analysis of characteristics of monopolistic competition, it should be pretty obvious that monopolistic competition is a realistic model of market structure. Most of the consumer goods, like textiles, clothing, food products, goods of common use (like tooth paste, soap, blades, pens), electronics etc. are all produced with different brand names. For example, there are different brands of soap like Pears, Lux; of tooth paste like Colgate, Forhans etc. of shoes like Bata, Woodland, Mescos etc; of television like Sony, Philips etc. You name almost any product you consume; it is produced under different brand names. This shows that monopolistic competition corresponds to the real-world market situations.

Features of Monopolistic Competition

1. Large Number of Buyers and Sellers
2. Differentiated Products
3. Free Entry and Exit
4. Selling Cost
5. Non-price Competition
6. Independent Price Policy

OLIGOPOLY

Meaning Oligopoly is an important form of imperfect competition. It is that form of market structure in which there are a few firms selling a product so that there is intense competition among them. How few should be the sellers to call it a situation of oligopoly is rather a difficult task. But generally, we can say that when the number of sellers of a product is two to ten, it is a

situation of oligopoly market. In most modern economies, oligopoly is the main market structure for the production of a large number of goods like automobiles, electronic products and many of the consumer products like baby foods, vegetable oils, soft drinks etc.

Features of Oligopoly

The basic characteristic features of oligopolistic market structure are the following:

1. Intense Competition

When there are a very few producers in an industry, keen competition among them is bound to exist. Since there are only a few firms, each firm produces a large share of the market. Each firm with only a few rival firms knows that it has the significant market power to influence the market price. But it also knows that the other firms in the industry have such a power too. The number of the firms is so small that any action by one firm is likely to affect the rival firms. Therefore, every firm keeps a close watch on the activities of the rival firms. It is always busy in preparing an appropriate strategy to deal with the rival firms. It has to evolve both aggressive and defensive strategies to survive and prosper in the face of competition from its rival firms. Oligopoly is the highest form of inter-firm competition.

2. Interdependence

A very important feature of oligopoly is the interdependence of firms in respect of decision-making. The number of firms in oligopoly is so few that each firm worries about how its rivals will react to anything it does. The reason for this is that when the number of competitors is small, any change in price, output, product, etc. by one firm will affect the rival firms and will force them to retaliate by changing their price, output, product etc. Any action by the firm will call for a reaction by the rival firms. Therefore, while taking any decision a firm has to take into account the reaction the other firms. For instance, if Maruti Udyog offers free-insurance of the cars to the buyers of Maruti Cars, the other car companies like Santro may also make the same offer to the buyers of Santro cars. Therefore, Maruti Udyog before making any such offer will have to take into account this reaction of the sellers of other cars. It is this interdependence, action and reaction by the rival firms which sometimes leads to price war and price cutting among competitors. This is what is happening in case of Coke and Pepsi in the Indian market.

3. Nature of the Product

The firms under oligopoly may produce homogeneous product or differentiated product. Accordingly, we may have “*oligopoly without product differentiation*” (or *pure oligopoly*) and “*oligopoly with product differentiation*” . In automobile industry, Maruti, Santro, Indica and in refrigeration industry, L.G., National and Godrej are the examples of differentiated oligopoly. On the other hand, cooking gas of Indiana and Burshane are the examples of pure monopoly.

4. Importance of Selling Cost

In view of the intense competition and interdependence of firms under oligopoly, the firms compete each other through various sales-promotion measures like price-cutting, discounts, door-to-door campaign, advertisement etc. Therefore, there is a great importance of selling costs and advertisement under oligopoly market structure. Advertisement is in full swing under oligopoly and many a times advertisement can become a matter of life and death. T.V. commercials war among Coke and Pepsi is testimony of this fact.

5. Barrier to Entry

The existence of oligopoly in the long-run necessitates the existence of barriers to the entry of new firms to the industry. In the absence of these barriers to entry of new firms, the oligopoly may not retain its characteristic of few sellers in the long-run. A lot many industries are dominated by a few large firms in most the modern economies because of large-scale production, cost advantage of the old firms, price-cutting, control over important inputs, patent rights etc. These factors prevent the entry of new firms and preserve the oligopoly.

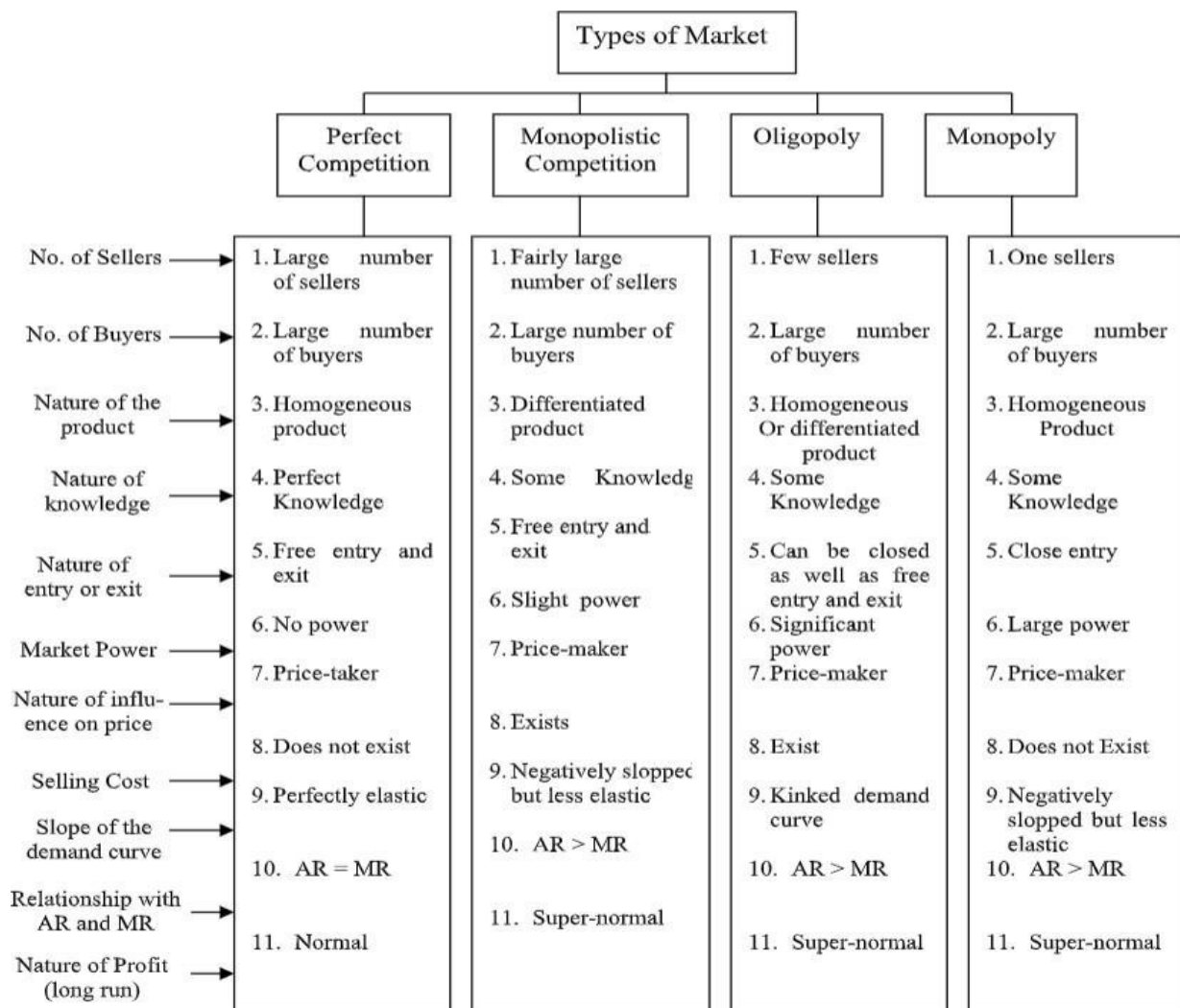
6. Indeterminate Demand Curve of an Oligopolist

An important feature of oligopoly is that the demand curve faced by an oligopolist is indeterminate. A demand curve shows the amounts of the product a firm can sell at various prices. A firm under perfect competition or monopoly or monopolistic competition faces a definite demand curve because it can ignore the reaction of the rival firms. But this is not so under oligopoly. An oligopoly cannot ignore the reaction of the rival firms in view of the interdependence of firms. Any change in the price by one firm may result in a change in prices by the rival firms. As a result, the demand curve faced by an oligopolist keeps on shifting. Therefore, demand curve of an oligopolist is not definite, instead it is indeterminate.

Features of Oligopoly

1. Intense Competition
2. Interdependence
3. Homogeneous or Non-homogeneous Product
4. Importance of Selling Cost
5. Barriers to Entry
6. Indeterminate Demand Curve

12.4 COMPARISON BETWEEN DIFFERENT FORMS OF MARKET: AN OVERVIEW



12.5 SUMMARY

The concept of a market is as follows: a place where goods of common (daily) use are found, which are purchased by some people. That place is called a market.

However, in economics, the term 'market' does not refer to a specific place, but it is a mechanism or system where buyers and sellers of a commodity connect with each other and are able to carry out economic transactions. Here, a commodity is bought and sold keeping its price and quantity in mind, which is also called a 'deal' (or transaction).

Different types of markets are classified on the basis of market structure and competition. Such as the number of sellers of a commodity (product), the nature of the product, the number of buyers of the product, the degree of restriction on entry into the industry, the extent of market knowledge and advertising—these are some of the important characteristics on the basis of which we can differentiate between various forms of markets.

Perfect competition is a market structure where a large number of homogeneous products are produced by producers (companies); because of this, no individual firm can influence the price (value) of the commodity.

Monopoly is a market structure in which there is only one seller of a product; he alone produces it, which is also called a 'single product'. Here, the product does not have any close substitute. In monopolistic competition, some elements of monopoly and some elements of competition are found. A blend of monopoly and competitive elements represents a monopolistic competition market structure. On the other hand, oligopoly is an important form of imperfect competition. In this market structure, only a few firms sell a product; therefore, intense competition develops between them.

12.6 GLOSSARY

Market: A market is a place where buyers and sellers gather for the purpose of buying and selling a commodity or product.

Perfect Competition: Perfect competition indicates a market structure with the presence of many firms/companies. They all sell identical (homogeneous) products. Here, sellers are called 'price takers'.

Monopoly: Monopoly is that market situation where a single seller exists, and he has control over his product as well as the entire market.

Imperfect or Monopolistic Competition: Under imperfect competition, a large number of buyers and sellers are present in the market here. Each seller can follow their own price-product policy.

12.7 CHECK YOUR PROGRESS

Fill in the blanks

1. is a physical place where goods are bought and sold.
2. A market structure represents the power of an individual firm to influence the price of a commodity in the market.
3. In a market, the firm changes from a price-maker to a market price-taker.
4. produce those goods which do not have close substitutes.

12.8 ANSWERS TO CHECK YOUR PROGRESS

(a) Market (b) Competitiveness (c) Perfect Competition (d) Monopolist

12.9 TERMINAL QUESTIONS

1. What is market?
2. Describe the characteristics of a market.
3. What is meant by monopoly?
4. What is meant by monopolistic competition?
5. What is meant by oligopoly?
6. What is imperfect competition?

7. What is meant by pure competition?
8. Compare the characteristics of different types of markets.
9. Clarify the difference between monopoly and monopolistic competition.

12.10 SUGGESTED READINGS

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UNIT13: PERFECTCOMPETITION AND MONOPOLY

Unit Structure

- 13.1 Introduction**
- 13.2 Meaning of Perfect Competition**
- 13.3 Features of Perfect Competition**
- 13.4 Short-run Analysis of a Perfectly Competitive Firm**
- 13.5 Long-run Analysis of a Perfectly Competitive Firm**
- 13.6 Monopoly**
- 13.7 Comparison between Monopoly and Perfect Competition**
- 13.8 Price Determination / Price Discrimination**
- 13.9 Summary**
- 13.10 Glossary**
- 13.11 Comprehension Questions**
- 13.12 Answers to Comprehension Questions**
- 13.13 Terminal Questions**
- 13.14 Suggested Readings**

OBJECTIVES

After studying this unit, you will be able to:

- Explain the definition of perfect competition.
- Describe the characteristics of perfect competition.
- Explain the definition of monopoly.
- Describe price determination.

13.1 INTRODUCTION

Structure of the market is one of the most commonly used approaches to study the behaviour of firms in an economy. Thus, the knowledge of market structure within which a firm is to operate is very helpful in understanding the nature and extent of maneuverability which the firm has in deciding about the price and quantity of the product.

13.2 MEANING OF PERFECT COMPETITION

Market structure can be broadly classified into two categories- perfect competition and imperfect competition. Imperfect competition may further be classified as monopoly, monopolistic competition and oligopoly. In perfect competition, there are a large number of buyers and sellers selling homogenous products; a single buyer or seller cannot influence the price of a product. In a monopoly, there is only a single seller controlling the entire market. Oligopoly can be defined as a market structure in which there are a few sellers in the market. In monopolistic competition, there are a number of sellers and buyers trying to differentiate the market through product differentiation and price discrimination. In this unit, we will discuss only perfect competition.

Perfect competition is said to be prevailing where there is a large number of firms producing a homogeneous product. Competition is perfect in the sense that every firm considers that it can sell any amount of output it wishes at the prevailing market price, which cannot be affected by the individual producer whose share in the market is very small. With many firms and homogenous product under perfect competition, no individual firm is in a position to influence the price of the product and therefore the demand curve facing it will be a horizontal straight line at this level of the prevailing price.

Although perfect competition does not exist in the real economy, it is helpful for managers and business persons to take decisions regarding an ideal combination of output – pricing for an industry or a firm. It also helps in analyzing the role of demand and supply in price determination.

13.3 FEATURES OF PERFECT COMPETITION

The following are the characteristics of a perfectly competitive market:

Large number of buyers and sellers

There are a large number of buyers and sellers in the market, and so no individual buyer or seller, however large, can influence the price by changing the purchase or output. This means the individual buyer or seller is an insignificant player in the market.

Homogeneous product

PERFECT COMPETITION AND MONOPOLY

All firms in the industry produce identical products. The products are identical in terms of quality, variety, color, design, packing and other selling conditions of the product.

Free entry and exit of firms

There are no barriers to entry or exit of firms. Entry or exit may take time, but firms have the freedom to move in or move out of the industry.

Perfect knowledge among buyers and sellers about market conditions

Buyers and sellers have perfect knowledge of the conditions in which the firm is operating. They also have knowledge about the price being quoted for the commodities in the market.

Perfect mobility

Since resources are assumed to be mobile, they can be shifted in and out of the market easily. Goods and services as well as other resources are perfectly mobile between firms.

Absence of transportation cost

In perfect competition, the transportation cost is nil for moving the product from one part of the market to another.

The assumptions of large number of sellers and product homogeneity imply that all individual firms in perfect competition are price takers (the firm takes the market price as given and is not capable of influencing price through its own behavior). The demand curve in perfect competition is infinitely elastic which means that the firm can sell any amount of a good at the prevailing market price. The demand curve of a firm in a perfectly competitive market is horizontal at the market price P (Figure 10.1). Market price is determined by supply and demand forces. For a firm, $P=AR=MR$ where AR is the average revenue and MR is the marginal revenue.

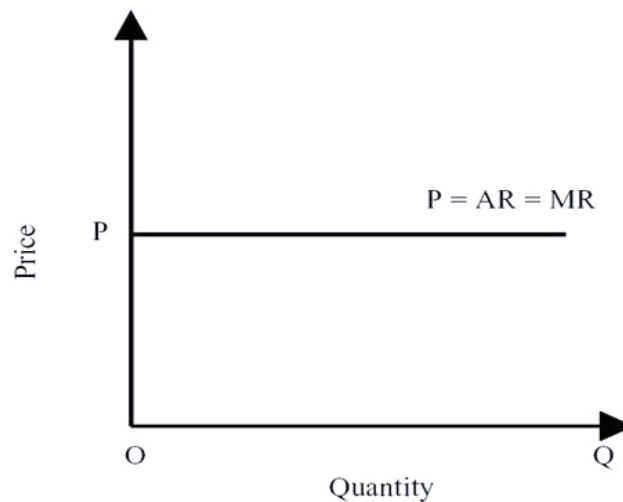


Figure 10.1

13.4 SHORT-RUN ANALYSIS OF A PERFECTLY COMPETITIVE FIRM

Short run equilibrium of a firm in perfect competition can be derived based on the total revenue and total cost and marginal revenue and marginal cost. As firms are price takers, each firm in an industry tries to maximize its profit by adjusting the output to a level where $MC=MR$. Profit is the difference between the total revenue obtained from sales and the total cost incurred by the firm.

Profit maximization of a firm can be measured in two ways- total revenue and total cost approach and marginal cost and marginal revenue approach. Table 10.1 explains how profit can be maximized with total revenue and total cost approach. Profit becomes positive in the 5th unit of output. This positive change in profit continues and reaches maximum by the 8th unit and slowly starts declining by the 9th unit. Finally, the profit of the firm becomes negative by the 10th unit of the product. When we analyze the maximization of profit in perfect competition with the help of total revenue and total cost approach as shown in Table 10.1, the profit of the firm will be negative for a particular period of time i.e. till the 4th unit of output and with the 5th unit of output it becomes positive.

Table 10.1: Total Cost, Total Revenue

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Market price	Rate of output and sales	Total revenue	Total fixed cost	Total variable cost	Total cost	Profit
100	1	100	300	40	340	-240
100	2	200	300	70	370	-170
100	3	300	300	90	390	-90
100	4	400	300	115	415	-15
100	5	500	300	145	445	55
100	6	600	300	185	485	115
100	7	700	300	250	550	150
100	8	800	300	350	650	150
100	9	900	300	510	810	90
100	10	1000	300	750	1050	-50

In perfect competition, since the firm is a price taker, the total revenue curve is a straight line. The fixed costs remain constant and cannot be changed. The firm accepts the fixed price and tries to achieve equilibrium by adjusting its output so that it will reach a maximum profitable point where the total revenue equals the total price (Figure 10.2).

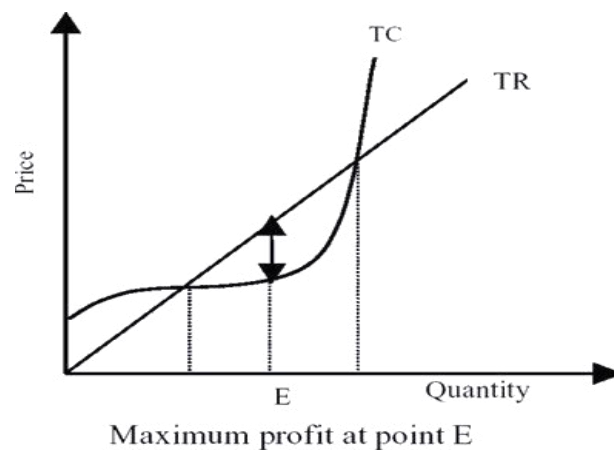


Figure 10.2

Table 10.2: Marginal Cost, Marginal Revenue Approach

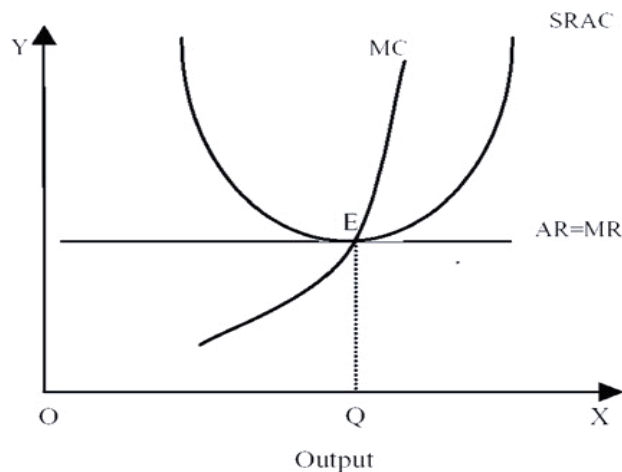
Output & Sales	Marginal revenue/ Price	Margin al cost	Average total cost	Unit profit	Total profit
1	100	40	340	-240	-240
2	100	30	185	-85	-170
3	100	20	130	-30	-90
4	100	25	1038	-3.8	-15
5	100	30	89	11	55
6	100	40	88	192	115
7	100	65	786	214	150
8	100	100	812	188	150
9	100	160	90	10	90
10	100	245	105	-5	-50

The marginal approach is explained with the help of Table 10.2.

It is clear from the above table that the firm earns its maximum profit when marginal cost equals price and marginal revenue. The firm maximizes its profit with the 8th output as the marginal cost equals the marginal revenue or the price of Rs 100. Marginal revenue can be defined as the addition to the total revenue attributable to the addition of one more unit of sale, whereas marginal cost is the addition to total cost as a result of one more unit of output. Thus, a firm increases profit when marginal revenue exceeds the marginal cost and the profit diminishes when marginal cost exceeds the marginal revenue.

Therefore, when the marginal revenue and marginal cost are equal, profit is maximum. (Figure 10.3)

In Figure 10.3, the firm reaches its maximum level of output at point E where $MC=MR$ and its profit is maximum. Profit maximization analysis helps the firm to analyze the breakeven point and the shut down point of a firm. If the firm is operating below its average variable cost, then it is better for the firm to shut down its operations.

Figure 10.3

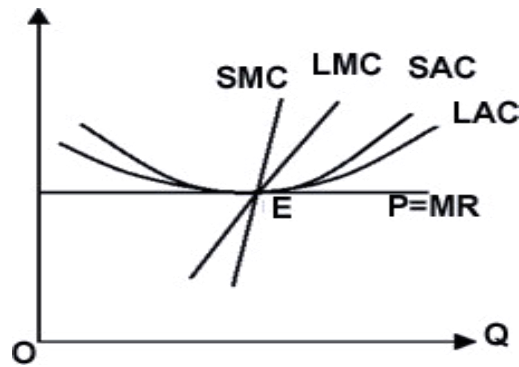
13.5 LONG-RUN ANALYSIS OF A PERFECTLY COMPETITIVE FIRM

In perfect competition, long run equilibrium performs the deciding role in the existence of the firm. In the long run, due to enough time period, the firm may cover its losses and earn normal profits. As we know, in the long run, all inputs are variable and the firm can have the most profitable level of output i.e. the profit maximization level of output.

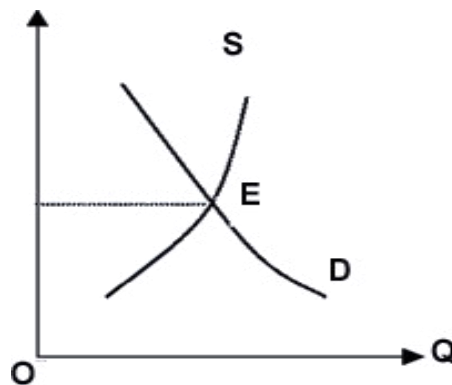
The profits that the firms earn would attract others to enter the industry. With the entry of new firms aggregate output would expand and there will be a shift in the short-run industry supply curve to the right until it intersects with the market demand curve at the price at which all firms make zero profits in the long run. It is then that the industry will be in equilibrium.

In Figure 10.4, the industry and the firm are in long-run equilibrium at point E where short run marginal cost (SMC)=long run marginal cost (LMC)=long run average cost (LAC)=short run average cost (SAC)=price (P)=marginal revenue (MR). The firm produces at the lowest point on its LAC curve and earns zero profits. Resources are used most efficiently to produce goods and services at the minimum cost.

Figure 10.4(a): Long run Equilibrium Point of a Firm



10.4(b): Long run Equilibrium Point of an Industry



13.6 MONOPOLY

Monopoly is a type of market structure in which there is only one seller of the product in the market, there are no close substitutes for the product and there are barriers to entry. Thus, monopoly is the exact opposite of the market situation prevailing in perfect competition.

Monopoly is said to exist when one firm is the sole producer or seller of a product which has no close substitutes. If there are many producers producing a product, either perfect competition or monopolistic competition will prevail depending upon whether the product is homogeneous or differentiated. On the other hand, when there are few producers, oligopoly is said to exist. A second condition which is essential for a firm to be called monopolist is that no close substitutes for the product of that firm should be available.

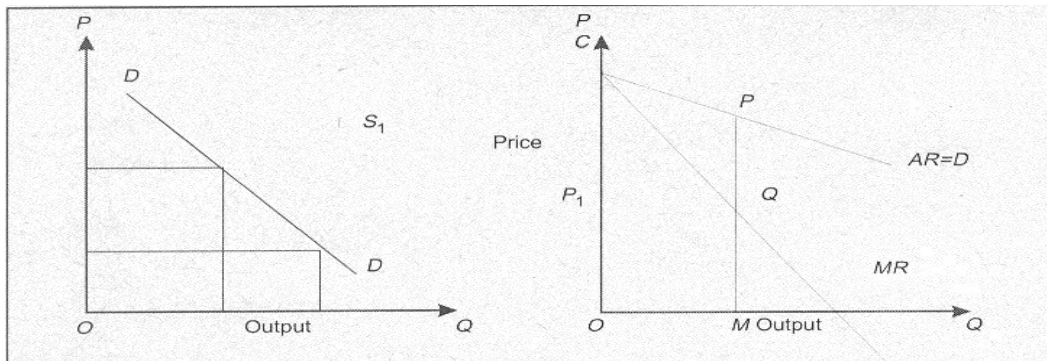
FEATURES OF MONOPOLY

From above it follows that for the monopoly to exist, following things are essential:

1. One and only one firm produces and sells a particular commodity or a service.

2. There are no direct competitors of the firm.
3. No other seller can enter the market for whatever reasons legal, technical or economic.
4. Monopolist is not a price taker rather a price maker. He tries to take the best of whatever demand and cost conditions exist without the fear of new firms entering to compete away his profits.

Figure 11.1



In the case of monopoly one firm constitutes the whole industry. Therefore, the entire demand of the consumers for a product faces the monopolist; which slopes downward. Monopolist can lower the price by increasing his level of sales and output and he can raise the price by reducing his level of sales. Demand curve facing the monopolist will be his average revenue curve, which also slopes downward. Since average revenue curve slopes downward, marginal revenue curve will be below it.

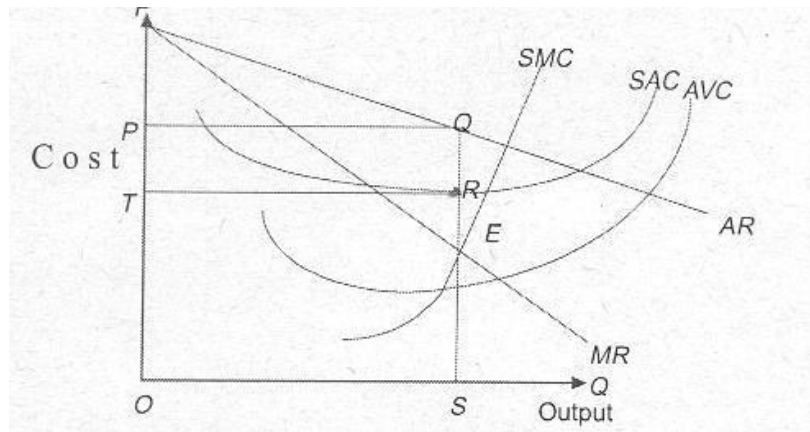
SHORT-RUN EQUILIBRIUM

In the short-run, a monopolist firm tries to maximize its short-run profits or minimize its short-run losses if the two conditions are fulfilled:

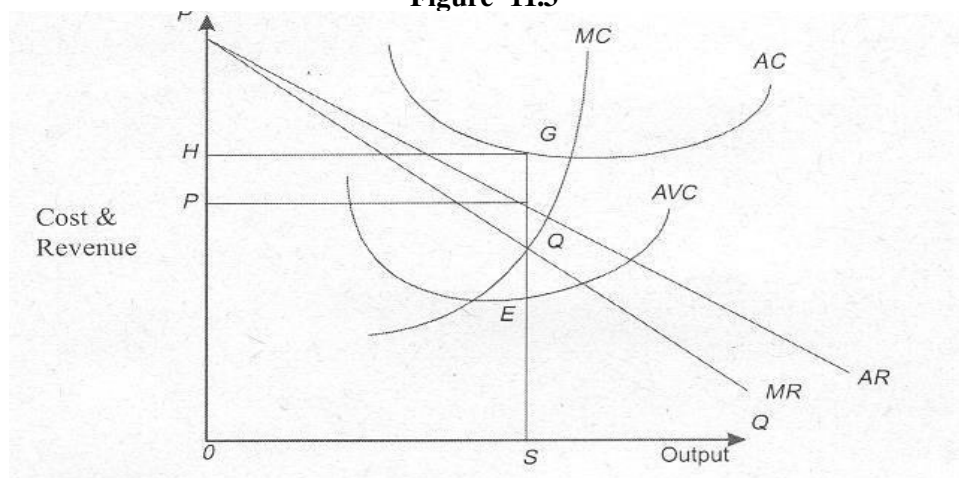
- (i) $MC = MR$ and
- (ii) The slope of MC is greater than the slope of MR at the point of their intersection (i.e. MC cuts the MR curve from below).

In the short-run a monopolist firm has to work with a given existing plant. It can expand or contract output by varying the amount of variable factors but working with a given existing plant. Maximisation of profits in the short-run demands for the fixation of output at a level at which marginal cost with a given existing plant is equal to marginal revenue. In Figure 11.2 SAC and SMC are short-run average and marginal cost curves. Monopolist is in equilibrium at E where marginal revenue is equal to

marginal cost. Price set by him is SQ or OP . It is earning profits equal to $TRQP$.

Figure 11.2

In the short-run it will continue working till the price is above the average variable cost. If the price comes down below average variable cost the monopolist firm would shut down even in the short-run. In case of losses, monopoly equilibrium is shown in Figure 11.3. The monopolist firm is in equilibrium at OS level of output with price OP . Since the price (or AR) is smaller than average cost, it is incurring losses which are equal to area of the rectangle $PQGH$.

Figure 11.3

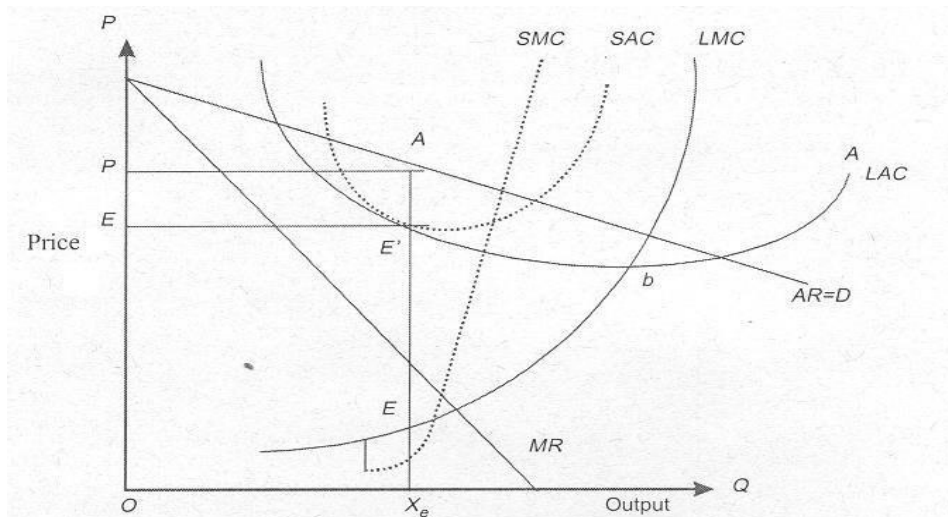
LONG-RUN EQUILIBRIUM

In the long-run, the monopolist firm has the sufficient time to expand its plant or to use its existing plant completely which will maximise its profits. It is not necessary for the monopolist to reach an optimal scale as there is no entry. It means that monopolist will not remain in business if he incurs losses in the long-run. The size of his plant and the degree of utilization of any given plant size depend entirely on the market demand. It may reach the minimum point of LAC or remain at falling part of its LAC and expand beyond the minimum LAC depending on the market

PERFECT COMPETITION AND MONOPOLY

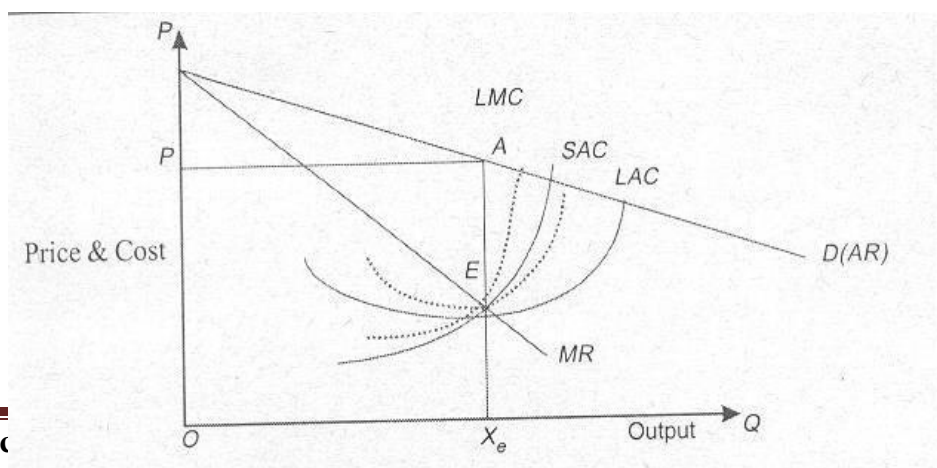
conditions. The market size does not permit the monopolist to expand to the minimum point of LAC (figure 11.4). This is because to the left of the minimum point of the LAC the $SRAC$ is tangent to the LAC at its falling part and also because the short-run MC must be equal to the $LRMC$. This occurs at E , while the minimum LAC at ' b ' and the optimal use of the existing plant is at a : Since it is utilised at the level E' , there is excess capacity.

Figure 11.4



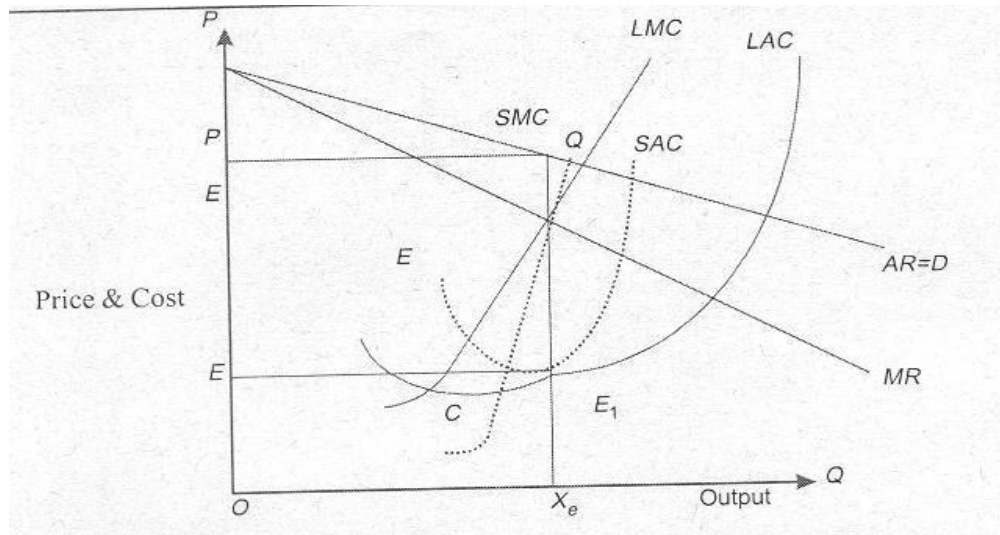
When the size of the market is so large that the Monopoly monopolist, in order to maximise his output, builds a plant larger than the optimal and over utilize it (figure 11.5). This is because to the right of the minimum point of the LAC the $SRAC$ and the LAC are tangent at a point of their positive slope and also because the $SRMC$ must be equal to the LAC . Thus, the plant that maximizes the monopolist's profits leads to higher costs for two reasons: firstly, because it is larger than the optimal size and secondly because it is over utilised.

Figure 11.5



Lastly, in Figure 11.6 we show the case in which the market size is just large enough to permit the monopolist to build the optimal plant and use it at full capacity. It should be clear as to which of the above situations will emerge in any particular case depends on the size of the market (given the technology of the monopolist).

Figure 11.6



13.7 MONOPOLY AND PERFECT COMPETITION COMPARISON

Monopoly and perfect competition are anti-poles of each other and they differ in following ways:

(1) Under competition, variation in output has no effect on price and thus, marginal revenue is equal to price. But if the monopolist wants to sell more, he must reduce price and, therefore,

$MR < P$ for every output level.

(2) Monopoly price is higher than competitive price.

(3) Monopoly output is lower than competitive output.

(4) Under competition a firm can sell as much as it likes at the current price.

Therefore, the average revenue curve of the firm is a straight line parallel to the horizontal axis and it is perfectly elastic. But under monopoly the average revenue or demand curve is downward sloping and we have elastic demand ($ep > 1$). Equilibrium can occur with $ep = 1$, when total cost is constant and $MC = 0$.

(5) For competitive equilibrium the marginal cost curve must be strictly upward

sloping. But monopoly equilibrium is possible with any shape of MC curve since demand curve is not horizontal. However, we cannot have any equilibrium when MC curve falls more steeply relative to MR curve.

- (6) Under perfect competition the firm in the long-run makes only normal profits but under monopoly the firm can get super normal profits even in the long-run.
- (7) Since, even in the long-run, the monopolist's demand curve remains sloping downward, it cannot be tangent to average cost curve at of AC minimum. It implies that the firm will produce less than its optimum output level in the long-run.
- (8) Monopolies are also likely to be inefficient and slow to introduce technological change. Pure competition forces each firm to be either efficient or perish. Thus, the monopolist leads to an inefficient allocation of resources from the consumer's point of view. The monopolist restricts price to maximise his profit and holds price above marginal cost.

13.8 PRICE DISCRIMINATION

Discrimination in price takes place when the same product or service is sold at more than one price that does not show a proportional difference in costs. An airline firms sell tickets for a particular flight at a higher price to business class than to economy class. Companies engage in such practice to enhance profits.

A firm can engage in price discrimination, when following conditions are fulfilled.

- 1. The firm must have some control over the supply of the product or service. A perfectly competitive firm cannot discriminate between different classes of buyers and charge different prices, as it has no control over price.
- 2. The different segments of buyers are separable at moderate cost and are not able to transfer products easily from one class to another.
- 3. The different markets/buyers should have different price elasticity of demand. This may be due to difference in income levels, tastes or availability of products. From, consumers, viewpoint those in lower price market may benefit compared to Monopoly situations where a uniform price is charged. However, consumers in the higher-price markets are at a disadvantage. The extent to which a seller can

separate the market and discriminate between buyers, gives rise to three types of price discrimination.

First Degree Discrimination

It is assumed that the firm is aware of each consumer's demand curve for the commodity and fixes the price accordingly. The maximum price obtained for the product is equal to the marginal cost of production. Any attempt to offer more will reduce the profits because price would be less than the marginal cost. e.g., A lawyer or doctor may charge different fees based on the income of the clients and patients respectively. Similarly, different rates are taken for electricity services for industrial use and residential demand.

Second Degree Discrimination

This is a more practical form of price discrimination. Here firms charge a different price for each set of units sold. Different prices are charged for different blocks or portions of consumption. This is an imperfect form of price discrimination. Instead of setting different prices for each unit, the prices are based on the quantities of output purchased by individual consumers. In most cases, second-degree price discrimination is seen in utilities like power and telecom.

13.9 SUMMARY

This type of discrimination is very common. The monopolist segregates the customers into different markets and charges different prices in each segment. Market segmentation can be based on location, age, product use or income. Different locations are priced differently even though the cost of offering in each location is same. A movie theatre varies its seat prices according to audience preferences for different locations. Similarly, railways and buses charge half-ticket for children below 14 years.

Market structure is the most widely used approach in economics to study the behavior of firms. Markets can be broadly classified into two categories – perfect competition and imperfect competition. Perfect competition implies that there are a large number of companies producing a prevailing product. The assumption of a large

PERFECT COMPETITION AND MONOPOLY

number of sellers and homogeneity of the product means that in perfect competition, any individual firm is a price taker (the firm takes the market price as given and is not capable of influencing the price through its own behavior).

Monopoly implies when a single firm is the sole producer or seller of a product, and there is no close substitute (close alternative) for that product. A monopolist is a price maker rather than a price taker. In the presence of demand and cost conditions for the product, he tries to achieve the best outcome. Without any fear of profit competition from the entry of new firms into the market, a monopolist maintains his position in the market.

In the long run, a monopolist firm has sufficient time to expand its plant or fully utilize its existing plant, thereby maximizing its profit. If a monopolist wishes to increase his sales in the market, he must lower the price. Price discrimination occurs here, which means that when the same product or service is sold at more than one distinct price, no proportional difference is observed in the costs here.

13.10 GLOSSARY

Equilibrium Price: The price at which the quantity demanded by consumers of a product is equal to the quantity supplied by sellers of a product.

Free entry: The absence of barriers to entry into a market.

Market Structure: The number and relative sizes of buyers and sellers in a particular market, the nature of product and the degree of ease of entry of firms into the market determine the market structure.

Normal profit: The rate of profit just sufficient under conditions of free entry, to keep firms leaving the industry in the long run.

Price Discrimination: It occurs when the same product is sold at more than one price that does not reflect a proportional difference in costs.

First Degree of Price Discrimination: Firm is aware of each consumer's demand curve for the commodity and fixes the price accordingly.

Second Degree Discrimination: Under this type of discrimination, differential prices are charged for different amount of goods and services.

Third Degree Discrimination: The monopolist segregates the customers into different markets and charges different prices in each segment.

13.11 CHECK YOUR PROGRESS

Fill in the blanks

- A. Perfect competition is where a large number of firms produce products.
- B. In perfect competition, transportation costs for moving a product from one place to another in the market are
- C. A necessary condition for a firm to be a monopoly is that no exists for the product produced by that firm in the market.
- D. price exists where separate charges are levied for the same product or service. (It is sold at more than one price.)

13.12 ANSWERS TO CHECK YOUR PROGRESS

- A. Homogeneous / Identical B. Zero C. Close substitute (Close alternative) D. Discrimination (Differential)

13.13 TERMINAL QUESTIONS

1. What are the characteristics of perfect competition?
2. Explain the equilibrium of a competitive firm incurring losses.
3. Discuss price and output determination of a firm under perfect competition in the short run.
4. Show the long run equilibrium of a competitive firm.
5. Explain the efficiency of monopoly and competition in terms of price, output and cost. Should monopolies be controlled?
6. What is price discrimination? What are its objectives?

13.14 SUGGESTED READINGS

1. Yogesh Maheswari, *Managerial Economics*, Prentice Hall of India, New Delhi.
2. D. N. Dwivedi, *Managerial Economics*, Vikas Publishing House Pvt. Ltd., New Delhi.
3. T. R. Jain, O. P. Khanna and Veersen, *Microeconomics and Indian Economy*, V. K. Publishers, New Delhi.
4. H. L. Ahuja, *Modern Managerial Theory*, S. Chand and Sons Co. Ltd., New Delhi.
5. Atmanand, *Managerial Economics*, Excel Books, Delhi.
6. R. L. Varshney and K. L. Maheswari, *Managerial Economics*, Sultan Chand and Sons, New Delhi.

UNIT-14: MONOPOLISTIC COMPETITION

Structure

14.1 Introduction

14.2 Features of Monopolistic Competition

14.3 Equilibrium of the firm in the short run

14.4 Equilibrium of the firm in the long run

14.5 Oligopoly

14.6 Summary

14.7 Glossary

14.8 Check Your Progress

14.9 Answers to Check your Progress

14.10 Terminal Questions

14.10 Suggested Readings

OBJECTIVES

After studying this unit, you will be able to:

- Describe the characteristics of monopolistic competition.
- Explain the short-run and long-run equilibrium of a firm.
- Describe the concept of oligopoly.

14.1 INTRODUCTION

Monopolistic competition is a market situation in which a large number of independent firms are supplying products that are *slightly differentiated* from the point of view of buyers. The products of the competing firms are close but not perfect substitutes because buyers do not regard them as identical.

In this type of market structure, sellers are numerous but no one of them is in position to control a major part of the supply of the common commodity which all of them are offering to sale. The same commodity is sold

under different *brand names*, each brand being slightly different from the others.

Each firm is therefore the sole producer of a particular brand or ‘product’. It is monopolist as far as a particular brand is concerned. However, since the various brands are close substitutes, a large number of “monopoly” producers of these brands are involved in competition with one another. This type of market structure, where there is competition among a large number of “monopolists” is called monopolistic competition.

14.2 FEATURES OF MONOPOLISTIC COMPETITION

Following are the main features of a monopolistically competitive situation:

- (1) **Many number of Sellers:** The number of sellers is many and small enough. No seller is big enough to influence the market price which is determined by industry demand and supply. The interdependence is insignificant between sellers.
- (2) **Product differentiation:** Firms Produce somewhat differentiated Products. The differentiation makes the products of different firms heterogeneous. However, these products are inherently similar. The differentiation among competing products or brands may be based on real or imaginary differences in quality. Real differences among brands refer to palpable differences in quality such as shape, flavour, colour, packing, after sale service, warranty period, etc. In contrast, imaginary differences mean quality differences which are not really palpable but buyers are made to believe that such differences exist and are important. Advertising often has the effect of making buyers imagine or believe that the advertised brand has different qualities. When there is product differentiation, each firm has some degree of control over price. Since products are sold under brand names, the buyers become attached to particular brands. On the result of which, a commodity is sometimes known and bought on the basis of its brand name rather than its commodity or generic name.

(3) **Freedom of entry of the new firms and exit of the old firms :** In monopolistic competition there are many small firms each producing a close substitute. Therefore, in the long run, there cannot be any restriction on entry or exit of the firms. There are neither any legal nor any economic barriers against the entry of new firms into the market. New firms are free to enter the market and existing firms are free to leave the market.

(4) **High elasticity of demand:** As the products are differentiated, the producer of each competing brand has, some control over the price of his product and the extent of his power to control price depends upon how strongly the buyers are attached to his brand. Therefore, each individual firm possesses some (not complete) monopoly power and therefore its demand curve is more elastic than that of a monopoly firm. It means that a small decrease in the price of the product may lead to large increase in the demand for the product.

As a result, under monopolistic competition, the demand or average revenue curve of an individual firm is a gradually falling curve. It is highly elastic but not perfectly so. Therefore, the marginal revenue curve of the firm is also falling and lies below the average revenue curve at all levels of output. It is in this respect that monopolistic competition differs from perfect competition.

Firms selling slightly differentiated products under different brand names compete not only through variations in price but also through variations in *product quality (product variation)* and *changes* in advertising or *selling costs*. Thus, under monopolistic competition, an individual firm has to maximize profits in relation to variations is *three policy variables*, namely, price, product quality, and selling costs. (In contrast, under perfect competition there is competition only through price variation).

14.3 EQUILIBRIUM OF THE FIRM IN THE SHORT RUN

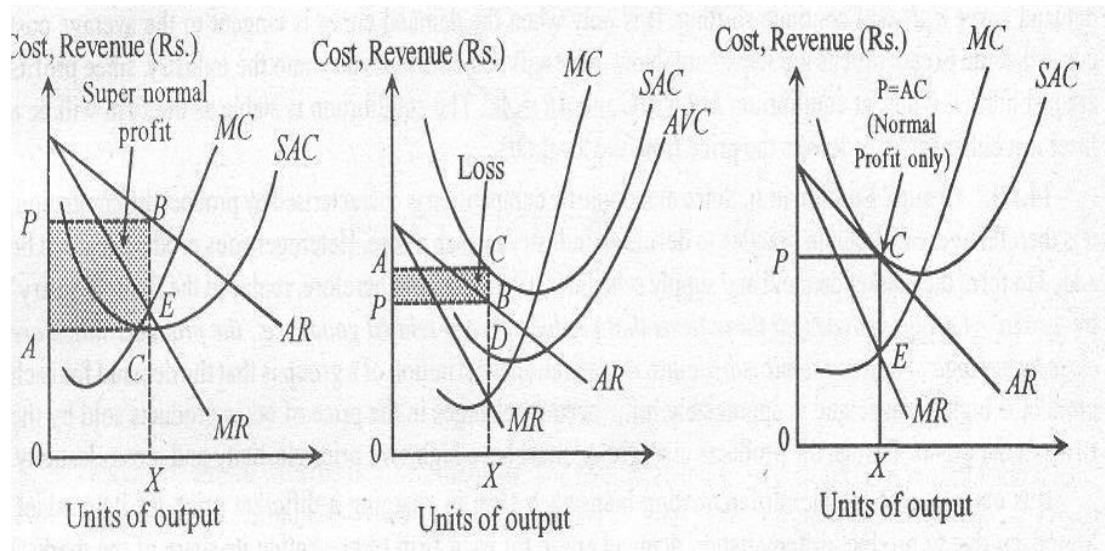
In short run, the firm's equilibrium is based on the additional assumption that entry and exit of firms is not possible. In monopolistic

competition, each firm focuses on that level of price and output which maximizes its profits. At the equilibrium, marginal cost (MC) equals marginal revenue (MR).

Figure 12.1(a)

Figure 12.1(b)

Figure 12.1(c)



In figure 12.1(a) E is the point of equilibrium where the firm produces OX output and sells it at OP price. The average profit equals AP and the total profit is ACBP. It is the supernormal profit earned by the firm.

All the firms do not earn supernormal profit. Some firms may be incurring losses too because of higher costs. In figure 12.1 (b), at equilibrium the firm produces OX output at OA average cost and sells at OP price, therefore, incurring an average loss of AP and total loss becomes APCB. Some other firms may be earning only normal profits. Since at equilibrium level of output, firm's $AR = AC$ (figure 12.1(c)).

Since there is product differentiation, all the firms produce identical quantities and charge identical prices. However, as products are close substitutes, price charged by each firm is nearly equal to the others producing similar products.

14.4 EQUILIBRIUM OF THE FIRM IN THE LONG RUN

The conditions and process of long-run equilibrium under monopolistic competition is based on the assumption that competing firms keep

their selling costs and product quality constant and compete only through price variation. Thus, we assume that:

- (a) The demand curves of all firms are symmetrical. This assumption implies that market share of every firm is the same and equal to a constant proportion of total market demand. i.e., if total market demand is Q and an individual firm's demand is q then $q=KQ$, where K is a constant for all the firms.
- (b) Both average and marginal cost curves are symmetrical for each firm.

These two assumptions may not be realistic but we need to make them for logical convenience in order to analyze the long-run equilibrium of a typical firm under monopolistic competition.

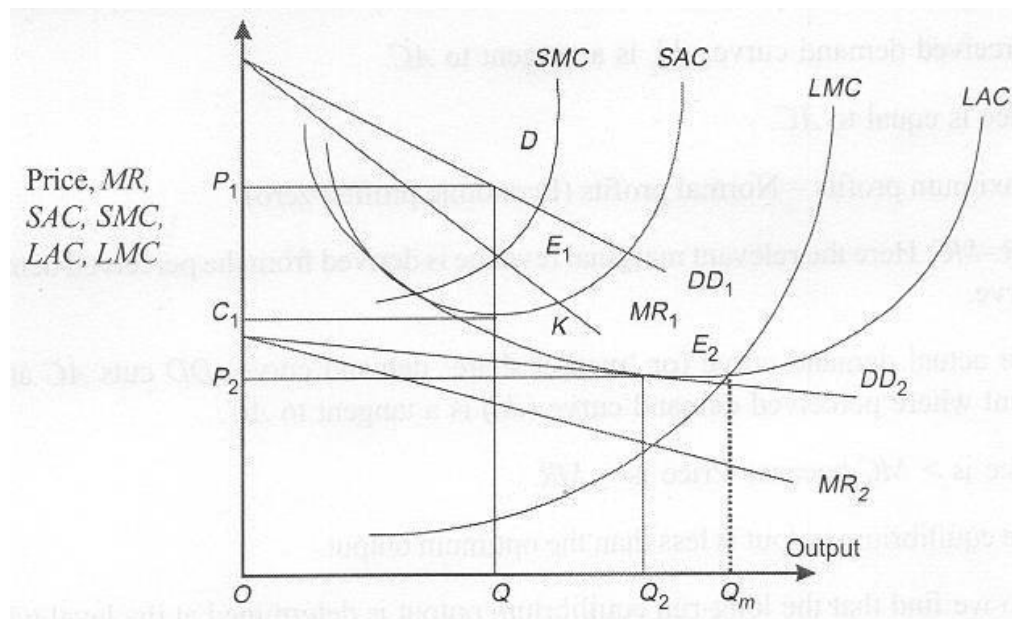
Chamberlin developed three distinct model of equilibrium under monopolistic competition.

- * When competition takes place only through the entry of new firms.
- * When competition takes place only through price variation (price cutting).
- * When competition arises through price variation and new entry.

Long-run equilibrium through new entry competition

Under monopolistic competition, the number of firms selling differentiated products is large and the relative market share of each firm is insignificant. Therefore, the entry of a new firm into the market will not have any adverse effect on the sales (or demand) of any of the existing firms. Established firms will have no reason to react to new entry by adopting practices to discourage this. There are no legal or economic barriers against new entry. High profits of the existing firms attract new firms to enter the market.

Figure 12.2



The process by which competition from the entry of new firms leads an individual firm's long-run equilibrium is explained with the help of Figure 12.2.

The initial downward sloping demand curve of the firm is DD_1 and MR_1 is the corresponding marginal revenue curve. SMC and SAC are the short-run marginal cost and short-run average cost curves. We see that the SMC curve cuts MR_1 from below at point E_1 . The firm maximizes profits at output Q_1 and charges price OP or Q_1D . At Q_1 output $SAC=OC_1$. It makes super-normal profits = area P_1DKC_1 . The super-normal profits of existing firms induce new firms to enter this market. As the number of firms and brands increases, the market share of each firm declines and each firm is able to sell less at the same price. Hence, the demand curve of every individual firm slides downwards, remaining parallel to itself. This process of competition from new entry continues so long as the profits earned by a typical firm are more than normal, i.e. so long as the demand curve lies above the AC curve.

The competition from new entry will stop and every firm will reach its long-run equilibrium output when profits are only normal and price is just equal to long-run average cost. This happens when the demand curve of an

individual firm becomes DD_2 , which is at a tangent to the LAC curve at point E_2 . The marginal revenue curve MR_2 corresponds to demand curve DD_2 . Here LMC cuts MR_2 from below at point G at output Q_2 . Thus, the maximum profit that each firm can earn is only normal profit which is included in LAC . The point of tangency E_2 , is therefore the position of the long-run equilibrium of a firm where output is Q_2 and price is P_2 .

When there is competition only from new entry, the long-run equilibrium of the firm under monopolistic competition is reached under the following conditions:

- (a) $\text{Price} = AR = LAC = OP_2$
- (b) $MR = LMC = GQ_2$
- (c) Maximum Profit = Normal Profits.

However, as the firm's demand or average revenue curve is falling, the price is higher than marginal revenue. Hence, under monopolistic competition, even though the long-run equilibrium price is $= LAC$, it is greater than LMC . This is because, at equilibrium, $MR = LMC$ but price is $> MR$. (Under perfect competition $\text{Price} = \text{Minimum } LAC = LMC$).

Moreover, since the firm's demand or average revenue DD_2 is falling on account of product differentiation, it can be a tangent to the U-shaped LAC curve only when LAC is also falling. As shown in Figure 12.1, the long-run equilibrium position E_2 will be at a point which is to the left of the minimum LAC . Thus, the long-run equilibrium output Q_2 is less than optimum output, Q_m (where LAC is at its minimum). The difference between Q_m and $Q_2 = (OQ_m - OQ_2)$ shows the extent of excess or underutilised capacity. Equilibrium with excess capacity is therefore the necessary consequence of product differentiation and monopolistic competition.

Long-run equilibrium when competition is through price variation

For the purpose of explaining the process of competition through price changes, two demand curves for every individual firm are used.

The changes in demand resulting from the changes in price undertaken on the basic assumption that its competitors will not follow suit when it reduces its price leads the firm to expect that the increase in its demand will be proportionately greater than the reduction in its price. The perceived demand curve is highly elastic though not perfectly elastic. It falls, but falls very gradually, shows why a firm is induced to cut its price. It is the decision-making demand curve because the firm decides to cut price on the basis of the change in demand it perceives or assumes to occur as the result of the change in price.

However, because every firm's market share is equally insignificant, each firm acts on the assumption that when it lowers its price, the prices of its competing firms will remain constant. Each firm therefore reduces its price on the basis of the same assumption, and consequently all firms in the market reduce their prices simultaneously but independently (i.e. not in retaliation). Each firm acts on the basis of its perceived demand curve. As a result, the actual increase in demand resulting from a reduction in price is much less than as been 'imagined' by each firm. The actual changes in demand arising from such simultaneous reduction in price by all firms is shown by what is called the actual demand of an individual firm.

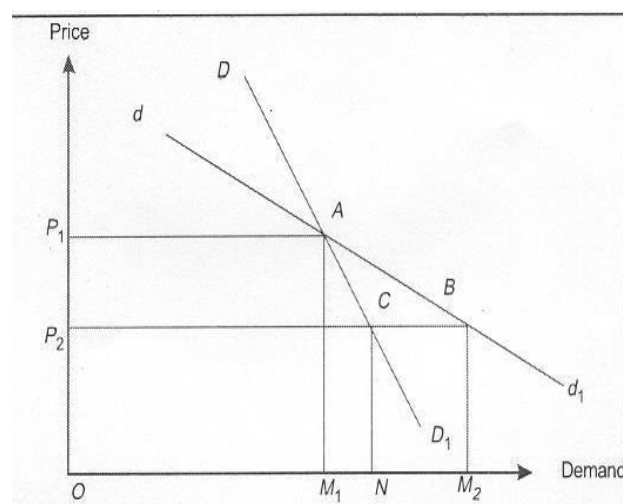


Figure 12.3

Figure 12.3 shows $dd1$ as the assumed or perceived demand curve and $DD1$ as the actual demand curve. When price is lowered from $P1$ to $P2$ the firm assumes the demand to increase from $M1$ to $M2$, but as is shown by $DD1$ it actually increases only to $M1N$. The assumed demand curve is much more elastic than the 'actual' demand curve. This is because the former "assumed" or "perceived" changes in demand based on the assumption that only one firm changes its price, while its competitors keep their prices constant. The actual demand curve, however, shows the real changes in demand when all firms simultaneously but independently change their prices acting on the basis of same assumption.

Competition through price variation and new entry

We have seen that the actual demand curve DD shows the absolute market share of an individual firm. Because we assume that the position and shape of demand curve are symmetrical for every firm, the market shares of all firms are assumed to be equal in terms of absolute quantity or size of output. It is given by a ratio of total market demand divided by the number of firms. The larger the number of firms in the market, the smaller the absolute market share of each firm. The position of DD , i.e. its distance from the Y -axis therefore depends upon the number of firms in the market.

The actual demand curve DD will shift nearer to the Y -axis as the number of firms increases and will move further away from the Y -axis as the number of firms decreases. That is, DD will shift towards the left as new firms enter the industry and it will shift towards right when the existing firms leave the industry.

As shown in Figure 12.4 the initial, actual demand curve is shown by $DD1$. It cuts the AC curve at point J . Let $dd1$ be the initial perceived demand curve cutting $DD1$ at point $B1$. As explained in Case 2, competition among firms through price variation will continue until the perceived demand curve $dd1$ becomes $dd2$, which is a tangent to AC at point E . Point E shows price to be $= OP2$. However, point E is not situated on the actual demand curve $DD1$.

Hence, the firm finds that corresponding to point E , the actual demand on $DD1$ is $P2R$. Now point R on $DD1$ is above the AC curve. Therefore, output $PR2$ indicates super-normal profits shown by area $P2RGC2$. These super-normal profits induce new firms to enter the industry. As the number of firms increases the absolute market share of each decreases and the actual demand curve $DD1$ shifts towards the left. This process will continue till $DD1$ shifts to the position of $DD2$ which intersects the AC curve at point E where the perceived demand curve $dd2$ is a tangent to AC . At this point profits are normal on the basis of perceived demand curve $dd2$ as well as on the basis of actual demand curve $DD2$. That is, actual demand and perceived demand are equal when profits are normal. The point of tangency between $dd2$ and AC is at point E where $DD2$ cuts AC . Here the long-run equilibrium output is $Q2$ and price is $P2$.

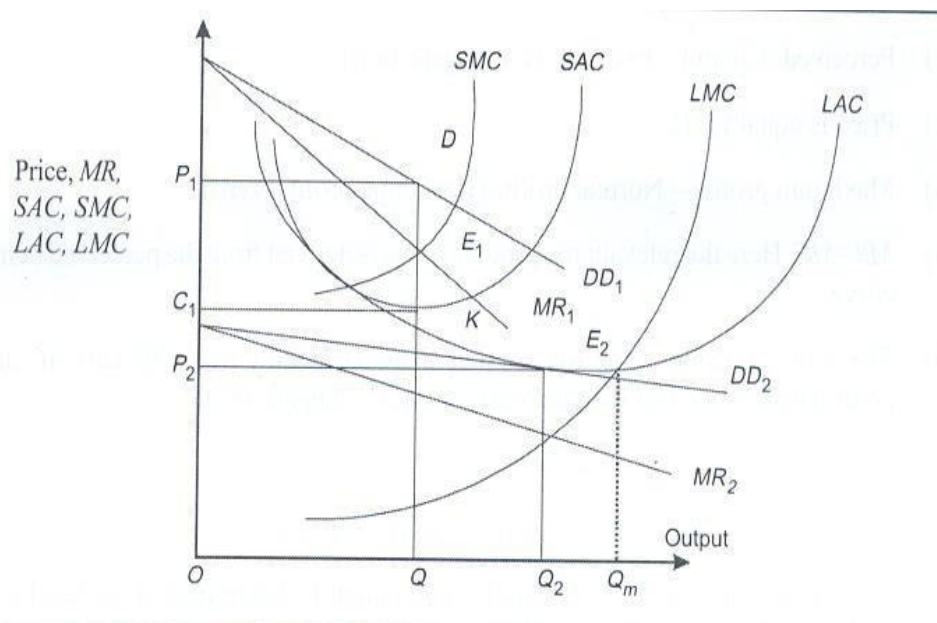


Figure 12.4

Here the competition through price variation is shown by the downward shifts in the perceived demand curve along the actual demand curve. (From position $dd1$ to position $dd2$, which is a tangent to AC at point E). And the competition through new entry is shown by the shift in the position of actual demand curve ($DD1$ shifts to the position of $DD2$ which intersects AC at the point of tangency of $dd2$ and AC , i.e. at point E).

Under monopolistic competition, when there is competition through price variation as well as new entry (or exit) the long-run equilibrium of the firm will be reached when following conditions are satisfied:

- (1) Perceived demand curve, dd is a tangent to AC .
- (2) Price is equal to AC .
- (3) Maximum profits = Normal profits.
- (4) $MR=MC$. Here the relevant marginal revenue is derived from the perceived demand curve.
- (5) The actual demand curve (or 'market share' demand curve) DD cuts AC at the point where perceived demand curve (dd) is a tangent to AC .
- (6) Price is $> MC$ because Price is $> MR$.
- (7) The equilibrium output is less than the optimum output.

The long-run equilibrium output is determined at the level where AC is falling and therefore the equilibrium output is less than the optimum output, Q_m . That is, excess capacity exists at long-run equilibrium output.

14.5 OLIGOPOLY

Oligopoly is the situation in which there are few sellers that each of them is conscious of the results upon the price or the supply in which he individually places upon the market. In other words, it is a market structure in which there are few sellers selling a product so that there is intense competition among them. The term '**Oligopoly**' is coined from two Greek words '**Oligoi**' meaning '**a few**' and '**pollein**' means '**to sell**'. It occurs when an industry is made up of a few firms producing either an identical product or a differentiated product. In simple words, "**Oligopoly is a situation in which there are so few sellers that each of them is conscious of the results upon the price of the supply which he individually places upon the market**" — The number of sellers is greater than one, yet not being enough to render negligible the

influence of any one upon the market price.

Definition. The oligopoly can be defined as under:

According to J. Stigier: “Oligopoly is that situation in which a firm bases its market policy in part on the expected behaviour of a few close rivals”.

According to P.C. Dooley: “An oligopoly is a market of only a few sellers, offering either homogeneous or differentiated products. There are so few sellers that they recognise their mutual dependence”.

According to Prof. Dooley, “An oligopoly is a market of only a few sellers offering either homogeneous or differentiated products”.

Features of Oligopoly

1. Few Sellers and Large Number of Buyers:

The first and foremost feature of oligopoly is that there exist only a few sellers of a commodity and large number of buyers. Each firm controls a considerable part of the total supply in the market and can influence the price and output of the whole industry.

2. Interdependence between Various Firms:

A very important feature of oligopoly is the interdependence of firms in respect of decision making. This is due to the small number of competitors. Any change in the price and output etc. by one firm will affect the rival firms and force them to apply the same. Therefore, while taking any decision a firm has to take into account the actions of other firms.

3. Intense Competition:

Since under Oligopoly there are few sellers, therefore, keen competition is bound to exist. So each seller is always on alert and keep a close watch over the activities of its rivals in order to have a counter-action.

4. Nature of Products:

The firm under Oligopoly may produce homogeneous as well as differentiated products. Oligopoly without product differentiation is considered as **pure oligopoly**. For eg. cooking gas of Indane, Brushane, Bharat

Petroleum offer homogeneous products. On the other hand, Oligopoly with product differentiation is called differentiated oligopoly, for eg. in automobile industry, Maruti, Santro, Fiat etc. are differentiated products creating differentiated oligopoly.

5. Importance of Selling Cost:

There is great importance of selling cost and advertisement under Oligopoly market structure. In view of intense competition and interdependence the firms compete with each other through various sale promotion measures like price cutting, discounts, door to door campaign etc.

6. Barrier to Entry:

As there is keen competition in an oligopolistic industry, there are no restrictions to enter into or exit from it, but in the long run there are some types of barriers to entry which tend to restrain new firm from entering the industry. They may be economies of scale enjoyed by few firms, high capital requirement, exclusive patents and license etc. Due to this oligopolistic industry can earn long run (super-normal profits).

7. Interdependence of Demand Curve of an Oligopolistic or Indeterminable Demand Curve:

Because of interdependence of firm in oligopoly and due to inability of a particular firm to predict the behaviour of other firms, the demand curve facing an oligopolistic firm loses its definiteness and determinateness.

Classification of Oligopoly

Oligopoly can be classified as under:

1. Basis of Product Differentiation:

On the basis of product differentiation, oligopoly may be classified as Pure or Perfect Oligopoly and Imperfect or Differentiated Oligopoly. In the case of pure oligopoly, the product of different firms in the industry is identical or homogeneous while in the case of differentiated oligopoly, the products of different firms are not identical but rather differentiated products. Thus, differentiated oligopoly will exist where the

competing firms produce products which are close substitutes but not perfect substitutes.

The distinction between pure oligopoly and differentiated oligopoly does not play a significant role in the analysis. In real situation, firms in most oligopolistic industries produce differentiated products.

2. Basis of Entry of Firms:

On the basis of the possibility of entry of new firms into the industry, oligopoly may be classified as Open Oligopoly and Closed Oligopoly. An open oligopoly provides full freedom to new firms to enter into the industry. In the situation of open oligopoly there is no restriction of any kind for the desiring firms to enter into the market. A closed oligopoly, on the other hand, refers to that market situation where only the few firms control the entire market and new firms are not allowed to enter the industry.

3. Basis of Price Leadership:

On the basis of presence or absence of price leadership, oligopoly may be classified as Partial Oligopoly and Full Oligopoly. Partial Oligopoly refers to that market situation where the industry is dominated by one large firm (known as the leader) and the other firms (known as the followers) of the industry follow the price policy determined by their leaders. Full oligopoly on the other hand, refers to that market situation where there is no leader and no followers.

4. Basis of Agreement:

On the basis of agreement, oligopoly is classified as Collusive Oligopoly and Non-collusive Oligopoly. A collusive oligopoly refers to that market situation where the firms of the industry follow a common policy of pricing. In other words, they combine together to avoid competition among themselves regarding the price and output of the industry. A non collusive oligopoly refers to that market situation where there is no agreement among the firms regarding the price and output of the entire market. In other words, the firms under non collusive oligopoly act independently.

Characteristics of Oligopoly

Oligopoly as a market structure is distinctly different from other market forms. Its main characteristics are discussed as follows:

1. Interdependence:

The foremost characteristic of oligopoly is interdependence of the various firms in the decision making.

2. Advertising:

Under oligopoly a major policy change on the part of a firm is likely to have immediate effect on other firms in the industry. Therefore, the rival firms remain all the time vigilant about the moves of the firm which takes initiative and makes policy changes.

3. Group Behaviour:

In oligopoly, the most relevant aspect is the behaviour of the group. There can be two firms in the group, or three or five or even fifteen but not a few hundred. Whatever the number, it is quite small so that each firm knows that its actions will have some effect on other firms in the group. In oligopoly, behaviour is not possible to be known due to various reasons (i) the firms constituting the group may not have a common goal (ii) the group may or may not have a formal or informal organizations with accepted rules of conduct (iii) the group may be dominated by a leader but other firms in the group may not follow him in a uniform manner.

4. Competition:

Since under oligopoly, there are a few sellers, a move by one seller immediately affects the rivals. So each seller is always on the alert and keeps a close watch over the moves of its rivals in order to have a counter move.

5. Barriers to Entry of Firms:

As there is keen competition in an oligopoly industry, there are

no barriers to entry into or exit from it.

6. Lack of Uniformity:

Another feature of oligopoly market is the lack of uniformity in the size of firms. Firms differ considerably in size.

7. Existence of Price Rigidity:

In oligopoly situation, each firm has to stick to its price.

8. No Unique Pattern of Pricing Behaviour:

The rivalry arising from inter-dependence among the oligopolists leads to two conflicting motives. Each wants to remain independent and to get the maximum possible profit.

9. Indeterminateness of Demand Curve:

Under oligopoly a firm can expect at least three different reactions of the other sellers when it lowers its prices. This happened due to the reasons like (i) it is possible that others maintain the prices they had before. In this case, an oligopolist can hope that its demand would increase substantially as the prices are lowered. (ii) when an oligopolist reduces his price, the other sellers also lower their prices by an equivalent amount. In this situation although demand of the oligopolist making the first move will increase as he lowers his price, the increase itself would be much smaller in the first case. (iii) when a firm reduces its price, the other sellers reduce their price far more.

Price And Out Determination Under Oligopoly

A diversity of specific market situations works against the development of a single, generalized explanation of how an oligopoly determines price and output. Pure monopoly, monopolistic competition and perfect competition, all refer to rather clear-cut market arrangements; oligopoly does not. It consists of the ‘**tight**’ oligopoly situation in which two or three firms dominate the entire market and the ‘**loose**’ oligopoly situation where six or seven firms occupy the maximum share of the market. Other firms share the balance. It includes both **differentiation** and **standardization**. It encompasses the cases in which firms

are acting in collusion and in which they are acting independently. Therefore, the existence of various forms of oligopoly prevents the development of a general theory of price and output. The element of mutual interdependence in oligopolistic market further complicates the determination of price and output. In spite of these difficulties, two interrelated characteristics of oligopolistic pricing stand out is below:

1. Oligopolistic prices tend to be **inflexible** or **sticky** price change less frequently in Oligopoly than they happen under other competitions like perfect competition, monopoly and monopolistic competition.
2. When oligopolistic prices change, firms are likely to change their prices together, they act in collusion in setting and changing prices.

Keeping these facts in mind, the price and output determination under oligopoly is in the following situations:

1. Price Determination of Non-Collusive Oligopoly:

In this case, each firm follows an independent price and output policy on the basis of its judgment about the reactions of his rivals. If the firms are producing homogeneous products, price war may occur. Each firm has to fix the price at the competitive level. On the contrary, in case of differentiated oligopoly, due to product differentiations, each firm has some monopoly control over the market and therefore charge near monopoly price. Thus, the actual price may fall between the two limits.

- (i) **The Upper limit of Monopoly Price and,**
- (ii) **The Lower limit of Competitive Price.**

Practically, there is every possibility to determine the exact price within these limits. However, there may be the following possibilities:

- (i) There may be complete price instability in the market which results in price war.
- (ii) The price may settle down at intermediate level due to the working of the market forces.

- (iii) The firm may accept the prevailing price and adjust itself according to prevailing price.

So long as the firm earns adequate profits at the prevailing price, it may not try to change it. Any effort to change it may create uncertainties in the market. A firm will stick to that price to avoid uncertainties. Thus, the price tends to be rigid where oligopolist takes independent action.

14.6 SUMMARY

Monopolistic Competition is a market situation in which a large number of independent firms supply differentiated (non-identical) products while keeping consumers' preferences in mind. Therefore, each firm is the sole producer of its own particular brand or product. The demand and supply conditions faced by a firm under monopolistic competition differ from those under perfect competition. In monopolistic competition, each firm focuses on determining the price and level of output that maximize its profit. The long-run equilibrium under monopolistic competition is based on the assumption that new firms are free to enter or leave the market. The market remains in equilibrium, and competition takes place only through price.

Oligopoly is a market situation in which only a few producers exist. They closely monitor each other's pricing and output decisions. Consequently, the price and supply of a firm's product are largely influenced by the actions and decisions of its competitors.

14.7 GLOSSARY

Monopolist: Single seller of a product.

Product differentiation: A wide variety of activities, such as design change and advertising that rival firms employ to attract customers by distinguishing their product from competitors' product.

Classification of Oligopoly: Oligopoly situation can be classified on different basis. Basis of product differentiation, Basis of entry of firms, Basis of price leadership, Basis of agreement.

Characteristics of Oligopoly: Interdependence, Advertising, Group behaviour, Competition, Barriers to entry of firms, Lack of Uniformity, Existence of price rigidity, No unique pattern of pricings behaviour. Price Rigidity: Sweezy's kinky Demand Curve model as Equilibrium under Independent Act: Prof. Sweezy represented the kinked demand curve analysis to explain price rigidities in oligopolistic markets.

Cournot's Model: It provides the solution that each seller supplies one third of the market demand and charges the same price. Here, one third of the market remains unsupplied. This model can be extended to the general oligopoly.

Collusive Oligopoly: Under it, collusive agreement is made between giant firms to avoid price-war through the formation of cartels, merger between firms etc.

14.8 CHECK YOUR PROGRESS

FILL IN THE BLANKS

1. In monopolistic competition, the products of competing firms are close substitutes, but not..... because buyers do not consider them exactly the same.
2. is a market of producers who offer either homogeneous or differentiated products.
3. are of great importance in a monopolistic market structure.
4. is a situation in which one firm does not initiate a reduction in price; instead, it follows a price increase by another firm. This is because it avoids facing price competition and takes advantage of the demand curve.

14.9 ANSWERS TO CHECK YOUR PROGRESS

1. Perfect substitutes
2. Oligopoly
3. Selling costs and advertising
4. Price leadership

14.10 TERMINAL QUESTIONS

1. What are the main features of monopolistic competition?
2. Explain the key differences between perfect competition and monopolistic competition.
3. Explain the price and output determination of a firm under monopolistic

competition in the long run.

4. Define Oligopoly.
5. Give two points of difference between monopolistic and oligopoly.
6. What is monopolistic competition? How is price determined under it?
7. What is monopolistic competition? Determine short period equilibrium of a firm in the short period?
8. Define the concept of Oligopoly. State its main characteristics.

14.11 SUGGESTED READINGS

1. Yogesh Maheshwari, *Managerial Economics*, Prentice Hall of India, New Delhi.
2. D. N. Dwivedi, *Managerial Economics*, Vikas Publishing House Pvt. Ltd., New Delhi.
3. D. R. Agarwal, *Price Theory and Business, Microeconomics and the Indian Economy*, K.K. Publishers, New Delhi.
4. L. M. Prasad, *Modern Management Principles*, S. Chand & Company Ltd., New Delhi.
5. Ahuja, H. L., *Managerial Economics*, Excel Books, Delhi.
6. R. L. Varshney and K. L. Maheshwari, *Managerial Economics*, Sultan Chand & Sons, New Delhi

Unit 15 - Rent-Concept, Ricardian and Modern Theories

Unit Structure

15.1 Introduction

15.2 Concept of Cost

15.3 Cost Determination or Theories of Cost

15.3.1 Ricardian Theory

15.3.2 Modern Theory of Cost

15.4 Money Cost

15.5 Real Cost

15.6 Summary

15.7 Glossary

15.8 Check Your Progress

15.9 Answers to Check Your Progress

15.10 Terminal Questions

15.11 Suggested Readings

OBJECTIVES

After studying this unit, students will be able to:

- Understand the concept of rent in general.
- Understand the rent determination theories.
- Understand the concept of quasi rent.
- Understand the Idea of situation rent.
- Understand the relation between rent and price.

15.1 INTRODUCTION

Rent is the payment made for the use of land or use of a material asset for a particular period of time. According to Carver, “Rent is the price paid for the use of land”. Prof. Marshall has broadened the term and stressed that manmade equipment also produces rent. Mainly there is a term used in economics for rent as economic rent which may be defined as any payment o a factor of production which is in excess of the minimum amount necessary to keep that factor in

its present occupation as stated by Boulding.

15.2 CONCEPT OF RENT

Broadly speaking rent is a payment made by a person for the use of an asset belonging to someone else. In economic analysis rent refers to a term which is used in the distribution of income process, which in turn relates to micro economic behaviour of an economy. The study of micro economic analysis deals with nature and scope of economics, theories of demand and supply relating to consumption and production, theory of price-determination, and last but not the least is distribution theory. Rent belongs to distribution theory. Formerly the word was restricted to income received from the ownership of land. Modern version of rent, describes it as a payment over and above the necessary supply price of a factor of production. Economic rent can be enjoyed indefinitely by a factor whose supply is relatively fixed, land enjoys this distinction.

Common sense says that any payment made for the use of material good for a certain period of time is known to be rent. Here we can cover the rent for the use of a house, shop, rickshaw, taxis, and machine etc. In fact, this is only a contract rent. Economic rent is the price paid for the use of land only. Many opinions are propounded by economists from time to time.

Dr. Marshal states that the income derived from the ownership of land and other free gifts of nature is commonly called as rent. In Carrier's words, "Rent is the price paid for the use of Land." Ricardo who propounded his own theory of rent says "Rent is the price paid for the use of original and indestructible powers of the soil." In this manner, Ricardo and other classical economist related rent with land and other free gifts of nature like water, mountains and all other bounties of nature, since the supply of all these is perfectly inelastic and neither can be altered with change in price nor can be zero. Despite this traditional version, modern version of rent is also given by modern thinkers. Prof. Boulding & Mrs. Robinson say that although like land other factors of production i.e. labour, capital and entrepreneur are not perfectly inelastic in supply but to that extent in which their supply is inelastic, may be for a shorter period, rent may accrue for their use as well. Rent here is defined as surplus. In the words of Professor Boulding "Economic Rent may be defined as any payment to a factor of production which is in excess of the minimum amount necessary to keep that factor in its present occupation."

15.3 RENT DETERMINATION OR THEORIES OF RENT

Classical and Modern version of concept of rent deal with two theories of rent determination, one Ricardian theory and another is Modern theory.

15.3.1 Ricardian Theory

Ricardo believed that value is determined by the costs of production, and he applied this idea not only to goods but also to the factors of production. Cost of product could not work when applied to land as land can't be produced by anybody. It is a gift of nature to man. Thus a separated theory of rent is required to be built up. In fact rent was determined by the price of the produce which is raised on land. In his famous dictum, 'Rent is high because the corn is high and not the corn is high because the rent is high.'

Ricardo defined rent as "that portion of the produce of earth which is paid to the landlord for the use of original and indestructible powers of the soil." Ricardo calls economic rent as a true surplus left after making payments of other costs of cultivation for example to labour, capital and entrepreneur. Ricardo did not consider rent as a cost of production. Before analyzing the details of Ricardian rent theory, main assumptions of this theory must be gone through.

Assumptions of the Theory

1. Long period of time is considered only
2. Perfect competition in the market
3. Original and indestructible powers of the soil
4. Limited and fixed supply of land for cultivation
5. Land is a free gift of nature
6. Difference in fertilities of different portions of land exists
7. Different grades of land in order of difference in fertility
8. Law of Diminishing Marginal returns operation in agriculture
9. Population increases at an increasing rate
10. Existence of Marginal or no rent land where the cost and produce of land are equal

How Does rent arises?

Ricardian assumption of increasing population that too in increasing order leads to more

demand for the produce of land. Thus, cultivation of land needs to be extended to other available portions of land ultimately compelling to intensive use of land by employing more units of labour and capital. True cause of presence of rent is the scarcity of land. Prior to Ricardo physiocrats too talked of how does rent arise? Land is a gift due to kindness of nature. Land produces more than the labour employed on it. Thus, a surplus produced by the land is known as rent.

Ricardo had altogether different opinion on rent. Rather than bounties of nature, he considered niggardliness of nature as the important determinant of rent. As its total supply is inelastic and different portions of land differ in fertility.

Explanation of Ricardian Theory

On the basis of Ricardo's rent statement, both fertility and situation of land differ from place to place which becomes the cause of rent. Further rent is determined by the concept of existence of marginal land. It is also known to be 'No Rent Land'. Other higher productivity lands are intra marginal lands. Thus, rent is a differential surplus earned by superior lands over the marginal or inferior land. While explaining rent determination Ricardo talks of two techniques of cultivation i.e. intensive and extensive cultivation, so rent is determined in two ways:

1. Rent in case of Extensive cultivation
2. Rent in case of Intensive cultivation

1. Extensive Cultivation

In order to meet additional demand for the produce of land due to population pressure, when more units of labour and capital are engaged on more land under cultivation, it is known as Extensive cultivation

The concept of Rent, given by Ricardo in his book "Principles of Political Economy and Taxation" made a significant impact on the economic policy. Even modern theory of rent is influenced by Ricardo idea of rent.

In order to substantiate his view on Rent with respect to Extensive Cultivation, Ricardo considered the case of an islands, flock of people came and settled there. In the preliminary stage the land here was in excess in relation to the number of inhabitants who were settled there. People didn't have to pay any rent for this land as land was a free gift

of nature. Again, he imagines four types of land portions existing on this island i.e. A, B, C and D grades of land. A graded land is marked as most fertile and best land by the islanders and D Grade is rated as the least fertile and marginal land of the island. Thus A, B, C, and D Grades of land are marked here in descending order with respect to fertility. Naturally, people start their farming by cultivating the best land i.e. 'A' grade land which we assume produces 100 tons of food grains. As the demand of food rises with increase in population, entire 'A' grade land will be put to use leading to cultivation of 'B' Grade land which produces 75 tons of food grains. With more population pressures 'C' Grade land too will be brought under cultivation leading to put in use of the marginal land i.e. 'D' Grade land as well. Produce of 'C' Grade land is assumed to be 50 tons and marginal land i.e. 'D' Grade land produces 25 tons of food grains. Thus lands 'A' 'B' and 'C' grades are called intra-marginal lands. Site 'D' grade which is the least productive land will be put to cultivation at last and will earn no rent. Thus, only intra marginal lands 'A' 'B' and 'C' Grades will earn rent. Rent of these lands is a 'surplus over and above the produce of marginal 'D' grade land'. Hence the rent of A Grade land is produced of A grade land minus produce of D Grade land i.e. $100-25=75$. Rent of B Grade is produced of 'B' Grade minus produce 'D' Grade i.e. $75-25=50$. Rent of "C" grade is produce of 'C' grade minus 'D' which is $50-25 = 25$. 'D' Grade land is marginal land is stated to be no rent land. Thus differing fertilities between different pieces of land cause differential rent. So rent is different on each grade of land. Above discussion on differential rent as a surplus over and above the marginal land can be illustrated with the help of a table. Following table explains the concept of differential rent:

Table Origin of Rent and Extensive Cultivation

<u>GRADE OF LAND</u>	<u>PRODUCTION(TONS)</u>	<u>SURPLUS (RENT IN TONS)</u>
A	100	$100-25=75$
B	75	$75-25=50$
C	50	$50-25=25$
D	25	$25-25=0$

Above table illustrates that 'A' 'B' and 'C' grades of land earn differential surplus as rent i.e. 75, 50 and 25 tons of produce. Zero rent for marginal land i.e. 'D' Grade Land which is last to be used by newer entrants in farming.

Same idea can be shown with the help of a diagram

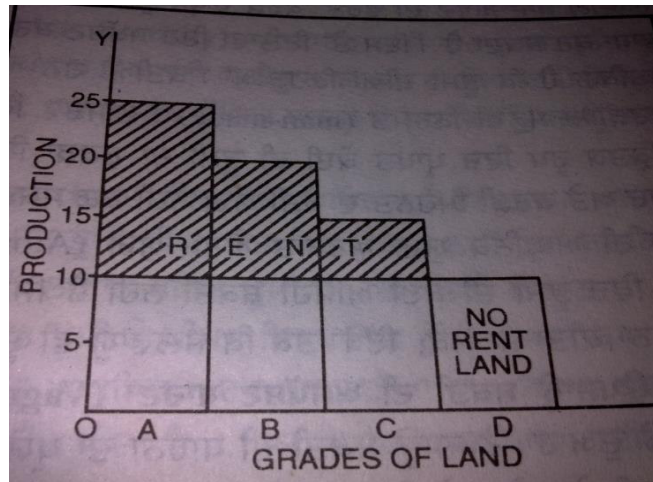


Figure 15.1: **Origin of rent and Extensive cultivation**

Above illustration clearly states that Ricardo considers here only this type of situation which shows no rent beyond extensive margin of cultivation for the whole farming community. Of course the idea of differentiating fertile lands is quite realistic.

2. Rent Under Intensive Cultivation

When the circumstances change, farmer has to adapt himself to them. Since population pressures go on increasing, hereby keeping in mind the Malthusian theory of population, by geometric progression and agricultural produce grows at arithmetical progression, the demand for food grains grow at a higher rate. To cope up with the higher demand for food grains, farmer expands his activities at both extensive as well as intensive margins so that he brings himself back into equilibrium position which is essential ingredient of any economic activity. By bringing more land under cultivation, he can't fulfill the promise of more food. Rather farmer will have to cultivate his land more intensively as well, so that normal profits are continued to accrue to him. Thus, intensive cultivation is as desirable as extensive cultivation. To get more produce from the land, farmer will employ more units of labour and capital on it. Ricardo assumes the operation of law of diminishing returns on agriculture, here the notion is, 'It is not the difference in fertility or situation of land that matters rather same piece of land can fetch higher or less produce with additional doses of labour and capital'. Here additional number of labour and capital employed will increase the total production but at diminishing rate. Thus, marginal product diminishes with the additional number of labour

and capital which are the variable factors of production. While fixed factors like land can't be altered. It can be explained with the help of example that 1st dose with 75 tonnes, 3rd with 50 tonnes and 4th the last dose of labour & capital produces only 25 tonnes. 4th unit of capital here is just called marginal unit of labour & capital which is known movement unit as well. The other three intra marginal units earn rent equal to the difference between their produce and the produce of last unit. Conclusion is that, to 1st unit of labour and capital accrued rent is $100-25=75$ tons and share of 2nd unit of labour & capital is $75-25=50$ and 3rd unit rent is $50-25=25$. But marginal unit earns no rent. Again this can be illustrated with help of a table given below followed by a diagrammatic representation.

Table: Origin of Rent and Intensive Marginal Cultivation

Units of Labour and Capital Employed	Marginal Product (Tons)	Surplus (Rent in Tons)
Ist Dose	100	$100-25=75$
IInd Dose	75	$75-25=50$
IIIrd Dose	50	$50-25=25$
IVth Dose	25	$25-25=0$

Here the cause of earning different rent for each piece of land is not the difference in fertility of soil, but the operation of law of diminishing returns on the cultivation of same piece of soil. Clearly whereas 1st, 2nd & 3rd doses of labour and capital have surplus produce as a rent, marginal dose has no rent as it has no surplus production. Hence even when there is no change in situation or fertility of land, rent can arise. In the diagram given below the 1st, 2nd, 3rd doses of labour and capital are earning rent into the form of surplus.

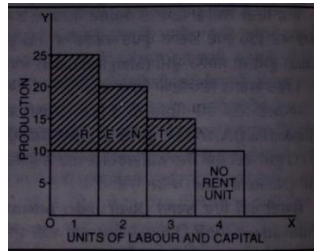


Figure 15.2: Origin of Rent and Intensive Cultivation

Above diagram shows that Ricardo's rent is not fixed. With increase in demand for food, cultivation may be extended to inferior lands or existing lands are intensively cultivated, then rent arises as a surplus which is earned by intra-marginal lands by employing additional units of labour and capital under progressive farming. Some conclusion can be drawn and concepts of rent by Ricardo can be more clearly stated now. Here in Ricardian model, land has zero elasticity of supply. This leads us to the fact that original indestructible powers of the soil are the root cause of rent as propounded by David Ricardo, the British economist who gave the earliest systematic theory of rent.

Criticism of Ricardian Rent Theory

Ever since the Ricardo theory is propounded, it has been criticized on various ground which can be listed below:

1. Historically Unsound

Carry and Richer pointed out that the view that the best land is cultivated in new island occupied by mankind is not supported by historical sequence of extensive cultivation in newly discovered lands. Actually, situation of land for early settlers mattered the most as water was the basic requirement for human existence so the land nearer to the sea shore was cultivated first. Moreover, most fertile lands were covered by dense forests which were not assessable to mankind in early stages. So Ricardo's best land may have been best situated land and not necessarily the best fertile land.

2. Based on Malthusian Theory

This theory based on Malthusian theory of population makes the rent theory as faulty theory. Geometric and Arithmetic progression of both population and food production as stated by Malthus are no more valid arguments now days in the era of economics development.

3. Assumption of Perfect Competition

This assumption too is far from reality today. In real life imperfect competition in the market prevails.

4. Long Period Concept

In ordinary business of life people are related with actual short run problems, so long run concept can't be accepted in routine life.

5. Application of Law of Diminishing Returns in Agriculture

Modern era is the age of advancement in science and technology. Innovative ideas have been applied on agriculture as well. So, all the laws of returns like increasing, constant and diminishing returns applies in agriculture which makes the theory invalid automatically.

6. Idea of Original and Indestructible Powers of the Soil

A question mark is put on this idea for the use of which rent is paid. No land in the world is found cultivable without reclamation and that too required hard labour. Climate too plays a bigger role in making production feasible.

7. Concept of Marginal Land is Totally Imaginary

‘No-rent land’ virtually does not exist in the world. If a particular land is totally unfit for cultivation, it is used for other production purposes like industry, commercial public or private residences etc. Hence rent will arise on every piece of land.

8. Narrow Version

Only agricultural production is taken into account. Several other users of land cannot be ignored which influence demand and supply of land, hence the rent as well. Therefore the theory is narrow in approach.

9. Neglect of Scarcity Rent

Even if all lands are equally fertile, rent may arise. So long most suitable and best land is scarce and rent arises on that. Actually, if demand for land is more than its supply, rent will be paid. Thus, scarcity of land does contain the element of rent, which is very important from the economics point of view.

10. Rent and Price

Ricardo says that rent does not enter into price. Marginal land which is no rent land, only determines the rent. But modern thinkers opine that in specific situations rent is the part of cost of production and price as well. For a farmer, rent is the part of cost of production which in turn determines the price of produce.

11. No Specific Theory of Rent is Needed

Modern version of rent determination does not require a separate theory of rent determination. General theory of demand and supply of land can make the things possible. Ricardo does not explain how rent is determined but simply tells why rent differs in different lands and situations.

Conclusion

Above criticism can't be accepted in toto and hence rejection of Ricardian theory. Rather

the first ever systematic attempt of rent theory by Ricardo can never be undermined. It is a singular contribution which led us to the understanding of Theory of Distributive shares. Idea of differential surplus has been used to explain the shares of factors other than land, for production purposes. Thus Ricardian theory became the foundation stone of modern theory of rent which added many feathers in the cap of production process.

15.3.2 MODERN THEORY OF RENT

There is no such organized theory of rent propounded by any modern economist in deep. Dr. Marsh, Prof. Boulding and Mrs. John Robinson etc. made improvements in Ricardo's Rent theory and gave a modified version of rent which is known as modern theory of rent. Major difference in Ricardian and modern version is that Ricardo stated that the fertility of the soil differs and good quality land is scarce and total supply of land is inelastic whereas modern thinkers opine that the peculiarities are found in other factors of production as well. Modern view is basically a short run version. So in the short run other factors also contain the qualities like that of land being inelastic in supply. Since Ricardian rent theory does not answer the question of how and when rent is determined, modern theorists developed demand and supply theory for rent determination. As we all know that demand and supply of any factor of production determine its price, in the same manner rent of land too is determined by forces of demand and supply. Difference in fertility of soil is not the cause of rent, rather supply being limited with respect to demand is the main cause of rent. Higher the scarcity of land, higher will be the amount rent, lesser the scarcity of land, lower will be the rent amount. So there is direct relationship between rent and scarcity of land with respect to its demand.

Prior to elaborating the modern theory of rent, we can have bird's eye view of comparison of Ricardian and Modern version of rent, there are no two opinions about this that modern theory is an amplified and modified form of Ricardo's rent theory. To substantiate the perspective of amplification of Ricardian theory, modern thinkers stated supply of land is of course limited and inelastic, but this feature is found in other factors of the production also at least in short run. When demand for them increase in short run

they too receive higher revenue than their normal income. This accrued surplus in short run is known as rent. Modern theory of rent is general theory of factor price determination. Now coming to the modification part over Ricardian theory, whereas Ricardo asserted that use of marginal land is required to measure the rent element, modern view does not agree with the concept of existence of marginal land, rather for them rent is a difference between actual earning and transfer earning. Other point to be modified in Ricardo's theory was cause of rent. Difference in fertility is assigned as the root cause of rent by Ricardo. Modern theory stresses on specification of a factor of production. More specific is the factor of production, higher will be its rent portion. Modern view seems to be more rational and scientific. Third thing Ricardo theory narrates is the relation between rent and price. Rent does not enter into price. Rent does not determine the price but is determined by the price. Modern version is, rent determines price. To be more precise we say that modern theory is not altogether different and entirely new perspective but a modified form of Ricardo's theory which acts as a foundation for the modern opinion of rent.

Determination of Rent-Modern Analysis

Modern economic analysis of rent was basically developed by J.S. Mill. Forces of demand and supply determine not only the price of product but rent is the price paid for the use of land and is determined by market forces in the factor market. Demand for land is not a direct demand rather derived demand. Reason being, land is demanded for its uses, products of land are demanded by mankind if people demand more, then the price of land will be higher and if demand is less, then price will be lower. Supply of land depends on the fact that land has its alternative uses i.e. one piece of land used for one particular use can be used for another purposes as well. This demand and supply analysis of rent determination can be best explained into two ways:

- (i) For the economy as a whole
- (ii) For the particular use in Industry

i) For the Economy as a Whole

Since supply of land for the economy as a whole is fixed, with rent changes supply can't be altered. So supply curve will be perfectly inelastic and a vertical straight line. Here the demand for land depends on the demand for products for which the land has to be used, which is inversely related with price of land. Demand curve will be sloping negatively downwards from left to right. As supply is totally fixed, then price of land varies with increase and decrease in demand. Shifts in demand curve are the only cause of different rent at a different time. In factor market that rent will prevail at which both demand and supply curve intersect each other. Thus, rent can be changed but with shift in demand level only.

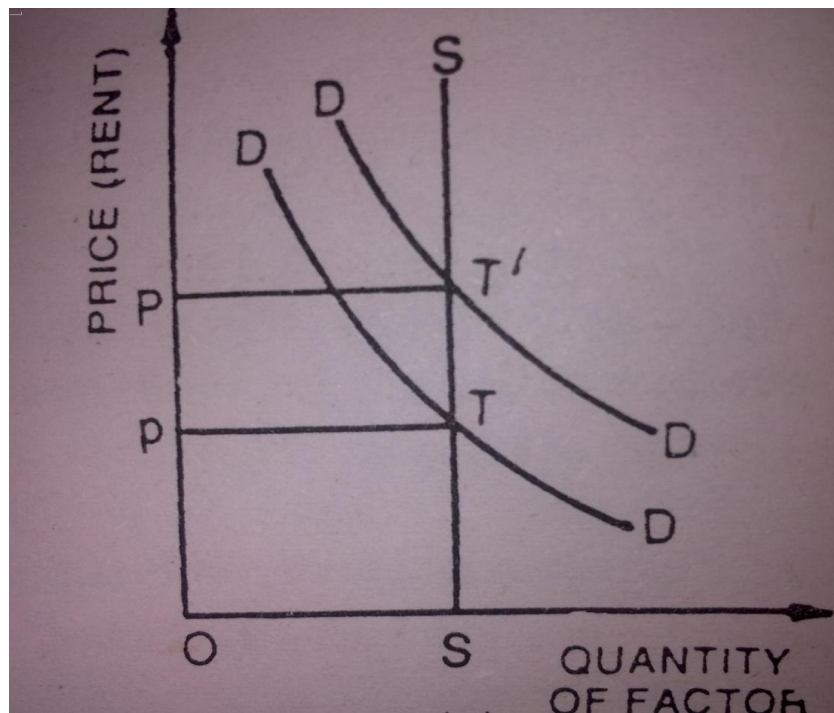


Figure 15.3: Rent Determination for use in the Economy as a whole

ii) For a Particular use in Industry

The demand for land arises for its capacity to produce. Marginal revenue productivity plays a vital role in the demand curve of the land. With more use of land, marginal revenue productivity

goes on diminishing. Thus the marginal revenue productivity curve will be negatively slopping. Consequently, demand curve also slopes downwards from left to right. Thus, it may be for the economy as a whole or in partial industry case demand curve is of similar slope. Difference lies in supply curve. Supply curve here is no more inelastic, rather it is elastic curve. At higher level of rent more land will be afforded for a particular industry and vice-versa. We may assume here that in the state of Maharashtra land is shifted to cotton growing from sugarcane, then cotton producer should pay the rent at least equal to that which was paid to sugarcane producer. This assures us the idea of minimum positive rent and supply curve will depend upon rent. Supply of land and rent will be directly related and thus the supply curve is elastic. Modern views tell us that rent is due to scarcity of land, where as Ricardo theory talks of difference in fertility only, modern economists' talk of superiority of land due to both fertility and location. Heterogeneous lands results carry different rent, to quote Marshall, in a sense, all rents are scarcity rents and all rents are differential rents. Explanation stated above can be explained with the help of diagram 15.4 given below:

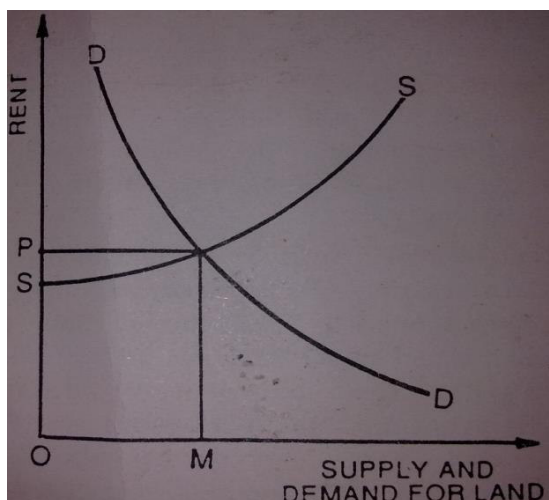


Figure 15.4: Rent Determination for particular use in Industry

This is how, modern view of demand for and supply of land for determination of rent is illustrated. For the economy as a whole, the supply can't be altered, so any change in demand brings change in rent. This is not the case in particular industry. Here both demand and supply curve are elastic so both the forces determine as

well as can influence rent of land. Here rent is seen as differential surplus. If the supply of land is perfectly inelastic and its supply price is zero then whole income of land is rent in the form of surplus. In short run, other factors too are in short supply and their supply is inelastic. So they can also earn surplus earning due to their inelastic supplies. Marshall has aptly remarked here, “Even the rent of land is seen not a thing by itself, but as the leading species of a large genus”.

Modern theory of rent is not propounded by one or two economists. It is a combination of different opinions put forward by different thinkers. Alfred Marshall in his book “Principles of Economics” did talk of short run concept, of supply of factors of production being less than perfectly inelastic. Mrs. Joan Robinson in her book “Economics of imperfect competition” tells us that all the factors of production contain land aspect in short run. Mrs. Robinson says, “the essence of the conception of rent is the conception of a surplus earned by a particular use of products over and above the minimum earning necessary to induce it to do its work.” This statement clears the idea of surplus. Rent of any factor of production is measured by surplus of earning other than its transfer earning. Concept of transfer earning is the foundation of modern theory of surplus rent. Naturally, we need to clear the idea of transfer earning. Transfer earning is the amount that every factor of production could earn in its best paid alternative use. Here transfer earning indicates us the alternative uses of a factor of production. Best use of a factor of production is tried to be made. So if a present use of factor needs to be continued the price equal to next best alternative use need to be given. This is said to be ‘minimum supply price’. The earning accruing from the present use of a factor is called actual earning. Transfer earning is necessary price to be given to a factor production to retain it in the industry. Surplus rent is actual earning minus transfer earning. So rent is equal to actual earning minus transfer earning. Only specific factor can earn rent as they cannot be transferred. Only one use can be made of the factor of production. So, transfer earning will be zero. Non-specific factors have transfer earning, greater the transfer earning lesser will be the rent. Specific and non-specific factors indicate the elasticity of supply of factors of production. We need not

bother about the division of factors of production as specific or nonspecific here, only consideration is the elasticity of supply which varies with nature of these factors. In order to explain the rent determination, we have to deal with elasticity of supply which is perfectly elastic, perfectly inelasticity and elastic. In the Robinson's rent concept demand curve is the same negatively sloping, downwards from left to right where marginal revenue productivity of factors of production is reducing all the time. Shapes of supply curve will off course differ, so the rent determinations too will be differently explained. Elasticity of supply has three contents i.e. perfectly inelastic supply, perfectly elastic and elastic supply.

1. Perfectly inelastic Supply and Rent

Perfectly inelastic supply shows a vertical straight line supply curve but demand curve is elastic of negative slope.

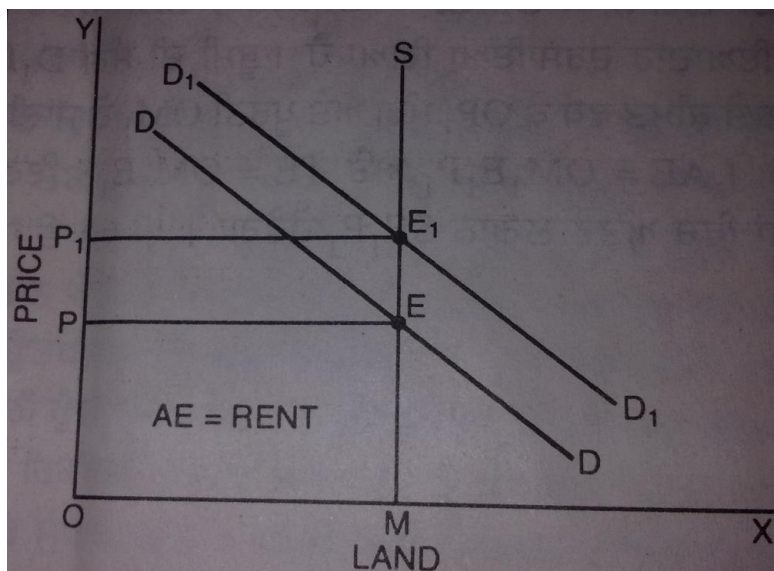


Fig No 15.5: Perfectly inelastic Supply and Rent.

With demand curve DD and supply curve SS entire earning of OREM is rent as there is no transfer. With increase in demand i.e. D_1D_1 curve both actual earnings and rent increase.

2. Perfectly Elastic Supply and Rent

It implies the fact that at a given price any quantum of land can be supplied. Here transfer earnings of all units of land are equal. So actual earning will be equal to transfer earning. Hence no rent will prevail.

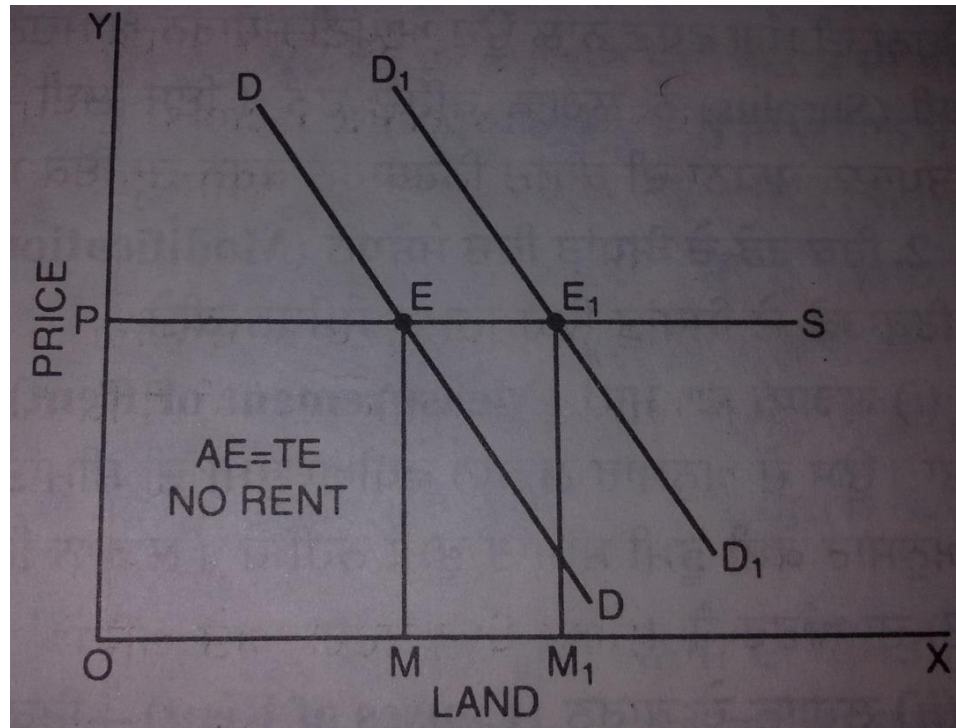


Figure: 15.6: Perfectly Elastic Supply

Above illustration shows demand supply equilibrium. As there is no rent and transfer earning and actual earnings are equal at equilibrium level. Demand may increase but rent remain zero.

3. Elastic Supply and Rent

It is only for the economy as a whole, the land is perfectly inelastic or elastic, for a particular use it may simply be elastic. In this case transfer earning will be less than actual earning and their difference is called rent. Both demand and supply of land are elastic and determines the per unit price of land.

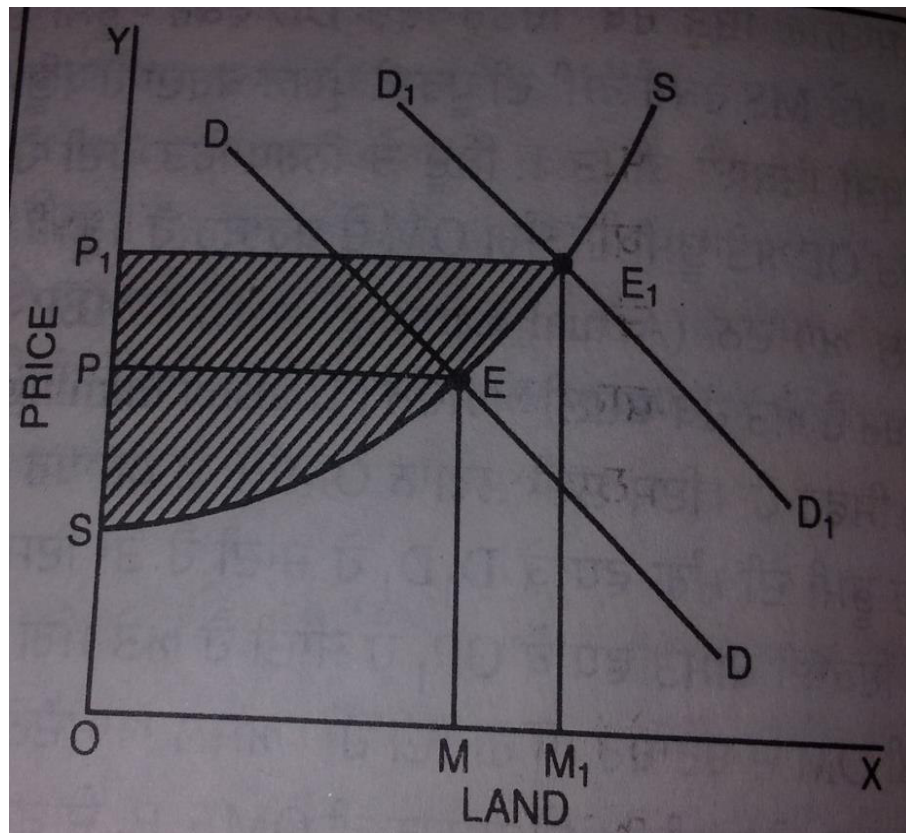


Figure 15.7: Elastic Supply and Rent

In the given figure actual earning is OMEP with DD is demand curve and SS supply curve. Transfer earning here is OMES, here differential rent is $SER = OMEP - OMES$. With increase in demand, demand curve will shift to D_1D_1 curve and new equilibrium will be established at E_1 . Now the Actual earning is $OM_1E_1P_1$ and transfer earning is OM_1E_1S , therefore surplus is SE_1P_1 .

15.4 QUASI RENT

Concept of quasi rent was developed by Dr. Alfred Marshall. By quasi rent we mean the payment made for a commodity or a service which is limited in supply for the time being. Here we pay more for the product that would really be necessary to maintain the existing

supply. Existence of quasi rent implies a true surplus or economic rent, either increase in supply or fall in demand may be able to eliminate quasi rent. Marshall's concept of quasi rent is a short run concept and quasi rent is derived from those factors whose supply is limited.

Quasi-Rent Determination

Process of price determination in the short period in a perfectly competitive market is a matter of great relevance here. Any change in demand can't be matched by change in supply in the short run. Only long run allows us to change the scale of plant or even install a new plant. Supply of plant and equipment is supposed to remain fixed and inelastic. In the short run even if quasi rent is derived it disappears in the long run. Dr. Marshall in his book 'Principle of Economics' explained this concept by taking the example of 'Parable of meter or stone'. Three situations can be assumed:

1. Rainfall of stones occur only at one place. These stones are useful for industry. People call these stones as free gifts of nature and by selling them the income they receive is like rent of land. Supply of these stones can't be altered in short and long periods, so supply is inelastic.
2. In second situations all the different spheres of land experience windfall of stones. Thus, supply is unlimited so supply of stones is perfectly elastic in short and long run.
3. Third situation deals with the fact that in the short run supply of stones is limited but can be unlimited in long run, so supply will be inelastic in short run and perfectly elastic in long run. There is no price paid for the stones in short run, so income received for them is called quasi-rent, but in long run cost of stones is incurred so the difference left after paying the cost out of the total income received by selling the stones to industry is quasi-rent.

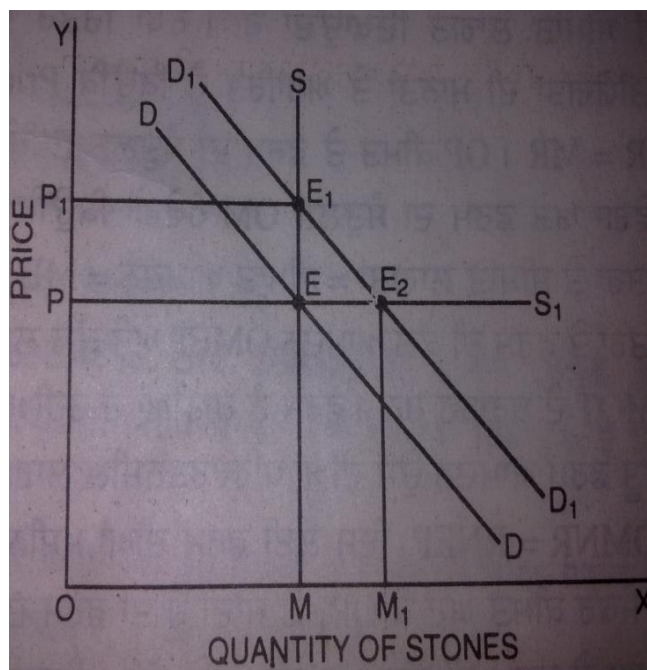


Figure 15.7: Marshall's Quasi Rent Determination

In the diagram, SM is supply of curve of stones in short run which is inelastic and S_1P is supply curve of stones in the long run which is perfectly inelastic. Per unit price of stones is determined by the inter-section of demand curve DD with supply curves SM and S_1P , quantity demanded and supplied of stones is OM with DD demand curve and price per unit is OP. Income from stones will be OMEP. Since in the short run supply curve is inelastic then income from stones is equal to OMEP. This income is like rent of land here. In the long run, perfect elasticity of supply changes the scene. If demand level is raised to D_1D_1 , short run price will rise to OP_1 instead of OP. But in the long with increase in demand more quantity of stones can be supplied i.e. OM_1 here instead of OM. Now the price will come down to OP only which is equivalent to expenditure on finding the stones. So quasi rent is no more found which is found in the short run.

Quasi rent is again considered as surplus over variable costs as stated by Marshall. Costs of production are of two types i.e. fixed and variable costs. Industry needs to cover at least average variable costs if not the average fixed costs in order to continue the production process. It is a situation of short run only. In the long run all costs incurred i.e. $ATC=AFC+AVC$ must be covered to remain in industry, so machines become the cause of revenue in short run. Quasi rent is the excess

of total revenue over total variable costs. Quasi Rent=Total Revenue-Total variable costs.

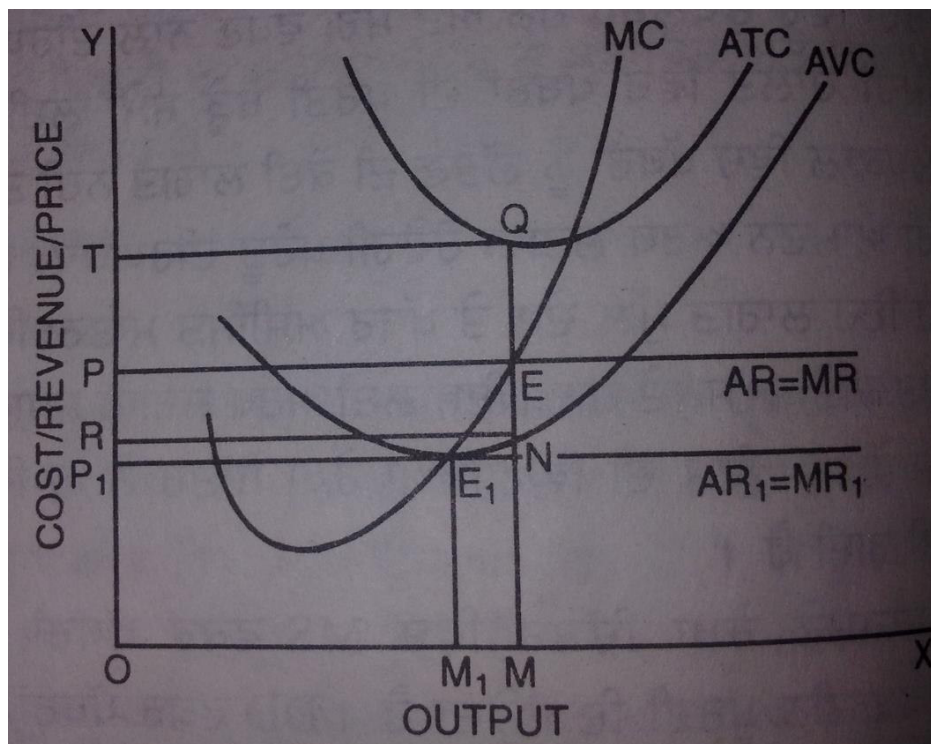


Figure 15.8: Quasi Rent Determination

In the short run quasi-rent arises which is explained with the help of figure given above. Depicted in the above diagram on OX axis is quantity of output and on OY-axis cost/revenue price of the product. ATC and AVC curves are average total costs and average variable costs curves. MC is marginal cost curve. $AR=MR$ is average and marginal revenues of the firm under perfect competition. $MR=MC$ is the condition of firm's equilibrium. E is that point of equilibrium where price is OP and OM is the equilibrium output. Here total revenue of the firm is OMEP and total costs are OMQT. It is clear from the diagram that firm is incurring losses i.e. PEQT. Another fact is that variable costs are OMNR which are less than total revenue of the firm. Difference of total revenue and variable costs in RNEP which is said to be quasi rent of the firm. So quasi rent here is $OMEP - OMNR = RNEP$. Now if price falls to OP,

then firms point of equilibrium will be E_1 and equilibrium output OM_1 , new firms total revenue $= OM_1 E_1 P_1$. Again, total variable cost is also the same at E_1 equilibrium level, so no quasi-rent is

earned by the firm. Even if price again falls, the firm will no longer produce i.e. shut down the firm since even variable costs are not met here. We can stress that quasi rent does arise in the short run but it is never zero or negative. As far as the long run is concerned there is no distinction between fixed and variable costs. A Perfectly competitive firm earns only normal profits in the long run, where total revenue and total costs are equal. Normal profits are implied under such market period of time. No revenue is earned by the firm other than variable costs, so firm has no quasi-rent in the long run. We may sum up that quasi-rent is a short run concept.

Difference Between Rent and Quasi-Rent

Rent and quasi-rent discussion helps us to draw a distinction between similarities and differences of the two as follows:

Similarities

1. Rent and quasi-rent both can be stated to be surplus. Whereas rent is a surplus received on land use, on the contrary quasi-rent is a surplus earned on man-made machinery.
2. Rent and quasi-rent arise when the demand starts increasing for land as well as machines both.
3. Cause of both of them is their limited supply. Unlimited supply can't fetch rent or quasi-rent.
4. Both are determined by difference between actual and transfer income.

Differences

1. Rent is received from free gifts of nature but quasi-rent is received from man-made resources.
2. Rent arises both in short run as well as long run but quasi-rent is only a short run concept.
3. Rent is permanent but quasi-rent is a temporary feature in the market.
4. Rent is never zero but quasi-rent can be zero when total revenue is equal to total variable

costs.

5. Rent is the difference between total revenue and total costs but quasi-rent is the difference between total revenue and variable costs.

15.5 SITUATION RENT

When we talk of rent, we cannot ignore an important version of rent prevalent in day-to-day life. Situation rent is that concept of rent which is related with the situation of land. In today's world of open market and trading system, commercial establishments play dominant role in the economy. Suppose a dealer wants to hire a shop. He will never prefer it to get it anywhere in the city rather a relevant market is the sole determinant in deciding his choice. Talking of a city like Delhi Sadar Bazar market and Connaught place market, the preferred choice will be Connaught place. Reason being that Connaught place is a fashionable shopping center. More over supply of land in this area is limited. Well situated shops will be demanded more. Naturally rent will be higher in Connaught place than sadar bazaar shop. The same applies to other cities and of non-urban land. Even corner sites, main street land and all other possible differences lead to different rents. Fact is that, land fetches a high price only due to big demand for its alternative uses. There are relative advantages of different sites. Whenever there is a change in advantages of the sites then their comparative rents also change. Rent may be in true sense of a land or site it remains a differential surplus.

Rent and Price

It has remained a topic of debate as how rent and price are related. One popular notion was 'Rent is high because the corn is high, corn is high because the rent is high' which one of the two is correct can't be easily answered. Ricardo a British economist who evolved his popular theory of rent never agreed with the opinion of those who asserted that corn is high due to high land price. Farmers had to pay high price to landlord so they were compelled to sell corn dearly. Thus, rent was considered a part of cost of production. Ricardo changed this opinion of the people. Modern economists modified his views as well. So, an elaborated discussion is needed here. Two versions are there i.e. one of Ricardo and other is modern version.

Ricardian view

Ricardo says that high rent is not the cause of high price rather high price of corn is the cause of high rent. Differential surplus version of rent is based on no rent on marginal land. So, rent can't enter into price. Rent does not determine price rather is determined by price. So, corn is not high because rent is paid, rent is paid because corn is high. Thus, rent is price determined not price determining.

Another explanation as to why rent does not enter into price is that rent is paid for the use of land, here lies one fact that land is a free gift of nature and has a zero-supply price. So rent in this sense is not a part of the supply price of the produce of land and hence does not enter into price.

Modern view

Modern thinkers assert that land has alternative uses. Most profitable alternative use is the transfer cost of land which forms cost of production. So rent does enter into price. Ricardian view of rent not entering into price holds good, if we look at land from community price of view. If particular use of land view is considered this does not hold true, actually we have to analyze it differently. Modern view analysis it from the society, an industry and an individual producer's view point. Taking society's perspective, supply of land is fixed and it has no alternative uses, transfer cost would be zero as society gets free gift of nature. When the demand for land increases, supply being inelastic, price i.e. rent will arise. So rent is price determined. Talking of a particular industry, transfer cost is the part of cost of production so rent enters into price. Supply of land is less than perfectly elastic, if a particular industrialist wants to expand his production, he will have to purchase more land. So a minimum transfer price is required which is a cost of production. So, price of the produce is determined by rent. From an individual's point, the whole of rent is a cost of production and enters into price as it is a necessary payment.

15.6 SUMMARY

Rent is a payment made for the use of land, which is not only a free gift of nature but limited in supply for the economy as a whole. It is a payment made to any factor of production. There are

two doctrines for the rent determination i.e. Ricardian theory of rent and Modern theory of rent. Ricardian theory emphasizes that rent is paid to the use of land only and modern theory emphasizes rent is payment for the manmade machines also. Concept of quasi rent given by Marshall holds true in the short run where variable costs can be covered.

15.7 GLOSSARY

Rent: Payment made for the use of land or any physical property for a specific period.

Extensive Cultivation: A method of farming in which, due to increased population pressure, more labor and capital units are employed on additional land to meet the excess demand for agricultural produce.

Economic Rent: Payment made for a good or service whose supply is limited for a certain period of time.

15.8 CHECK YOUR PROGRESS

Fill in the blanks

- (i) Rent is the price paid for the use of _____.
- (ii) According to Ricardo, rent is earned by the cultivation of _____ land over marginal land.
- (iii) According to the Ricardian theory, Grade D land is called _____ land.
- (iv) Economic Rent = Actual Earnings – _____ Earnings
- (v) Rent is earned because of the _____ of nature.

(B). True /False

- (a). Quasi rent is a long run concept.
- (b). Quasi rent is the excess of total revenue over total variable cost.
 - (c) Transfer earning is the amount of income which a particular factor could earn in its next best paid alternative use.
- (d). Rent is not a differential surplus according to modern theory of rent.
 - (e). Prof. Weiser has divided factors of production into two parts i.e. specific and non-specific.
 - (f).

15.9 ANSWERS TO CHECK YOUR PROGRESS

A. (i) Land (ii) Intra Marginal (iii) No rent (iv) Transfer (v) Niggardliness

B. (i) False (ii) True (iii) True (iv) False (v) True

15.10 TERMINAL QUESTIONS

1. Critically evaluate Ricardian's theory of Rent.
2. What implications and modifications have been made by the modern economist over the Ricardian theory of rent? Explain.
3. Explain the concept of Quasi-rent. How is it determined?

15.11 SUGGESTED READINGS

1. Yogesh Maheshwari, *Managerial Economics*, Prentice Hall of India, New Delhi.
2. Dr. P. N. Reddy, *Managerial Economics*, Vikas Publishing House Pvt. Ltd., New Delhi.
3. T. R. Jain, O. P. Khanna and Vyas, *Micro Economics and Indian Economy*, V.K. Publisher, New Delhi.
4. M. L. Jhingan, *Advanced Economic Theory*, S. Chand & Co. Ltd., New Delhi.
5. Atmanand, *Managerial Economics*, Excel Book, Delhi.

UNIT 16: INTEREST- CONCEPT AND THEORIES OF INTEREST

Unit Structure:

16.1 Introduction

16.2 Gross Interest and Pure Interest

16.3 Interest Rate Differentials

16.4 Theories of Interest

16.5 Summary

16.6 Glossary

16.7 Check Your Progress

16.8 Answers to check your progress

16.9 Terminal Questions

16.10 Suggested Readings

OBJECTIVES

After reading this chapter, you will be able to understand the following topics.

- Understand the meaning of interest.
- Explain simple interest and compound interest.
- Study and differentiate the various rates of interest.
- Understand the theories of interest.

16.1 INTRODUCTION

Interest is the payment made for the use of capital. Interest is the reward for forsaking the present consumption for the better future. Gross interest includes all kinds of payments for the loan of capital; to cover the risk of loss, it is the reward for inconvenience and for management as well where as net interest is payment made for the use of the capital alone. Several different interest rate structures prevail in the market. Main reasons for the differences in the interest rates is the imperfect market conditions, degree of risk involved, monopoly element, amount of loan and credit worthiness of borrower.

Meaning

Interest is the payment received by the owner of capital. Interest is the reward for abstinence,

sacrifice on waiting. As Carver pointed out “Interest it is the income which goes to the owners of capital”. John Rae and Bohm Bawerk considered interest to be ‘agio’ or premium for time preference. According to Keynes interest is the reward for parting with liquidity. Mill says, ‘Interest is the remuneration for mere abstinence.’ Modern economists determine interest on the basis of demand and supply of money.

16.2 GROSS INTEREST AND PURE INTEREST

Total payment made by the borrower to the lender for the use of borrowed funds is called the gross interest. It includes the payment for the use of capital, payments on account of risk, inconvenience and management of loans. According to Chapman ‘Gross interest includes payment for the loan of capital, payment to cover risks of loss which may be a) personal risks or b) business risks.’

Gross Interest

Gross interest is a broader term which includes the following payments:

- a. **Pure or Net Interest:** It is the reward for the use of money only.
- b. **Reward for Inconvenience:** When the lender gives money to the borrower he is sacrificing his use of money in present for the sake of future, he is forestalling his present plans to spend the money, in lieu of that he will get his money with interest in future.
- c. **Reward for management:** Lender has to incur expenditure to maintain account books, has to send reminders and even has to take some legal action against the borrower if he does not pay the money back in time, so for all this sacrifice he gets some extra money in form of interest.
- d. **Reward for Risk Taking:** The greater is the risk element, the greater will be the reward for risk. Loans without security are at greater risk.

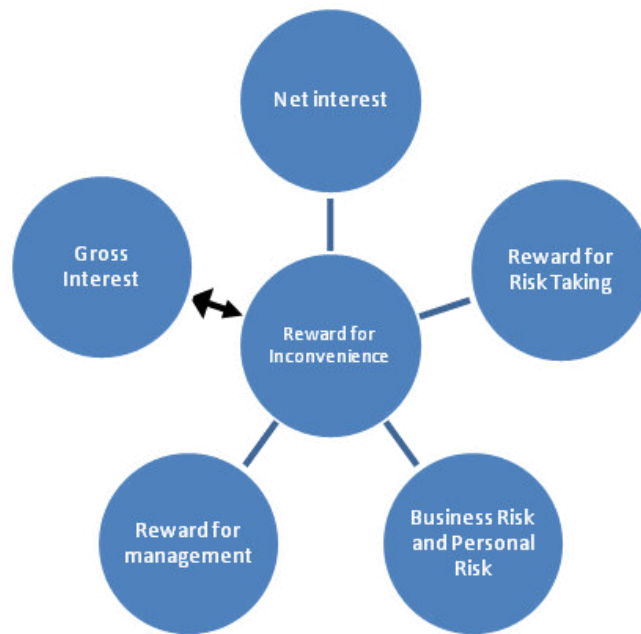


Figure 16.1: Components of Gross Interest

Net Interest

Net Interest is the payment for the use of capital alone. It does not include reward for risk taking, inconvenience and management. According to Chapman ‘Net interest is a payment for the loan of capital when no risk, no inconvenience and no work is entailed on the lender.’

Gross Interest = Net interest + Reward for inconvenience + Reward for risk taking + Reward for management.

Net Interest = Gross Interest – (Reward for inconvenience – Reward for risk taking – Reward for management)

16.3 INTEREST RATE DIFFERENTIALS

Several different interest rate structures exist in the market. There exists no uniformity in the interest rates, the prevalence of large spectrum of interest rates is called as structure of interest rates. In case of perfectly competitive market, there will be uniformity in interest rates. But in reality due to market imperfections there are differences in interest rates. According to Bober, there are four basic reasons for the differences in the interest rates which include i) Risk ii)

Liquidity iii) Maturity of Loan iv) Monopoly Element. Following are the major reasons for the existence of different interest rates:

- i) **Degree of risk:** If the risk is greater, the greater will be the interest charged on it. There is high charge for personal loans as compared to collateral loan.
- ii) **Imperfect market conditions:** Market conditions differ from region to region and from industry to industry, this accounts for interest rate differentials.
- iii) **Mobility of Capital:** If the capital is perfectly mobile, then the interest rates will be uniform and will be lower, but in imperfect market conditions where the capital is less mobile interest rates will be higher.
- iv) **Amount of Loan:** If the loan amount is larger, then the interest rate charged will be lower, on the other hand if the amount of loan is small and it is for smaller duration, interest charged will be higher.
- v) **Distance:** Distance between lender & borrowers can be the reasons for the existence of difference in interest rates.
- vi) **Productivity of Capital:** If the productivity of capital is high, then the borrower would like to pay high rate of interest to obtain capital from the lender.
- vii) **Credit Worthiness of Borrower:** Persons who have the greater creditability and are known for integrity can get loans on easy terms. With lesser interest rates as compared to other.
- viii) **Nature of Security:** Interest rates differ with the type of security. Interest rates will be lesser for the gold assets as compared to immovable assets like property etc. The more is the liquidity of the asset, lesser will be the rate of interest.
- ix) **Emergence of Banking Institutions:** With the emergence of developed banking structure, there will be less interest rate differentials. But still there exists the role of money lenders and 'Sahukars' who charge exorbitantly and exploit the borrowers.

16.4 THEORIES OF INTEREST

Mainly there are two sets of theories of interest. One approach is concerned with the why interest is paid and the other approach is concerned with the issue of

determination of interest rates.

Marginal Productivity Theory of Interest

Exponent of this theory are JB Say and Malthus. Interest is paid because of the marginal productivity of capital. Capital generates its own productivity and that is why interest is paid for this quality of capital. Law of diminishing productivity holds true in case of capital also. Entrepreneur will employ capital till its marginal productivity becomes equal to the interest paid for it.

Abstinence and Waiting Theory

This theory is propounded by Marshall and N. Senior. According to them saving involves some sort of sacrifice. So to induce people for saving they are given reward in the form of interest, so interest is a reward for abstinence. According to Marshall 'interest is a reward for waiting'. But this theory is incomplete; it does not provide any explanation regarding the nature of interest and its determination.

Agio Theory of Interest

It was originated by Bohm Bawerk, he says present consumption is preferred over future consumption, because the way the human beings perceive, future is uncertain, that is why for withholding the present consumption for the uncertain future, some reward or incentive is required, that reward if it is greater, then human beings will be induced to forsake the present consumption. This reward is known as interest.

Fisher's Time Preference Theory of Interest

Time preference theory of interest was propounded by Irving Fisher in 1907. He later revised his theory in 1930. Fisher's theory of time preference is influenced from the pioneer work of Bohm Bawerk. Bawerk gave the idea that present consumption is always preferred to the future consumption. In Fisher's theory of time preference, he says people generally have the preference for the present consumption over the future consumption, so the basic philosophy behind the Fishers theory is the inter-temporal choices of consumption by the people. The price which people are prepared to pay for income now

rather than for income later is called rate of interest. People tend to discount future wants for the sake of present consumption, so the rate of interest according to Fisher is the inducement given to the people for the with stalling their present consumption needs for the sake of better future rewards, higher the interest payment will be, higher will be inducement for sacrifice. He also maintained that people prefer present consumption because it gives them investment opportunity and this investment opportunity is determined on the basis of rate of return over cost. Fisher says that intensity of the preference of the people for the future income is determined by subjective and objective forces. Those forces are: 1) Willingness 2) Opportunity.

The determination of interest rate according to Fisher's theory is explained diagrammatically as follows:

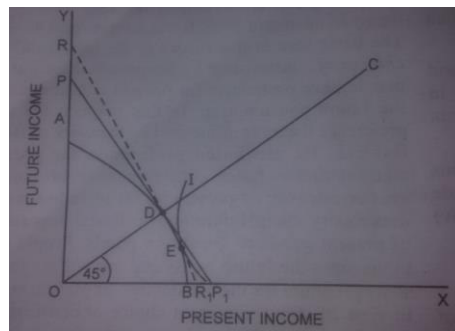


Figure 16.2: Interest Rate Determination
under Fisher's Time Preference Theory

The indifference curve 'I' is willingness curve that shows people's time preference in respect of current and future incomes. It shows that MV of income decreases as income increases. AB is the opportunity curve at which present income is transformed into the future income. This curve is concave to the origin indicating the diminishing marginal productivity of capital. The rate of interest is determined at point E, it means rate of interest is positive at this point. If the tangency between technical transformation curve AB and indifference curve takes place at D which lies on OC, rate of interest will be zero at this point.

According to Fisher for the economy as a whole the total amount that people desire to invest

INTEREST- CONCEPT AND THEORIES OF INTEREST:

must be equal to the amount which people desire to save if there is to be equilibrium in the economy.

Equilibrium level of rate of interest is shown diagrammatically as follows:

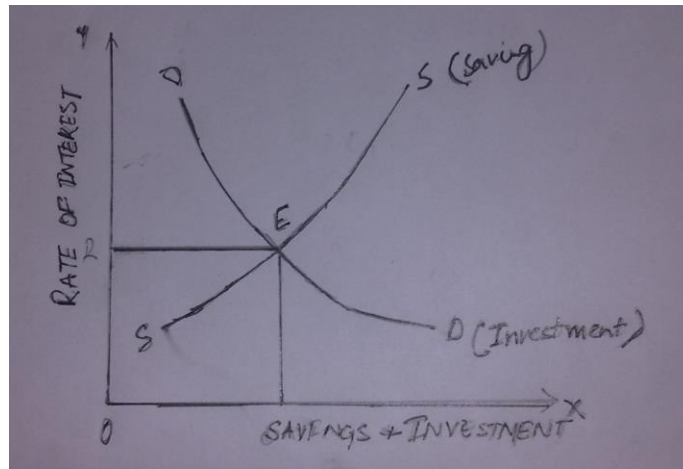


Figure 16.3 : Equilibrium Rate of Interest

With the changing interest rate structures, both producers and consumers have to alter their savings and investment schedules. Lenders and borrowers interact in finance markets to determine the allocation of funds among different users and between the present and future needs. In the figure given above, SS is the supply curve and DD is the demand curve for funds in financial market. The rate of interest is determined at point E where there will be saving and investment equality.

Fisher's theory has been criticized by F.H. Knight on following grounds.

1. It lays too much emphasis on capitalization as there are significant divergences between the capitalized rates in rental market of assets and their resale markets.
2. Fisher's theory revolves around circular reasoning as present value of assets is derived from the income accruals from the asset over its lifetime by discounting amenities at the current rate of interest. But the question is how to determine current rate of interest. The theory assumes it as given at present what it seeks to determinate.
3. Fisher's ignores the role of modern banking institutions on the determination of rate of interest.

4. Role of expectations and impact of uncertainty on rate of interest have been overlooked in this theory.

Classical Theory of Interest

Classical theory of interest is the contribution of many writers such as Marshall, Pigou, Knight, Taussig and Cassel. It is also named as real theory of interest as it is based on real forces of demand and supply of capital on investment and saving. The rate of interest is determined at that point where demand and supply of capital is equal.

1. Demand for Capital

Capital is demanded for the sake of investment. If the productivity of capital is high, then the demand for capital will be high too and vice versa. As the marginal productivity of capital goes on diminishing by its increased application, the entrepreneur or capitalist will make use of more capital at lower rates of interest. In other words, investment is inversely related with the rate of interest.

$$I = f(r) \Rightarrow \text{inverse function}$$

It means that investment curve will slope downwards.

2. Supply of Capital

Supply of capital is associated with savings or willingness of the people to save money or power to save money. Saving involves sacrifice abstinence or waiting so they will save more at higher rate of interests. Some people even save even at zero rate of interest, but generally saving is positively associated with rate of interest. Supply curve hence moves upwards to the right

$$S = f(r) \text{ (Direct Function)}$$

Table: Determination of Rate of Interest

INTEREST- CONCEPT AND THEORIES OFINTEREST:

Rate of Interest (in percentage)	Demand for capital i.e. Investment (in Rs. crores)	Supply of capital i.e. saving (in Rs. crores)
14	1200	800 $I > S$
15	1100	900 r will rise
16	1000	1000 $I = S$
17	900	1100 $I < S$
18	800	1200 r will fall

Table shows that investment is Rs. 1200 crores and saving is Rs. 800 crores at the interest rate of 14%. This shows that investment is more than saving by Rs. 400 crores; this will push interest rate further at 15%, even at this rate of interest investment exceeds saving. When the rate of interest is 16%, there is saving and investment equality as shown in the figure 16.4.

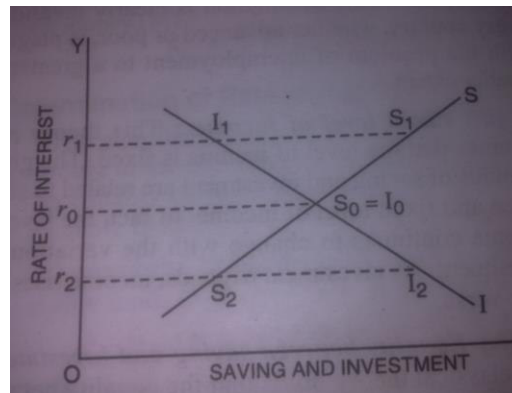


Figure 16.4: Interest Rate Determination under Classical Theory of Interest

I_1I is the investment curve and S_2S is the supply curve. At Or_1 , rate of interest saving is S_1r_1 which is more than investment, it tends to lower the rate of interest to r_0 where there will be equality of savings and investment. On the other hand at r_2 interest rate, saving is less than investment, it will push the interest rate to the r_0 again. At equilibrium rate of interest r_0 , there will be no tendency of interest rates to move either in upwards or downward direction. Equilibrium rate of interest is that which equates the cost of borrowing with marginal productivity of capital on one side and on other aspect it induces the marginal saver to save.

According to the classicals, real rate of interest should prevail in the market which is determined on the basis of demand and supply forces. Real rate of interest is reflected in terms of goods. Real demand is associated with the productivity of borrowed capital and the real supply of funds is governed by the willingness of consumer to forsake his present consumption. The problem is real rate of interest and market rate of interest in reality do not coverage due to two conditions 1) Anticipated Inflation 2) Anticipated Deflation.

Criticism of the Classical Theory

1. Changes in Income bring Equilibrium Between Saving and Investments and not in the Rate of Interest

According to Keyens income brings equality between saving and investment. Saving & investment are functions of income related changes. Saving is a direct function of income and investment depends upon the marginal efficiency of capital.

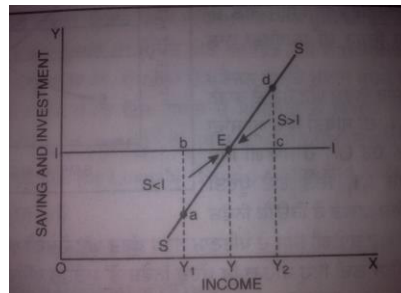


Figure 16.5: Equilibrium Determination of Saving and Investment as both are functions of income

Explanation of Diagram

Level of Income	Saving Investment Relationship	Effect	Final Result
OY	$S = I$	-----	-----
OY ₁	$S < I$	Income rises Saving falls	$S = I$ $S = I$ (In both cases striving for equilibrium)
OY ₂	$S > I$	Income falls	

		Saving Rises	
--	--	--------------	--

2. **Assumption of Long Period of Time is Unrealistic:** According to J.M. Keynes “in the long run we are all dead and buried” or the tomorrow never comes. It is the today which matters.
3. **Interest is not the reward for waiting:** Interest according to Keynes is not the reward for waiting but for parting with the liquidity.
4. **Assumption of Full Employment:** Prof. Dillard has rightly observed that “Within the framework of a system of theory built on the assumption of full employment, the notion of interest as a reward for waiting or abstinence is highly plausible. It is the promise that resources are typically full employed that lacks plausibility in the contemporary world. So, the assumption of full employment is unrealistic and impractical in the real-world scenario.
5. **Indeterminate Theory:** As saving mainly depends upon the level of income so it is not possible to know rate of interest unless the income level is known before hand. To determine the level of income, rate of interest must be known to us as with lower level of rate of interest, Output, employment, investment, income and saving will be channelized and will show increasing impact. For each level of income, separate saving curve will have to be drawn. Hence this is all circular reasoning and no plausible solution is visible. According to Keynes classicals did not have any determinate solution for interest.
6. **Ignores the Effects of Investment on Income:** Classical theory ignores the effects of investment on income. As interest rate moves up, investment will be less profitable which will further reduce the level of output, employment and income. This will later reduce saving. So high rate of interest has an adverse impact on savings whereas classicals

believe that saving is the direct function of rate of interest.

7. **Monetary Factors Ignored:** Keynes argued that interest is purely a monetary phenomenon but classicals have attributed interest as a reward for abstinence, sacrifice, waiting and productivity but ignores the impact of monetary factors like role of monetary policy, speculation etc.
8. **No Automatic Equality between Market and Natural Rates of Interest:** According to classicals, real rate of interest and market rate of interest ultimately coincides in the long run. There may be short run disequilibrium between them, but in the long run they will always be equal. But Keynes disagreed on this and said that as the supply of loanable funds increase in the market by expansion of bank credit, there will be corresponding fall in the market rate of interest below the equilibrium or natural rate of interest, so there is no automatic mechanism of equality between market rate of interest and natural rate of interest.

Loanable Funds Theory of Interest or Neo Classical Theory

Loanable funds theory of interest was propounded by Swedish economist (Knut Wicksell) and further it was developed and elaborated by Bertil Ohlin, Robertson, Gunnar Myrdal, Jacob Viner, Pigou etc.

Loanable fund theory or neo-classical theory states that rate of interest is determined by the demand and supply of loanable funds. "Interest is then basically the price of credit". According to Prof. Lerner, "It is the price which equates the supply of credit".

To analyze the neo-classical theory, we have to understand the basic concepts of demand of loanable funds and supply of loanable funds and what they constitute.

Demand for Loanable Funds

Principally there are three forces who determine the demand for loanable funds, but the primary question is who demands loanable funds. Demand arises from business houses, govt. and individuals and the reason for the demand are need to invest, to hoard and to dis-save.

1) Investment(I) 2) Hoarding (H) 3) Dissaving (DS)

1. **Investment(I):** Generally, demand for loanable funds arises from the business houses, corporates, entrepreneurs for the purpose of investment. Demand for investment will be more at the low rate of interest and vice versa. Investment has an inverse relationship with rate of interest and hence slopes downwards.
2. **Hoarding(H):** The business firms and individuals want to hoard money and loanable funds in cash form to satisfy their urge for liquidity. Hoarding is also inversely related with rate of interest. At higher rates of interest, lesser loanable funds will be hoarded and vice versa and that is why hoarding curve also slopes downwards from left to right.
3. **Dissaving (DS):** It is the opposite of saving. People may require more funds for consumption at a lower level of interest rates and vice versa. So, dissaving curve is also negatively sloping and inversely related to the rate of interest. Sometimes people may use past saving or they borrow from other sources to fulfill their present consumption needs.

Demand for loanable funds is the aggregate of investment, hoarding and dissaving.

$$\Sigma D = I + H + DS \quad (i)$$

2. Supply of Loanable Funds

The main sources of supply of loanable funds are saving, dishoarding, disinvestment and bank money:

a) Savings

Savings are generally generated from the households, business sector and govt. sector. Savings are the direct function of rate of interest. At higher levels of interest rates, there will be more savings and vice versa, hence saving curve moves upwards and has a positive slope.

b) Dishoarding

It represents purchase of old assets or securities from others out of idle cash balances of one's own fund for investment or for consumption in excess of income. At the higher rates of interest, people will offer larger amount of loans to others from their hoarded sources on the other hand at lower rates of interest incentives for dishoarding will be weak. It has a direct relation with rate of interest.

c) Disinvestment

Business houses maintain depreciation and replacement funds. If they have to withdraw portion of funds from these maintained funds, it is called as disinvestment. If the rate of interest is high, there will be more inducement for disinvestment and vice versa.

d) Bank Money

Bank money is the major component of supply of money. Banking institutions provide credit to the customers. At higher rates of interest, there will be larger flow of credit from banking sector to business sector and vice-versa.

Supply of Loanable Funds

It is the summation of savings (S), dishoarding (DH), disinvestment (DI) and Bank money (M). The supply of loanable funds can be written in the form of equation as follows:

$$\Sigma S = S + DH + DI + M \quad (ii)$$

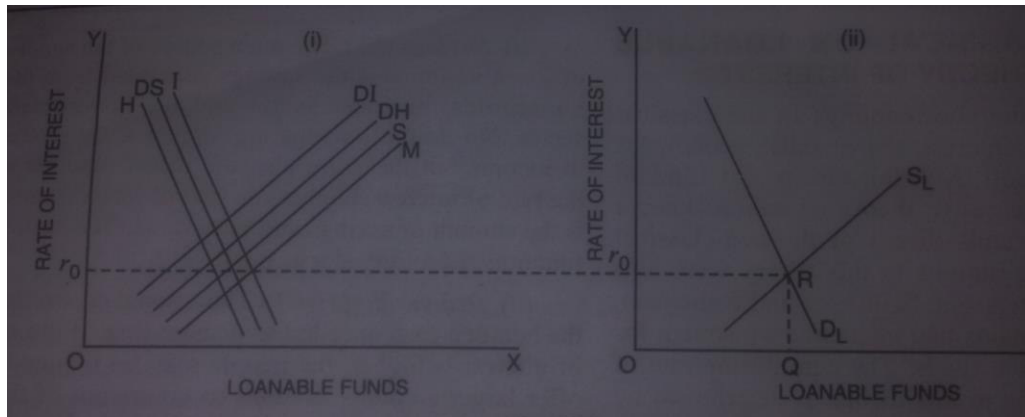
Determination of Rate of Interest

Rate of interest will be determined at that point where demand for loanable funds will be equal to supply of loanable funds.

$$D_L = S_L$$

$$I + H + S = S + DH + DI + M$$

Equilibrium rate of interest determined can be shown in figures 16.6:



**Figure 16.6: Equilibrium Rate of Interest
determination under Loanable Funds Theory**

In fig (i) H, DS, I i.e. hoarding, dissaving and investment represents the demand for loanable funds sloping negatively from left to right and DI, DH, S, M represents the supply of loanable funds which means disinvestment, dishoarding, saving and bank money curves. All these curves are in upward direction sloping positively. So is the rate of interest which is determined at the point of intersection of D_L and S_L funds as shown in fig (ii)

It is a better version of classical theory because they have integrated real and monetary factor in the theory. They have involved concepts like bank money and hoardings which influences upon interest which were completely ignored by classicals. So neo classical theory is more realistic. Neo-classical has attached importance to the concept of hoarding or preference for liquidity in their approach which later on became the cause for the development of Keynesian theory.

Criticism

Neo-classical theory has been criticized on following grounds:

1. Assumption of Full Employment is Unrealistic

Full employment case in reality is impossible or improbable. There may be a case of

under employment equilibrium or over full employment equilibrium as stated by Keynes, so the assumption of full employment in the economy is unrealistic.

2. Constant Level of National Income is Not Possible

At higher levels of rate of interest people tends to save more and this higher level of rate of interest also have the impact on income, but neo-classicals does not provide any explanation on this issue. According to neo-classical theory, national income remains constant which is practically not possible.

3. Indeterminate Theory

Keynes criticized this theory on the ground that it does not determine the level of interest. Even E.H. Hansen says that “the schedule of loanable funds is compounded by savings plus net additions to loanable funds from new money and dishoarding of idle balances. But since saving portion of schedule varies with the level of disposable income it follows the total supply schedule of loanable funds also varies with income making the rate of interest indeterminate.”

4 Saving Interest Inelastic

Theory stresses the role of interest on savings, but in reality, saving is the function of income and is interest inelastic, proper tend to save just not for the sake of interest, but to satisfy precautionary motive.

5. Real and Monetary Factors Not Inter-Related

It is not justified to combine real and monetary factors like saving and investment with bank credit and dishoarding without bringing the changes in level of income. So the theory has no practical basis to hold true.

Some economists like H.G. Johnson claims that neo-classical version is actually superior to Keynesian theory of interest. According to H.G. Johnson “Keynesian theory is static seeking only to explain the state of affairs in short period equilibrium and how changes in circumstances will alter the equilibrium values, while the loanable fund theory is

dynamic and seeks to explain precisely how interest and income move from one equilibrium level to another when circumstances have changed.”

Keynesian Liquidity Preference Theory of Interest

Liquidity preference theory of interest is propounded by J.M. Keynes in his book entitled “The General theory of Employment, Interest and Money.” In the words of Meyer “Liquidity preference is the preference to have an equal amount of cash rather than claims against others.”

According to Keynesian theory, interest is purely a monetary phenomenon, because it is determined by demand and supply of money. Demand for money is made for day to day transactions or to lend money to others or to meet any exigencies or for the speculative purposes. People would rather like to have money in cash or liquid form and would prefer it to lending. So this preference for liquidity is called liquidity preference. They will only part from liquidity if they get some reward on it, this reward for parting with liquidity is called as interest.

Keynesian Definition of Interest

According to Keynes, “Interest is the reward for parting with liquidity for a specified period”. People can hold money or wealth in different forms such as money, debentures, government securities etc. The wealth in form of debentures and bonds are first to be converted into money, they may cause inconvenience to the holder and is a risky venture, sometime holders have to bear losses also, so the holder will only be prepared to take such a risk if the reward is high, so according to Keynes, “The rate of interest is the premium which is to be offered to induce the people to hold wealth in some form other than the hoarded money.”

Determination of Interest

Interest is determined by the forces of demand for and supply of money. Interest will be determined at that point where demand will be equal to supply of money.

I. Demand for Money or Motives for the Demand for Money

Demand for money according to Keynes is nothing but preference for liquidity. Keynes attributed two main functions of money. 1) Medium of exchange 2) Store of Wealth. As a medium of exchange, it helps in buying goods or is used for transaction purposes and as a store of wealth it indulges in speculative activities, so money is basically demanded for three main reasons. 1) Transaction purpose 2) Precautionary motive 3) Speculative motive.

1) Transaction Motives

People want to hold money in cash form to meet the daily expenditure or needs like to buy bread, butter, milk etc., money is demanded in liquid form for transaction purposes or to buy commodities on day-to-day basis. If the size of income is large there will be more preference for liquidity for transaction purposes. The demand for transaction purposes depends upon i) size of income ii) the time gap between the receipt of income iii) mode of expenditure. Demand for money for transaction purposes depends upon the level of income.

$$L_t = f(Y)$$

Liquidity preference (L_t) for transaction purposes is function of income (Y).

2) Precautionary Motives

Individual, business firms have to face unforeseen circumstances, exigencies, accidents and uncertainties of future. So they would like to keep money in cash form, in order to face such situations like sickness, unemployment, fire, theft, accidents etc. Even firms need to keep cash to provide for sudden break down of machinery, losses in business etc. Liquidity for precautionary motive depends upon the levels of income and is positively related to income

$$L_p = f(Y).$$

Liquidity preference or demand for money for precautionary purposes is a direct function of income.

Combined demand for money for both transaction and precautionary motive can be stated as follows as both of them depends upon the level of income:

$$M_t = L_t + L_p = f(Y)$$

It can be expressed in a diagrammatic form also as follows:

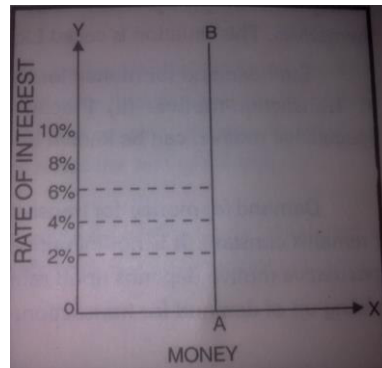


Figure 16.7: Demand for money for transaction and Precautionary Motive

AB line represents demand for money for transaction and precautionary motives. AB line is parallel to OY axis showing that Demand for money for these two motives remains. OA, irrespective of any changes in interest rates. It means that demand for both transaction and precautionary motives depends upon the level of income and is interest inelastic.

3) Speculative Motive

In the words of Keynes speculative motive is the motive of earning profit from knowing better than the market what the future will bring forth. If the rate of interest is expected to rise in future, speculators would like to dispose of bonds or assets and vice versa. In other words, liquidity preference for speculative motive which Keynes also termed as idle or passive balances is an inverse function of the rate of interest.

$$L_s = f(r)$$

Where Liquidity for speculative (L_s) motive is inversely related to rate of interest(r).It can be expressed in diagrammatic form as given below in figure 16.8:

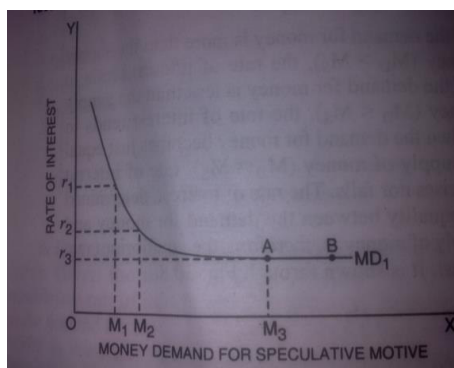


Figure 16.8: Money Demanded for Speculative Motive

INTEREST- CONCEPT AND THEORIES OF INTEREST:

On OX axis money demand for speculative motive is measured and on OY axis rate of interest is measured along vertical scale.

At r_3 rate of interest M_1 is the speculative demand for money. As the interest rate falls from r_3 to r_2 , speculative demand for money rises from M_1 to M_2 and if the interest rate further falls from r_2 to r_1 , speculative demand for money further rises from M_2 to M_3 exhibiting an inverse relationship.

Total Demand for Money

It is sum of active balances and idle balances:

$$M_D = M_{DA} + M_{DI}$$

$$M_{DA} = f(Y)$$

$$M_{DI} = f(r)$$

$$\text{Hence, } M_D = L(Y, r)$$

The total demand for money can be derived from the lateral summation of transaction, precautionary which is active balance (M_{DA}) and speculative idle balances motive (M_{DI}).

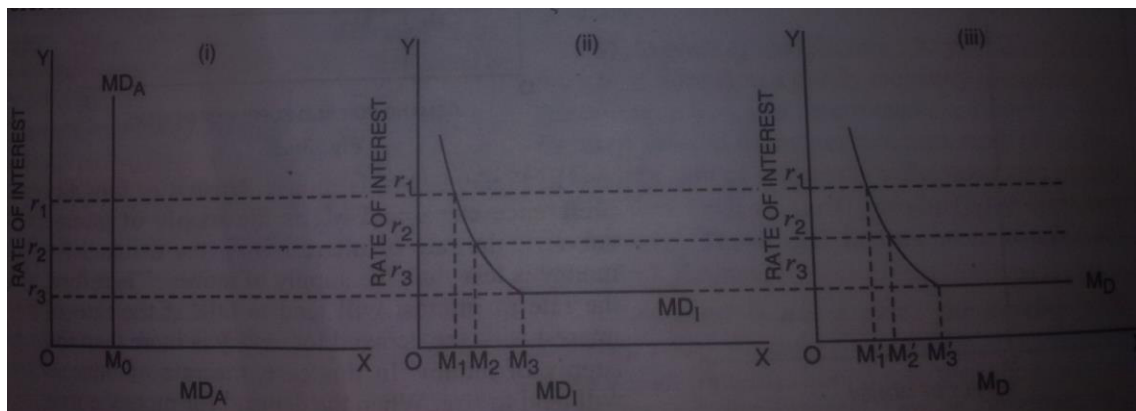


Figure 16.9: Total Demand for money

In figure 16.9(i) M_{DA} is perfectly interest inelastic, M_{DI} according to fig (ii) is inversely related with rate of interest as shown and M_D (total demand) in fig. (iii) is summation of $M_{DA} + M_{DI}$.

Determination of Equilibrium Rate of Interest

Equilibrium rate of interest will be determined where $M_D = M_S$, so the question here is what is supply of money.

Supply of Money

According to Keynes supply of money is governed by the central bank of the country. It undertakes the open market operations, vary the reserve requirements which in turn influences the supply of money. Supply of money is interest inelastic and is measured along the vertical axis.

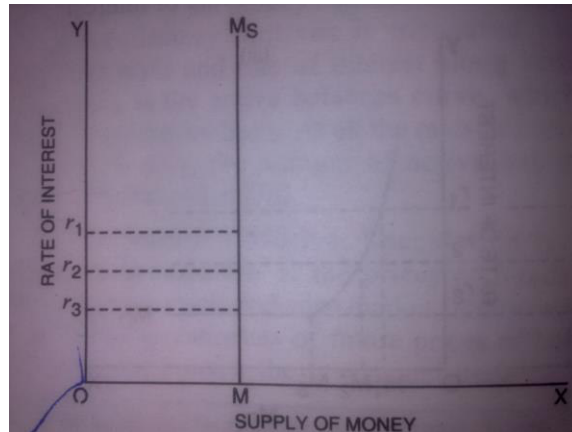


Figure 16.10: Interest Inelastic Supply Curve

MS is the money, supply curve which is parallel to OY axis and is a straight line showing, that it is completely interest inelastic.

Equilibrium Rate of Interest

Equilibrium rate of interest is determined at the point where money demand is equal to money supply.

$$M_D = M_S = r$$

If the demand for money is more than supply, rate of interest tends to rise and vice versa.

If $M_D > M_S$, then rate of interest will rise

If $M_D < M_S$, then rate of interest will fall

If $M_D = M_S$, equilibrium rate of interest will be determined.

It can be shown in diagrammatic form as well as follows:

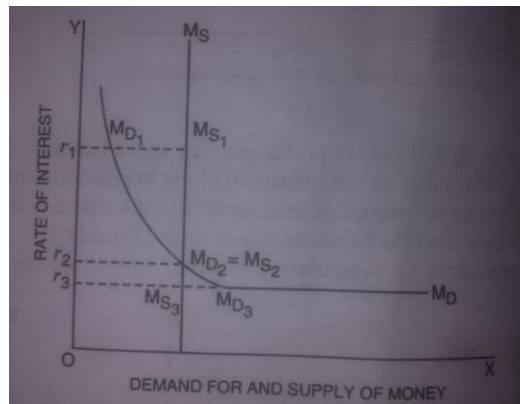


Figure 16.11: Equilibrium Rate of Interest

In figure given above M_D is money demand and M_S is money supply. If the rate of interest is r_1 demand is less than supply, therefore rate of interest tend to fall and is the rate of interest is r_3 demand for money is more than supply of money, rate of interest will rise. At r_2 rate of interest there is equality between demand for money and supply of money. This is equilibrium rate of interest.

Concept of liquidity Trap

A situation where interest rate is very low and no one expect them to fall any further. Liquidity trap means when the interest falls below particular level, people will not part with liquidity. They would like to hold it and they would not lend it to anybody. Because the rate of interest is a reward the people expect that by investing their money in securities or bonds, they may have to suffer losses or inconveniences, if they don't get any reward they would not like to part with their liquidity. There is a minimum level of interest below this level interest rate cannot fall further, people would be in trap to keep their money in cash form rather than risking it in some other venture

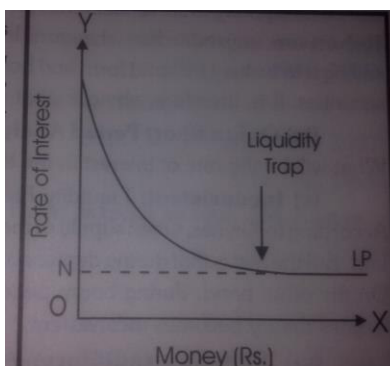


Figure 16.12: Liquidity Trap

At OX level we have taken money and on OY axis rate of interest. As shown in diagram at ON level of rate of interest LP curve becomes parallel to OX axis this means people would not like to part with liquidity anymore, they would keep their money in cash form and the rate of interest would not fall from this minimum level any further.

Criticism

Prof. Hansen, Hazlitt, Don Patinkin etc. have criticized the theory on the following grounds:

1. Inconsistent Theory

It is not based on empirical facts. According to Keynes, when supply of money is less then rate of interest rises and vice-versa. But in reality during boom supply of money is more still rate of interest rises and during depression with the lesser supply of money rate of interest falls. Hence, the theory is inconsistent.

2. Role of Saving Ignored

According to Hazlitt, without saving the question of parting with liquidity does not arise. Savings is a main source for investible funds. Even Jacob Viner pointed out “without savings there can be no liquidity to surrender.” Robertson also emphasized on the role of savings and individual firstly and foremostly decides after earning his income what part of it is to be saved and what to be invested, so without savings there can be no liquidity.

3. Indeterminate

Keynesian theory is indeterminate and is based on circular reasons. Keynes assumes a particular level of income and then draws a liquidity preference schedule. When income changes, a new LP schedule is to be drawn, so there is no determinacy point.

4. Over Emphasis on Monetary Factors and Omission of Real Factors

According to Prof. Hazlitt Keynes has ignored the role of productivity, abstinence, time preference which are real factors and important determinants. Keynes has attributed interest as a purely monetary phenomenon which is a wrong assertion. Interest is basically a synthesis of both monetary and real factors.

5. Self Contradictory

Prof. Hazlitt termed Keynesian theory as self contradictory. If a person keeps surplus wealth in the form of bank deposits or short period treasury bills, then he gets interest on it, i.e. he earns interest and also enjoys liquidity. It is wrong to conclude that the interest is reward for parting with liquidity.

6. Based on Unrealistic Assumptions

According to Tobin, short term debentures give people advantage of both liquidity as well as interest, so the speculative demand for money is both dependent on income and interest.

7. Based on Short Period Analysis

Keynes himself commented that in the long run we may be buried or dead, so what will be the impact of interest rate changes in future, he has no answer.

8. Liquidity just not Based on three Motives

Liquidity can have other motives too, like deflationary motive, convenience motive, business expansion etc.

Hicks-Hansen Model

J. R. Hicks and A. H. Hansen have provided a determinate model of interest. They have criticized neo-classical theory and Keynesian version of interest on the ground that these theories assumed interest as given or preexisting and these theories were based on partial equilibrium analysis. Hicks and Hansen has based their model on general equilibrium analysis and stressed that it must involve multitude of variables like:

1. Investment Demand Function
2. Consumption Function
3. Liquidity Preference
4. Supply of Money Function

INTEREST- CONCEPT AND THEORIES OF INTEREST:

According to Hicks and Hansen the necessary requisite for a determinate solution to the rate of interest consistent with general equilibrium analysis is that the rate of interest and level of income should be determined simultaneously.

Simultaneous equilibrium in money market and real market will provide determinate solution to the rate of interest. So, Hicks and Hansen have synthesized monetary and real factors. To achieve this objective following two conditions must be fulfilled:

- i) Ex ante Savings should be equal to ex ante investment.
- ii) Demand for money must be equal to supply of money

Derivation of IS and LM functions

IS function is derived from the real market functions where ex ante savings should be equal to ex ante investments i.e. $S = I$.

$I = f(r)$ i.e. Investment Function

$S = f(Y)$ i.e. Saving Function

$S = I$ i.e. Equilibrium Function

These functional relations can be expressed diagrammatically as follows:

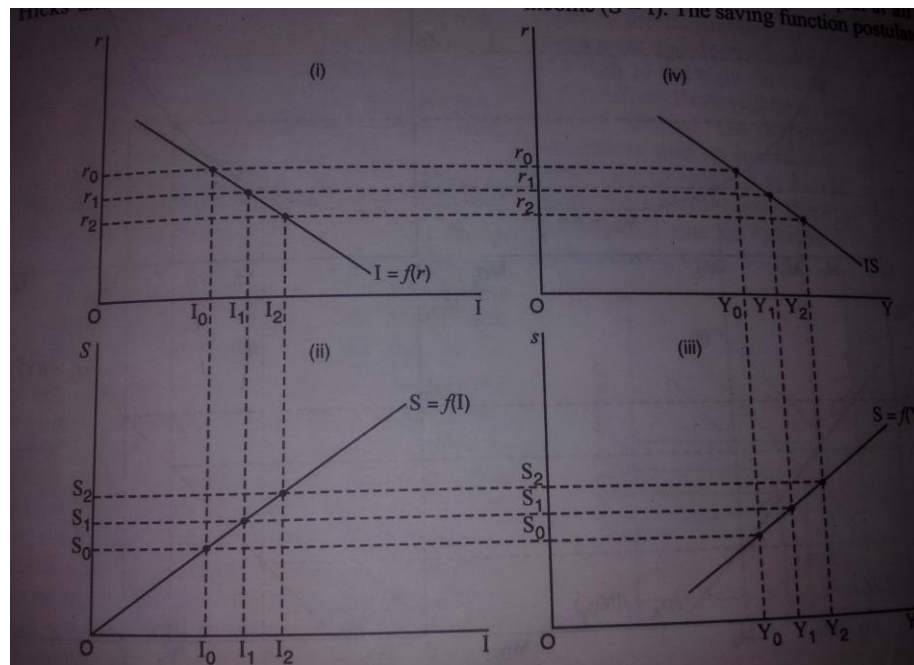


Figure 16.13: Derivation of IS function

INTEREST- CONCEPT AND THEORIES OF INTEREST:

In figure 16.13, $I = f(r)$, investment is inversely related to rate of interest shown in the figure. In figure ii, given is $S = f(I)$ which is 45-degree line exhibit different levels of savings at different levels of investment. In figure iii, given is $S = f(Y)$, at different levels of Y_0, Y_1, Y_2 corresponding savings level are shown as S_0, S_1 and S_2 . In figure iv, with given rate of interest r_0, r_1 and r_2 and their corresponding level of income Y_0, Y_1, Y_2 . IS is the investment saving curve which is drawn from respective interest rate and income levels and it slopes downwards.

Elasticity of IS function depends upon elasticity of saving and investment both. The investment saving function shifts to the right when there is increase in investment and vice-versa.

Derivation of the LM function

LM function stands for liquidity demand for money function and can be derived from money market equilibrium where $M_D = M_S$

$MD_1 = f(r)$ represents idle balance function

$MD_A = f(MD_1)$ represents equilibrium function

$MD_A = f(Y)$ represents active balance function

$MD_1 = f(r)$ is inversely related to the rate of interest.

$MD_A = f(Y)$ it is directly related with the level of income

These functional relationships can be expressed diagrammatically as follows:

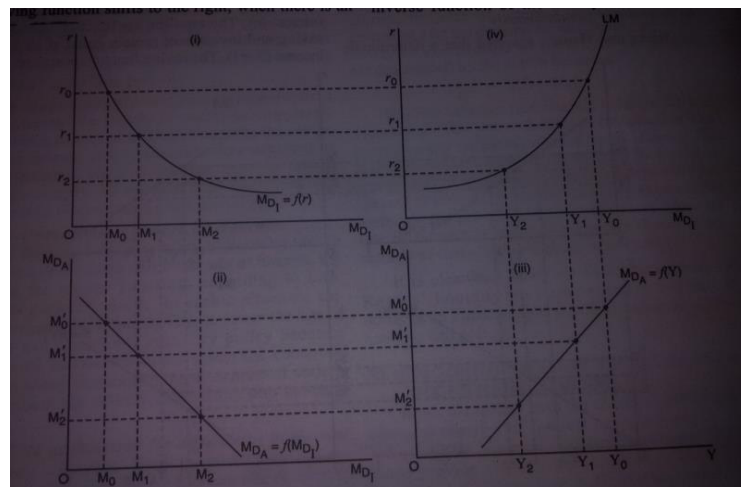


Figure 16.14: Derivation of LM function

In figure 16.14(i) MD_1 i.e. idle cash balances is inversely related to rate of interest. In figure 2, $MD_A = MD_1$ the amount of idle cash balances M_0, M_1, M_2 are shown correspondingly with active balances M_0', M_1', M_2' . In figure iii, $MD_A = f(Y)$ which exhibits that active balances are the direct function of level of income. In figure iv, with give rates of interest as r_0, r_1 and r_2 and corresponding levels of income Y_2, Y_1 and Y_0 LM function can be established.

Elasticity of LM function depends upon the elasticity of idle balance function for the liquidity preference. LM function shifts to the right if there is increase in the preference for speculative motive and decrease in money supply and vice-versa.

Determination of Equilibrium Rate of Interest

Equilibrium level of interest and income will be determined simultaneously where the IS and LM function will be intersected. Equality between IS and LM function will bring the equilibrium rate of interest as is explained in the figure given below:

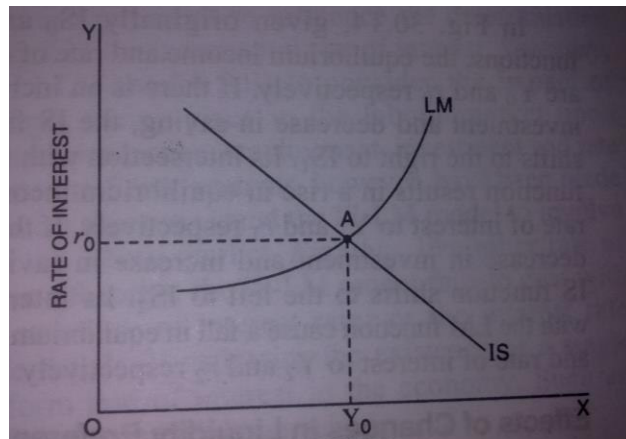


Figure 16.15: Determination of Equilibrium Rate of Interest

On OX axis we have taken income and OY axis rate of interest is measured. E is the equilibrium rate of interest, where IS and LM curves have intersected. IS curve as shown in the diagram slopes downward and LM has positive slope. At this, equilibrium level of income Y_0 , is also determined and both income and interest are determined simultaneously in this model.

Criticism

1. Based on closed economy

It does not take the effect of international trade on the changes in interest rates.

2. Not a Dynamic Theory

It does not explain the long run changes in the income and interest level and how the time lag influences these two important forces.

3. Price level a Passive Factor

Price level is assumed as a passive factor but in reality it plays a major role in determining the level of income and interest.

4. Concept of Flexible Rate of Interest

In reality interest rate is rigid not flexible, automatic adjustment does not hold true in case of interest rate movement. It becomes sticky.

5. Oversimplified Theory

According to Patinkin, it is oversimplified theory as it divides economy into two sectors. Real sector and monetary sector but in reality, these sectors are interdependent and interrelated and have the continuous impact on each other.

16.5 SUMMARY

In general interest is the reward for parting with liquidity, it is the premium received for sacrifice, abstinence, waiting etc. Basically, to determine the interest, synthesis of both real and monetary factors is essential. Modern theory of interest based on general equilibrium analysis finds a determinate solution. The other theories have their own merits and demerits but we cannot ignore the impact of these theories as they have contributed significantly in analyzing the concept of interest.

16.6 GLOSSARY

- **Compound Interest:** The total payment made by the borrower for the use of borrowed funds.
- **Simple Interest:** Payment made for the use of principal amount only.
- **Liquidity Trap:** A situation in which expansionary monetary policy does not increase the interest rate, and the interest rate falls to a very low level.

16.7 CHECK YOUR PROGRESS

A. Fill in the blanks

- (i) Agio theory of interest is propounded by
- (ii) According to Marshall – ‘Interest is the reward for
- (iii) Demand for loan able funds includes investment demand..... and dis-savings or consumption demand.

B. True/False

- (i) Equilibrium is determined where
 $I + C + H = S + BM + DI + DS$ (using symbols)
- (ii) According to classical theory if $I > S$, rate of interest will fall.

16.8 ANSWERS TO CHECK YOUR PROGRESS

A. i. Bohm Bawerk ii. Waiting iii Hoarding

B. i. True ii. False

16.9 TERMINAL QUESTIONS

1. Discuss the modern theory of interest in detail.
2. Prove the superiority of Neo-classical theory over the classical version of interest.
3. Which is the determinate theory of interest? Discuss it in detail.
4. Critically analyze the Keynesian liquidity preference theory of interest.

16.10 SUGGESTED READINGS

1. Yogesh Maheshwari, *Managerial Economics*, Prentice Hall of India, New Delhi.
2. D.N. Dwivedi, *Managerial Economics*, Vikas Publishing House Pvt. Ltd., New Delhi.
3. T.R. Jain and O.P. Khanna, *Business and Managerial Economics and Industrial Organization*, V.K. Publications, New Delhi.
4. M.L. Ahuja, *Advanced Economic Theory*, S. Chand & Co. Ltd., New Delhi.
5. Amitabh, *Managerial Economics*, Excel Books, Delhi.
6. R.L. Varshney and K.L. Maheshwari, *Managerial Economics*, Sultan Chand & Sons, New Delhi.

UNIT 17- THEORIES OF WAGES

Unit Structure

17.1 Introduction

17.2 Nominal and real wages

17.3 Factor affecting the real wages

17.4 Theories of wages

17.5 Collective bargaining and wages

17.6 Wage differentials

17.7 Concept of exploitation of labour

17.8 Summary

17.9 Glossary

17.10 Check Your Progress

17.11 Answers to check your progress

17.12 Terminal Questions

17.13 Suggested Readings

OBJECTIVES

After studying this unit, students will be able to:

- Understand the concepts of wages.
- Explain the factors that determine real wages.
- Describe the theories of wage determination.
- Understand the role of trade unions and collective bargaining.
- Understand the process of wage determination under bilateral monopoly.

17.1 INTRODUCTION

Theories of Wages

Wages are the payments received for the factor services rendered by the labour and the contribution made to the total product in the economy. Wages are the main ingredients of national income. According to Pigou, wages are the dividend paid out of the proportion of national income. Wages may be paid in the form of monthly salary, fortnightly, or on weekly basis or even on daily basis. Sometimes share of produce is given as wages to the labour. Wages are determined on the basis of demand and supply of labour. Wages are sticky downwards i.e. if there is a tendency of very low wages, workers would rather like to sit at home rather than doing work. There is a relationship between leisure and work, if the workers are motivated and they are given leisure hours during their work, even they are offered compensation for the extra hours they put in then, they will certainly do better work, their productivity will increase leading to more demand in the market. Today in the modern economy, to retain themselves in the jobs labourers need to acquire new skills and develop themselves according to the environment.

Concept of Wages

A wage may be defined as the reward for the mental or physical services rendered by the labourer. Wages may be paid in kind or cash by the employer. When these wages are paid to labourers in terms of money, they are called as money wages or nominal wages, when these wage are paid in kind i.e. share output is paid they are known as commodity wages, when wages are paid to the worker per unit of time, say per day, week month etc. they are known as time wages, when wage is paid for completion of specific task, the wage is known as task wage. Another category is of piece wage i.e. salary of the labourer is given on per unit of output basis. The most pertinent form of wages is nominal or money wages and real wages.

17.2 NOMINAL AND REAL WAGES

The nominal or money wages are the monetary wages actually paid to the worker for the services rendered by him. They are paid in terms of cash value or in money form. Suppose a labourer is getting Rs. 200 per day and he is working 28 days in a month, then his monetary wages or nominal wage in a month will be equal to $200 \times 28 \text{ days} = \text{Rs. } 5600$.

Real wages signify the purchasing power of monetary wages. When wages are to be evaluated on the basis of prevalent price index, they are known as real wages.

Theories of Wages

$$\text{Real wages} = \frac{\text{Monetary wages}}{\text{Prices}}$$

Real wages include broadly the money amount in terms of salary, other fringe benefits paid in kind or bonus, extra facilities like housing, food and clothing to labourer. They have greater relevance as they measure the standard of living of the labourer.

17.3 FACTOR AFFECTING THE REAL WAGES

Following are the main factors which affect the real wages of the workers.

1. LEVEL OF PRICES

Real wages of the workers vary inversely with the level of prices. If the prices of the commodity are higher, then the real wages will be low and if the prices of the commodities are low, then the real wages will be high, because it will signify that purchasing power of money is more in case of low prices and vice-versa.

2. SUPPLEMENTARY EARNINGS

If the worker is earning through some supplementary job or by working overtime, it means his real wages are higher. For

example, A medical practitioner is earning through his govt. job Rs. 10,000/- and additionally he is enjoying his private practice and his supplementary income through that practice is Rs. 5000/-, so his total income will be Rs. 15,000 gross. This shows his real wages are relatively higher.

3. CONDITIONS OF WORK

If the condition of work is hard, long hours, stressful life, lesser holidays and ill treatment in the working environment, then the real wages will be low because the labourer may fall ill, had to take medicines involving extra expenditure.

4. EXTRA WORK WITHOUT EXTRA PAYMENT

If the laborer is putting extra hours of work without incentive, then the real wages will be low even if the nominal wages are higher. Suppose a secretary has to attend the office for longer period than the other employee, her wages are less despite higher nominal wages.

5. METHOD OF WAGE PAYMENT

Theories of Wages

If the payment is made to the worker in kind, the quality of the good may not be good or appropriate to their needs, so the workers will not get desired satisfaction from those goods, consequently the real wages are said to be lower.

6. PERIOD AND COST OF TRAINING

In certain professions extensive and expensive and prolonged training is involved i.e. in case of doctors, lawyers, engineers, CA's etc. In these cases, even if the money wages are higher real wages are low because of the investment value involved in these professions.

7. SOCIAL STATUS

Some jobs entail greater social prestige and authority upon the worker e.g. I.A.S. officer although is getting lesser money wages than the politicians but the work satisfaction is higher and social status and position is esteemed in the society, so his real wages will be more.

8. FUTURE PROSPECTS

If the future prospects of the job are better i.e. there is a chance of promotion, brighter prospects then real wages are supposed to be higher even though money wages at present are low, if the job does not carry prospects of future progress, then the real wages are low.

9. REGULARITY OR IRREGULARITY OF EMPLOYMENT

If the job continuous, regular, on full time basis, it involves greater security. In this case even if money wage are low, real wages tends to be higher. On the other hand, if the job is part time, discontinues, then the worker will have to rely on past saving which means even if his present money wages are higher, his real wages are low.

10. PLACE OF EMPLOYMENT

If the person or worker is employed in a city or town where the basis amenities are well developed and his work place is nearby his real wages will be higher as it involves lesser transportation costs. On the other hand, if he has to commute on daily basis, he has to shell some amount of money in travelling and his real wages will be low.

17.4 THEORIES OF WAGES

Many theories have been put forward from time to time to explain wage determination. The prominent theories have been discussed as follows:

I. THE SUBSISTENCE THEORY

Theories of Wages

The subsistence theory of wages was propounded by the physiocratic school French economists of 18th century. The theory was developed later by German economists and they call it 'iron law of wages'.

According to this theory labour power is to be treated as a commodity and its price will be determined on the basis of cost of production. Its cost of production will be minimum subsistence level required to maintain the labour and its family, so that continuous supply of labour is maintained. The iron law of wages asserted that if wages rose above subsistence level and increase in population would inevitably follow. Thus, forcing wages come down again to subsistence level. On the other hand, if wages fell below the subsistence level there would be reduction in population through starvation or diseases, consequently shortage of supply of labour will be there. This tendency will continue till wages resort back to the minimum subsistence level.

CRITICISM

One Sided Theory

It just gives emphasis on the supply side of labour, ignore the role of demand which is highly important.

Wrongly Based on Malthusian Theory of Population

Malthusian theory of population is a controversial theory and highly disregarded in western economies, hence subsistence theory which is based on this controversial theory has no essence left.

Highly Pessimistic Approach

It presents a very dark future for the working class. It shows that they cannot rise above subsistence level which means their future is bleak with no hope.

Historically Not Correct

Past experience shows that rise in wages may not be accompanied by increase in population, rather it is followed by decrease in population growth rate as sophistication and higher standard of living curtails birth rate.

Unable to Explain Difference in Wages

Theories of Wages

There is heterogeneity of wages in the labour market. If the wage rate is to be maintained at a subsistence level, then why there is no uniformity in the wages. So theory fails to explain why there is different category of wages paid to the different labourer.

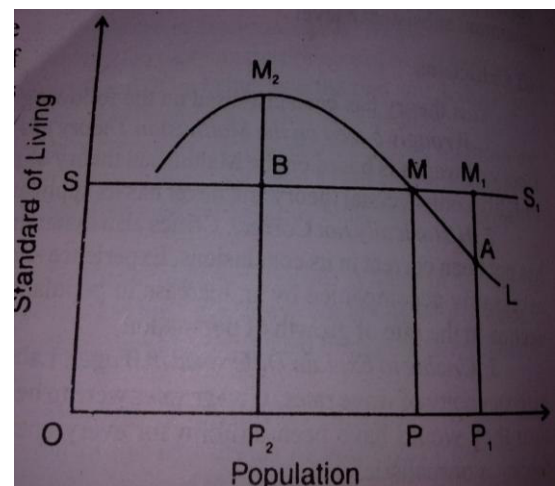
No attention to Efficiency and Production

According to this theory, wages ultimately tend to be equal to subsistence level but in reality it does not happen like this because differ in efficiency and production. Those who are skilled and efficient will get more wages than the other.

II. Standard of Living Theory of Wages

This theory was first of all propounded by classical economists who tried to give better version to the subsistence theory of wages. This theory states that in the long run wages tends to be equal to the standard of living of the labourer. The concept of standard of living is the way the workers are used to living, i.e. some kind of habituation for their living style and there is comfort zone, they want to maintain the comfort zone of standard of living. It is a comfort zone they have established for themselves, now they neither want to decrease it or increase it. This level is maintained for their physical and biological requirement, it is also determined by the environment in which they live, society, customs, value and norms in which they co-exist, which in turn influence their rearing of their children. If the wages fell below the standard of living they will cease to give birth to the children, as a result population will decline and marginal productivity will increase or rise. On the other hand, if the wages are higher than the standard of living population will rise and marginal productivity will decline, again bringing wages down to the standard of living level. The theory is explained in a diagrammatic version given in fig. 17.1

Figure 17.1: Standard of Living Theory of Wages



OP is the actual population and OM is the standard of living given in the figure, if the population rises to OP_1 level, actual level of living curve will be below the standard of living SS_1 . As shown by the distance AM_1 , workers will stop having

Theories of Wages

children and the supply of labour will decline. On the other hand, if the population falls to OP_2 level, then the actual level of living will be above SS_2 level i.e. BM_2 , workers will have more children, supply of labour will increase and wages will fall. The standard of living of workers will be again at M level at the OP population growth rate.

Criticism

Interdependent

The concept of standard of living and the wages are interrelated and interdependent the theory opines that standard of living determines wages but in reality, standard of living is determined by wages. Both the things are interdependent.

Standard of Living Not Fixed

The theory is based on the assumption that standard of living is fixed as shown in the diagram given above, (Figure 17.1) represented by SS curve but when the wages of the worker increase, the standard of living will automatically increase.

Fail to Explain the Wage Differentials

The theory assumes that the wages tend to be equal to the standard of living, which means that there is uniformity in wages. But there exist different categories of wages for different occupation. Skilled workers definitely get more wages than the others.

Ignores the Demand for Labour

This theory is based on the supply side of labour. Ignores the concept of demand for labour, hence it is purely one-sided theory.

III. The Wage Fund Theory

The wage fund theory was propounded and formulated by J.S. Mill. According to J.S. Mill “Wages depend upon the proportion between population and capital, or between the number of laboring class who work for hire and the aggregate of that may be called wage fund which consists of that part of circulating capital which is expended in the direct hire of labour.

Theories of Wages

Wages are determined by two factors, first is wage fund and the second is population. Wage fund is that fund which is allocated by the entrepreneur to purchase the services of labour and population hereby means the actual supply of labour, the people or population who enters the market for employment. The theory can be summed up in the equation form

$$AW = \frac{\text{Wage Fund}}{\text{Population}}$$

Where AW = Average Wage

This equation shows that wages have direct relationship with wage fund and inversely related with population.

Criticism

1. Labour is not Homogeneous

This theory is based on the assumption that labour is homogenous. But in reality, workers are different in their skill, productivity and efficiency. So, this is the contradictory assumption.

2. No Conflict Between Wages and Profits

This theory says that the increase in wages will automatically reduce the share of profits, but in reality, both wages and profits can rise.

3. Highly Unscientific

There is no validity of the concept of wage fund, because wages are paid from the national income, which is a flow concept, not a stock as wage fund is. So the theory is highly unscientific.

IV. The Residual Claimant Theory

This theory was originated by an American economist, Francis A. Walker “stated that wages of labourer are paid out of the produce of his industry”. In other words, it means that the wages are the residuals after deducting rent and interest from the net product. In the words of the Jevons,

Theories of Wages

“The wages of the working class are ultimately the coincidence with what he produces after the deduction of the rent, taxes and interest on capital”. Theory claims to understand the labour efficiency, if he works more, he will get better share or proportion of the national income. Theory stresses that labour has the power to influence its own market due to his productivity, skill and efficiency.

Criticism

1. Entrepreneur is the Residual Claimant not the Labourer

In reality entrepreneur gets his share after distributing rent, interest and wages. So he is actually the residual claimant and not the workers as claimed in the theory.

2. Ignores the Role of Trade Union

Pressures created by the trade union to enhance wages are totally ignored in the theory.

3. One sided Theory

The theory approaches the problem from the demand aspect of labour, ignores the supply side of labour. Hence, we can say that the theory is one sided.

4. No determination of Rent, Interest and Profits is Possible

The theory is based subjective and normative concepts, it does not have objective basis to determine the level of rent, interest and wages.

V. Marginal Productivity Theory of Wages

Marginal Productivity theory is the conception and work of many writers, each exploring improving, analyzing, amending and modifying the idea developed by the other writers. Firstly, it was put forward by Edward West and David Ricardo in their works “The application of capital on land” and the “Principle of Political Economy”. Earlier theory was used to determine the rent but after Jevon’s introduced the concept of marginal analysis his idea was extended to determine the level of wages. According to the neo-classical writers like Marshall and Pigou wages will be determined according to the marginal productivity of the labour. We can sum up this in a n equation as given below:

Theories of Wages

MPP = Wages

Which means marginal productivity is an addition to the total product by employing an additional unit of labour and it goes on diminishing with each successive employment. An entrepreneur has to take a decision regarding the employment of labour, he consider from his revenue point of view, so he is more interested in marginal revenue productivity.

Marginal Revenue productivity = Marginal Physical productivity X Price of the product.

According to this theory, entrepreneur will be earning maximum profits, where the marginal product of labour will be equal to wages and will suffer minimum losses at this point.

VI. Modern Theory of Wages

Modern theory of wages states that wages will be determined on the basis of demand for and supply of labour. In both the markets like perfect competition and imperfect competition, wage determination will be governed by forces of demand and supply.

1. Wage determination in case of perfect competition

In a perfectly competitive market, there is absence of trade unions. There are certain assumptions of this which are detailed below:

- i) The worker can go to any employer and an employer can employ any worker to suit his needs. There is complete freedom of occupation.
- ii) There are many workers in the market, no single worker can influence the wage structure
- iii) There is full employment in the economy.
- iv) Both workers and employers have perfect knowledge regarding the market.
- v) Perfect mobility in labour market exists.

In a perfectly competitive market wage will be determined by demand and supply forces. In order to understand the wage determination, the concepts of demand and supply need to be clarified.

Theories of Wages

Firstly, demand for labour – labour is demand for the service it generates towards producing the commodity. The demand for labour is dependent on two factors 1) Elasticity of Demand for Labour 2) Elasticity of Demand for the product. The more the elasticity in the demand for the product, then the more elastic is the demand for the labour which makes that product. Specifically, labour is demanded for its efficiency and productivity.

Second, Supply of labour: It means how many workers will offer themselves for employment at each possible wage rate. Generally, if prevalent wage rate is high, more workers will offer themselves and if the wage decline, there will be lesser workers who will come for employment. So, there is direct relationship between supply of labour and wages. Hence there is backward sloping positive curve of supply. Very significant factor in the supply of labour is the worker leisure ratio. At low wages, workers have to work for longer duration, give more time to work and sacrifice leisure, but when the workers' wages rise above the significant level, he feels at ease, he enjoys more leisure and works for lesser hours than before because his needs are met with ease and he does not have to worry about basic things in life. In this case supply curve is backward sloping.

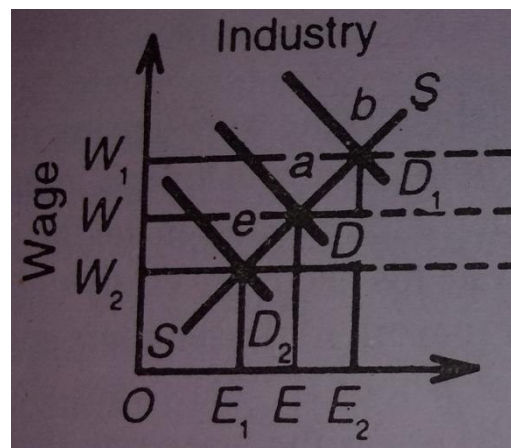


Figure 17.2: Wage Determination in an Industry

Theories of Wages

In figure 17.2 workers are employed at OW wage rate, if the wage rate rises above OW wage rate, more workers will offer themselves for employment and consequently the demand for labourer will reduce and wage rate will automatically come down to OW wage rate which is equilibrium wage rate. If the wage rate gets reduced from OW to OW_2 there will be lesser workers who will be willing to work and demand will be more, hence the employer has raised the wage rate above OW_2 to OW.

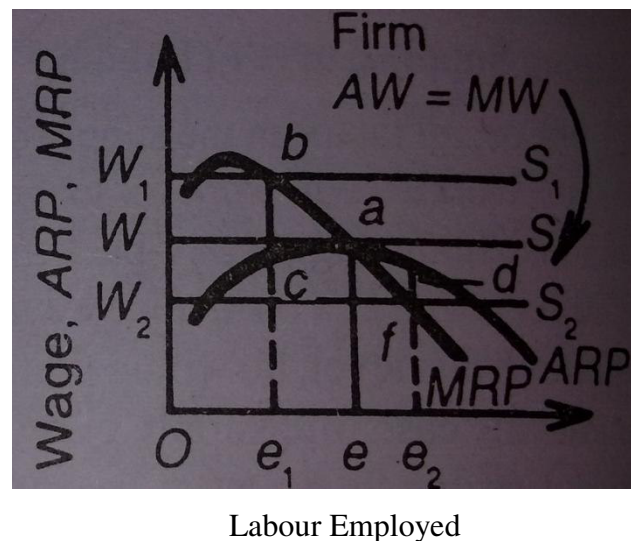


Figure 17.3: Wage Determination in a firm

In figure 17.3 for all firms under perfect competition, wage rate is determined by the industry demand curve and supply curve of labour. In the full employment equilibrium, marginal revenue product of labour is equal to its marginal cost and average revenue product is equal to its average cost.

$$MRP = MW$$

$$ARP = AW, \text{ Therefore } MRP = MR = ARP = AW.$$

2. Wage Determination Under Imperfect Competition

Imperfect labour market means there are lesser number of buyers and sellers. There is a special case of monopsony. This means there is single buyer who buys services of particular type of labour. This kind of market exists in mining towns. Here the labour is immobile, it is

Theories of Wages

specifically trained to work for a particular type of a job, there exists no knowledge or inertia for the labourers to move beyond their geographical territory. In this case buyer or entrepreneur earns super normal profits through exploitation of labour. It can be illustrated through the following figure 17.4:

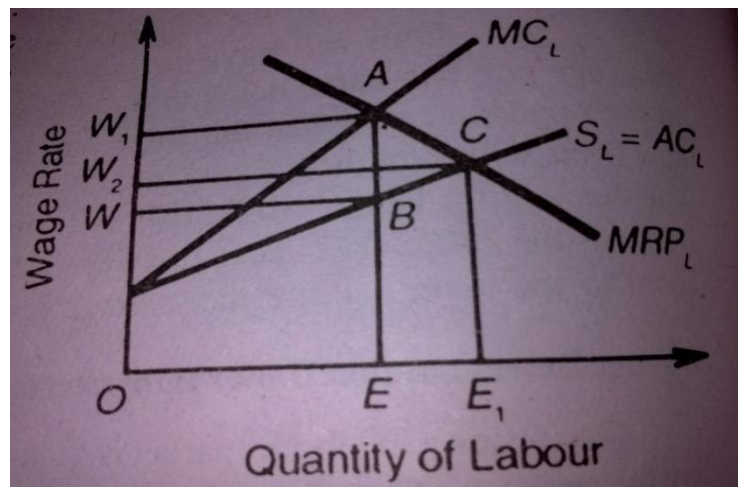


Figure 17.4: Wage Determination under Imperfect Labour Market

In figure 17.4 shows that MC_L is the marginal cost of labour and AC_L or S_L is the supply of labour. MRP_L is the demand for labour. To maximum profits, the monopsonist would employ labour up to the point A at $MRP_L = MC_L$, he will employ OE level of workers, marginal cost is less than marginal revenue, EB wage rate is the marginal revenue product, monopsonist would earn BA profit, in other words $WBAW_1$ super normal profits. On the other hand, by collective bargaining union can demand higher wages and reach up to the point where the marginal revenue product of labourers is equal to wages.

17.5 COLLECTIVE BARGAINING AND WAGES

It is also called as the bilateral monopoly model. When workers unite themselves and organize themselves to form a group to protect their interest and to guard themselves against the exploitation, the concept of labour unions or trade unions emerges. These trade unions carry negotiations on the behalf of workers regarding hours of work, working conditions,

Theories of Wages

social security, wages employment duration and living conditions, it signifies collective bargaining. In the bilateral monopoly model there are two parties, one is seller (trade union) and the other is buyer(monopsonist). In this case through collective bargaining trade unions try to negotiate and put pressure on the monopsonist for higher wages and allied facility, good working conditions etc. They will set upper limit of wages, on the other hand monopsonist would try to convince them for lower wages. Theoretically it is hard to determine wages in the bilateral monopoly model, practically it depends upon the negotiation power, pressure power and capability of each party to inflict losses to the other party and also capability of each party to sustain these losses. The indeterminacy of wage rate in case of bilateral monopoly can be explained through diagram given below:

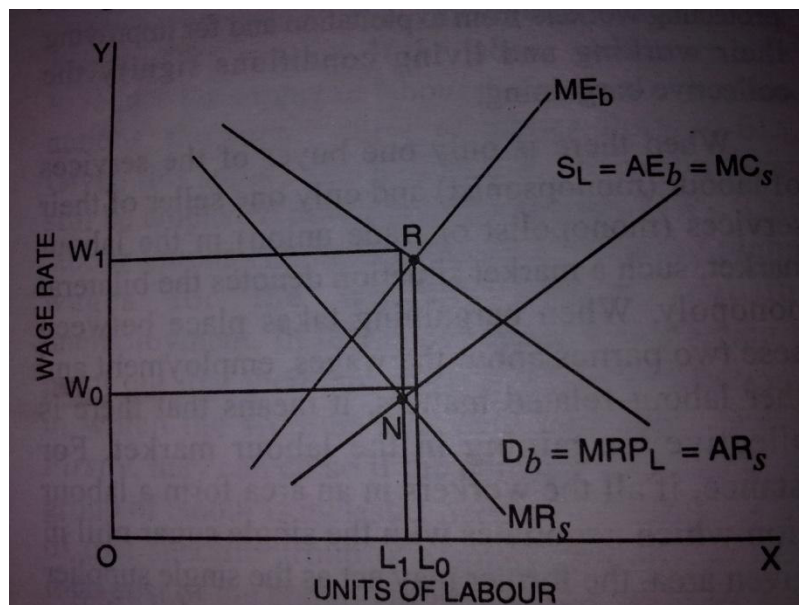


Figure 17.5: Bilateral Monopoly Model

In the above figure S_L is the supply curve of labour. D_b is the demand curve of monopsonist for labour. MR_S is the revenue curve of the seller or trade union. The equilibrium from point of view of the monopsonist would be determined at point R where ME_b is equal to MRP_L . At this point, monopsonist would employ L_0 labour and would pay W_0 wage rate, on the other hand labour union would bargain for higher wages W_1 and would want to employ L_1 units of labour. But there would be indeterminacy as both want to strike bargain for their own

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gain. In reality wage rate will lie between W_O and O_1 depending upon the relative strength of two parties.

Fellner's Bilateral Monopoly Model of Wage Determination

William Fellner has developed the model called as bilateral monopoly model of wage determination by employing the indifference curve technique between employment and wages. According to Fellner if the labour union wants to set a target of higher wages without considering its effect on the level of employment, then the indifference curve will be straight line parallel to OX axis. Higher the indifference curve, higher will be the level of satisfaction signifying the higher wages. This can be explained through figure 17.6 given below:

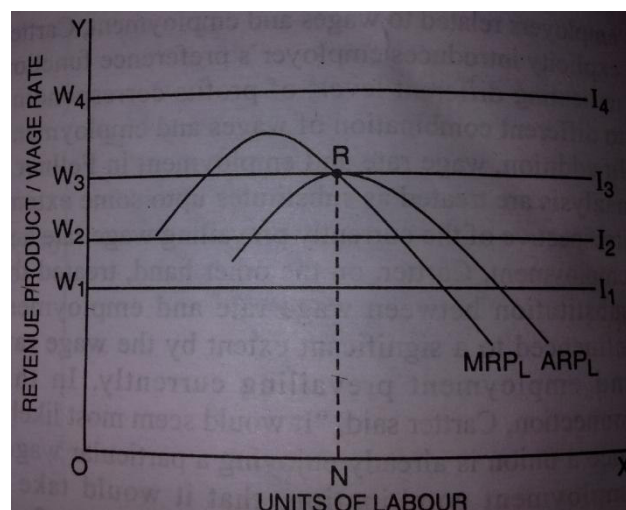


Figure 17.6: Fellner's Bilateral Model

According to Fellner, labour union can determine wages unilaterally as they exhibit their power and strength and don't bother of its effect on level of employment; they will select such a wage rate where the indifference curve will touch ARP_L as shown in the diagram given above and at wage2. I_1 , I_2 , I_3 and I_4 are the corresponding indifference curves and W_1 , W_2 , W_3 and W_4 are their wage rates. The distance between two successive indifference curves goes on increasing indicating larger increments in wage rate are required to satisfy the labour unions. Although labour union is all powerful here, but they cannot go beyond W_3

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wage rate as it will mean losses to the producer after W_3 wage rate cost of production could not be covered so W_3 is the wage rate which will be determined by the labour union.

Minimum Wage Fixation

Minimum wage fixation wage means setting the lower limit of wages by government or government agencies to save guard the interest of labour. Minimum wages does not mean the payment of lowest wages to the workers. It means by enacting a law, government prescribes the minimum wage rate in which no employer is permitted to pay wages below the minimum wage rate. The initial attempt to prescribe minimum wage law was made in New Zealand in 1894. In India, minimum wage act was passed for specified industry. Minimum wage is that wage which provide for the existence and sustenance of life but also for the preservation of the efficiency of the worker. Prof. Dobb defines minimum wages, “the standard rate which a trade union attempts to establish by collective bargaining”.

There are both positive and negative effects for the fixation of minimum wages which are listed below:

Positive Effects

It helps to remove exploitation of labour, it helps to retain industrial peace, no conflict or dispute arises between management and trade unions. If the level the wages is higher then it will have a positive generating effect on the national income. Minimum wages prescription increases the efficiency and productivity of the labourer. It leads to the equitable distribution of income and promotes justice and social welfare.

Negative Effects

Mainly, it impacts adversely on the level of employment and it also gives bad environment to the industry. Firstly, it will have an adverse effect on level of employment, employers will resort to labour saving devices curtailing employment, more wages means they would like to dispense with the existing workers. Fixation of minimum wages would mean lesser profits to

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the employer, so he would curtail his business and would not employ any labourers further. Secondly, it has its negative impact on industry, those industries who cannot afford to pay minimum wages prescribed under the law may face closure. Sometime, minimum wages may become maximum as it curtails the profits of the industrialists. Specifically for the export industry output declines, cost rise and profits shrinks.

17.6 WAGE DIFFERENTIALS

The existence of difference in wages of different kinds of labour in different industries, occupations or regions signifies wage differentials. There are three main reasons for the existence of wage differentials. First is, wage differentials due to the existence of non-competing groups. Second, wage differentials due to heterogeneity of labour. Third, compensating or equalizing wage differentials. According to Adam Smith there are five reasons for wage differential:

1. Agreeableness or Disagreeableness
2. Constancy and inconstancy of employment
3. The small or great trust
4. The probability or improbability of success
5. Easiness and cheapness

Prof. Taussig has given the assertion that wage differentials exist because of non-competing groups, because everybody cannot be skilled and cannot pass art and creativity to the other person. Prof. Taussig distinguished five groups:

- I. The unskilled workers like labourer
- II. Semi-skilled who can mix sand and cement in required proportion
- III. Skilled workers who require special training and skills
- IV. Clerical Workers with specific academic qualifications
- V. Professional group such as lawyers, teachers, physicians, actors and the managers

In India, wage differentials exist due to geographical distances as well as market imperfections. Sometimes in particular context of India, wage differentials exist because of the gender, race and caste discrimination which depicts very sorry state of affairs.

17.7 CONCEPT OF EXPLOITATION OF LABOUR

Exploitation of labour signifies that the labourers are paid quite less as compared to the contribution made by them. It is social, economic and moral problem faced in our economy these days. According to Marx, labour has the surplus power i.e. that is labour contributes more than its price but its interest should be protected and class division should be avoided in the society. Otherwise, one day they will come to the streets fighting for their rights leading to the total failure in the economic system.

Pigou-Robinson concept of Exploitation of Labour

In the words of John Robinson “What is actually meant by exploitation is usually that the wage is less than the marginal product of labour”. It is due to existence of imperfect market positions in both the labour and product markets. In the perfectly competitive market wages will be paid according to the value of the marginal product.

Chamberlin’s Concept of Exploitation of Labour

According to Chamberlin, there is a concept of exploitation of labour “When labour is paid a price less than its marginal revenue product”.

Question is how to remove exploitation of labour? It can be gauged that exploitation of labour may be removed through increase in the wages of the worker, by motivating them, by giving proper hygiene and sanitation facility and most importantly, government should enforce the law of minimum wages in every industry.

17.8 SUMMARY

Wages may be defined as a payment of all the activities done by the labour be it mental or physical. There are two categories of wages i.e. nominal and real wages. Nominal wages are money wages and are actually paid to the worker in money terms for the service rendered by him. Real wages on the other hand are evaluated on the basis of prevalent price index; hence they are equal to monetary wage/prices. Many theories have been proposed by different authors regarding the wage determination. According to

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classical notion, wages are determined by the free forces of demand and supply and there is automatic adjustment in the economic system and wages will be restored at equilibrium level automatically. But Keynes asserted that flexibility of wages may not be there and there may be downward rigidity, hence the level of employment is affected deeply. Here in this unit, we have given six theories of wages. The two modern versions have not been included one is concerned with the efficiency theory of wages which is a latest debate in developed economies. Although it is hard to measure efficiency but efficiency theory maintains that the person who is knowledgeable, skilled, efficient, diligent should get more wages.

17.9 GLOSSARY

- **Wages:** Remuneration paid to a worker for providing mental or physical services.
- **Real Wages:** The purchasing power of wages measured on the basis of the prevailing price index.
- **Subsistence Theory of Wages:** A theory which assumes labour as a commodity and states that wages are determined by the cost of subsistence necessary for the worker's survival.
- **Exploitation of Labour:** A situation in which workers are paid significantly less than the value of their contribution or productivity.

17.10 CHECK YOUR PROGRESS

A. Fill in the blanks

1. Subsistence Theory of wages was put forward by.....
2. Marginal Productivity theory hold that wages will be paid according toof labour
3. Modern Theory of wages states that demand and.....determines the level of wages.
4. Real wages are related with money wages and
5. Nominal wages are also called as

B. True and False

1. Adam Smith has given five reasons for wage differentials.

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2. Concept of exploitation of labour holds that labour is rewarded more than its productivity.
3. Efficiency theory of wages stresses upon the productivity of labour.
4. In the concept of collective bargaining wages are generally indeterminate.
5. Trade unions strike bargain for the labourers more than the cost of production

17.11 ANSWERS TO CHECK YOUR PROGRESS

A.1. Physiocratic school 2. Marginal Productivity 3. Supply 4. Price 5. Money Wages

B. 1. True 2. False 3. False 4. True 5. False

17.12 TERMINAL QUESTIONS

1. Discuss the modern theory of wages in detail.
2. What are the factors which affect the real wages?
3. Critically discuss the concept of bilateral monopoly model of wage determination.

17.13 SUGGESTED READINGS

1. Yogesh Maheshwari, *Managerial Economics*, Prentice Hall of India, New Delhi.
2. D.N. Dwivedi, *Managerial Economics*, Vikas Publishing House Pvt. Ltd., New Delhi.
3. T.R. Jain, O.P. Khanna and Varesen, *Micro Economics and Indian Economy*, V.K. Publishers, New Delhi.
4. M.L. Ahuja, *Advanced Economic Theory*, S. Chand & Co. Ltd., New Delhi.
5. Amitanand, *Managerial Economics*, Excel Books, Delhi.

UNIT 18 - PROFIT- NATURE, CONCEPT AND THEORIES OF PROFIT

Unit Structure

18.1 Introduction

18.2 Profit: Nature and Composition

18.3 Gross and net Profit

18.4 Theories of Profit

18.4.1 Hawley's Risk-taking Theory

18.4.2 Knight's Theory of Profit

18.4.3 Clark's Dynamic Theory

18.4.4 Schumpeter's Innovation Theory

18.4.5 Shackles Theory of Decision making and Profit

18.4.6 Monopoly Theory of Profit

18.4.7 Rent Theory of Profit

18.4.8 Wages Theory of Profit

18.5 Normal and Surplus Profit

18.6 Do Profits tend to be zero

18.7 Summary

18.8 Glossary

18.9 Check Your Progress

18.10 Answers to Check Your Progress

18.11 Terminal Questions

18.12 Suggested Readings

OBJECTIVES

After studying this unit, you will be able to:

- Explain the theories and applications of profit in economics.
- Explain the nature and functions of profit.
- Understand the meaning and concepts of profit.
- Describe the various theories of profit.
- Explain the fundamental elements, powers, and functions of profit.

18.1 INTRODUCTION

Land, labour, capital and entrepreneur are the four factors that make the process of production viable in the economy. The three factors: Land, labour and capital are hireable, at least in principle whereas entrepreneur is not. The very nature of entrepreneur differs from all other factors. In fact, he is the one person who hires all the others. An entrepreneur may be a single person, or a group of persons operating to maximize profit. Hence businesses can be single ownership based or conglomerate of individuals can form an industry. The output can vary in scale both large and small depending upon the number of owners. Evolutionary trends reveal the changing nature of ownership patterns of firms worldwide. In the modern times, sole entrepreneurship of the nineteenth century has been replaced by the concept of formation of a limited company. In twentieth century, Joint Stock Company was the main approach of doing business. Now, in the twenty first century the concept of multinational companies has gained momentum. A new managerial paradigm has emerged in the organizers pool of activity. It is

evident that entrepreneurial decisions have to be made and profits and losses are earned. With the changing economic constructs, profits as a reward become increasingly significant. The landlord receives rent, labour earns wages, capitalists are bestowed with interest, and the entrepreneur is rewarded with profit. Major distinction between the rewards of land, labour, capital and the entrepreneur is that while the rewards of all other factors are predetermined in advance (when they are hired) the entrepreneur gets the residual of all the payments made out of the total income. In short, he is the innovator and organizer who combined all the factors of production and puts them to work together resulting in industrial production.

18.2 PROFIT: NATURE AND COMPOSTION

At the outset, it is vital to explain the meaning of the term ‘profit’. Simply put, profits mean ‘what remain out of business earnings after paying current expenses i.e. revenue minus cost of production and providing for maintenance keeping intact the money value of the assets of the businesses.

In the case of sole proprietorship, often referred to as “pure profit” is only the reward for taking risks and bearing the uncertainty of the production process and not either the salary due to the employer himself for the work done by him or the interest on his own capital invested in the business.

It is important to understand the idea of profit as used in economic theory. It refers to the least sum to be paid to the entrepreneur to induce the investment of capital in any production unit. There are three types of situations faced by an entrepreneur: earning normal profits, supernormal profits and bearing losses. Normal profits are known to be a necessary part of cost of production. We may add here that in general, $\text{Profit} = \text{Total Revenue} - \text{Total Cost}$. The equilibrium condition of the firm remains unchanged i.e. marginal revenue is equal to marginal cost ($\text{MR} = \text{MC}$). The organizer/entrepreneur gets the profit for his extra ordinary ability of innovation and bearing uncertainty in production process. Profits differ from rent, wages and interest on the basis of three salient features stated below:

Firstly, it is a residual payment after making all other payments .Secondly there are more ups and downs in the quantum of profit as compared to rent, interest and wages and lastly, special point

to be profits can be zero or sometimes can become negative unlike other payments that always remain positive.

18.3 GROSS AND NET PROFIT

Both explicit and implicit expenses are deducted out of total revenue receipts of the firm and remainder is economic profit.

Gross Profit: Gross Profit is the excess of revenue over total explicit costs. Total Income contains explicit costs like rent, wages interest, raw material expenses, transport and electricity expenditure. Mathematically it can be expressed as

Gross Profit = Total Revenue – Total Explicit Cost

Suppose a hosiery firm in a year sells its product and receives Rs. 50 Lacs as total revenue after deducting Rs. 40 lacs as expenses on explicit costs, remaining Rs. 10 lacs is referred to as Gross Profit of the firm in a year.

Explicit costs are integral to the conceptual understanding of profits. Rent on land, wages of entrepreneur and interest on capital employed by the owner of the firm from his own side are all explicit costs. It is now clear that the elements of Gross Profit are rent on entrepreneur's land, interest on capital employed by him and wages on managerial skill. It is important to note that Net Profit is also a part of Gross Profit.

To summarize, main elements of Gross Profit are:

1. Rent on organizers land
2. Interest on one's own capital
3. Wages of managerial work by self
4. Net profit

NET PROFIT

There is no doubt that entrepreneur performs a number of functions like risk taking, uncertainty bearing, making Innovations and last of all minimizing the cost of the firm in all respects. The reward for performing all these function forms implicit costs of production. Net profit is the

residual amount left after deducting both implicit and explicit costs from the total revenue. Mathematically it can be expressed as

$$\text{Net Profit} = \text{Total Revenue} - (\text{Explicit costs} + \text{Implicit costs})$$

Since net profit is a subset of gross profit, the relationship can be expressed as follows:

$$\text{Net Profit} = \text{Gross Profit} - \text{Implicit Cost}$$

To summarize, the main elements of Net Profit are:

1. Reward for risk taking and uncertainty bearing.
2. Reward for making innovations.
3. Payment for bargaining power to cut the cost of the firm.
4. Windfall gains
5. Gains due to Monopoly power.

Constituents of Gross Profit			
Rent on Organisers own land	Wages of management function of organisor	Interest on own capital of entrepreneur	Economic Profit for Enterpreneural Ability

Exhibit 1 shows illustrative presentation of the elements of Gross Profit

Constituents of Net Profitwsa				
Reward for Risk Taking and Bearing Uncertainties	Reward for making Innovations	Payment for Bargaining Power to cut the cost of production	Windfall Gains	Gains on Monoploy Power

Exhibit 2 shows the illustrative presentation of the elements of Net Profit

18.4 THEORIES OF PROFIT

Several theories have contributed to the genesis and development of the conceptual foundation of Profit in economics. Theories of profit depict the nature and the scope of profit. The narrow version explains profit as a reward for important functions performed by an entrepreneur. Prof. H. Greyson has aptly remarked that “Profit may be considered for making innovations, a reward for accepting risks and uncertainties and result of imperfections in the market structure.” Based on the statement of Grayson economists like Knight, Walker, Hawley and Schumpeter propounded their theories of profit. On the other hand Dr. Marshal, Taussig, Robertson etc. provided a wider version of profit in their views. Here profit is considered as a residual payment. In simple words, profit is the difference between total revenue receipts and total expenses incurred on the commodity produced. This clearly states that profit has been matter of debate among the economists for long. At different times, economists of every era presented different theories of profit. Till date no single theory gives a satisfactory determination of profit. It was a long back that Prof. Taussig had called profit “*that mixed and vexed income.*”

Theories of profit propounded by various economists are:

1. Hawley’s Risk-Taking Theory
2. Knights’ Uncertainty bearing Theory
3. Clarks’ Dynamic theory
4. Schumpeter’s’ Innovation theory
5. Shackles’ Theory of profit
6. Monopoly Theory
7. Rent Theory
8. Wage Theory

18.4.1 HAWLEY’S RISK-TAKING THEORY

Renowned American economist Prof. Frederick B Hawley propounded the Risk theory of profit in his book “*Enterprise and Productive Process.*” in 1893. Hawley opined that every business activity involves risk of a greater or lesser degree. He says that profit is not the residue after making the payments of owners of land, labour and capital. It is a reward for taking risk and responsibility only and has nothing to do with compensation for managing and coordinating the business. There are many risks involved in running a business for example war may break out,

riots, floods or fire may occur tragically in an economy. Product may face slackened demand, falling prices or new technology may replace the old. Furthermore, the entrepreneur faces risk on account of many other industrial problems like power shut down, machinery break down, strikes by labour and lock outs by industrialists.

Out of many kinds of risks, Hawley focuses on four types of risks in any business venture. They are (i) Replacement (ii) Obsolescence (iii) Uncertainty (iv) Risk proper. F.B Hawley regards risk taking as the main function of the entrepreneur. The entrepreneur receives profit in lieu of this irksome task. He argued that since risks are enormous, normal return on business will not attract people to start the business in the first place. So, reward for risk taking should also be higher than the actual value of the risk involved. Besides, every individual is not capable of undertaking risks. Therefore, risk acts as a deterrent to the supply of entrepreneurs. In the nutshell, risk taking is a specific function and that too “wisely selected risks” by entrepreneurs.

Hawley stated that profit was composed of two parts: one part represents compensation for average loss incidental to the various causes of risk and the other part represents an inducement to suffer the consequences of being exposed to the risk. Hawley believed that profits arose from factor ownership as long as the ownership included risk. If the entrepreneur avoided risk by insuring against it, he ceased to be an entrepreneur and should not receive profits. According to Hawley profit arose out of uninsured risk. The uncertainty ends with sale of the entrepreneur's product. Profit thus is a residue.

Hawley stated that there exists a direct and a proportional relation between risks and profit in business. Greater the risk involved in an industry, higher the share of profits; otherwise entrepreneurs will be unwilling to operate in the industry. On the contrary, if a particular industry involves lower risks, even lesser profit can induce the entrepreneur to remain in his business. Thus, proportionality between risk and profit is always there. Pre-supposed amount involving risks in business is always kept and included in cost by the entrepreneur beforehand. Hawley concludes that profit is nothing but a reward for risk taking.

CRITICISM OF HAWLEY'S THEORY

Prof. Hawley's theory simply talks of only one function of risk taking by an entrepreneur; hence it is criticized on the following grounds:

1. Critics say that profit is a mixed phenomenon. Other than risk taking, entrepreneurial ability, administrative efficiency, bargaining power and loss bearing capacity of the entrepreneur are the other main tasks undertaken by a business man that should also be included in the profit determination.
2. Proportionate relationship between risks and profits too is not a reality. Sometimes risks involved in a business are too much. Resultantly great losses have to be sustained by the businessman. So, risk of sustainability not only reduces profit, but may incur losses in the short run. On the other hand, some situations involve little or no risk to business; even then large profits are earned. Therefore, profits and losses cannot always be linked to risk involved in business.
3. Prof. Carver points out that profit arise not due to risk taken by the businessman but because of his ability to reduce them. Hence it is the superior entrepreneur having greater ability to reduce the risks that makes profit. So, business firms which are more successful in reducing the risks can obtain larger profits as well.
4. Prof. Knight asserts that profits do not arise due to risk. Since all risks are not calculable, hence all of them do not involve profits. Some risks can be anticipated as they occur more often in any country at any time. They can be offset by insurance companies, only small premium paid by firms regularly can make up the losses occurred due to natural calamities. But certain risks are necessarily had to borne by an entrepreneur. He has to face many uncertainties like absurd fall in demand when the product is ready to sell in the market, change in technology and risk of progress. They are known as 'costs of staying in businesses'.

18.4.2 KNIGHT'S THEORY OF PROFIT

This theory of profit was propounded by F.H. Knight in his classical book '*Risk, Uncertainty and Profit*'. Knight asserted that profits do not arise because of risks involved, but because of uncertainties borne by the entrepreneur. This theory is comprehensive as it combines the conception of risk, economic changes and the role of business ability. According to Knight

“It is not dynamic change, or any change as such which causes profits, but divergence of actual conditions from those which have been expected and on the basis of which business arrangements have been made.” Knight’s ideas gained wide popularity in the study of profit.

SALIENT FEATURES OF KNIGHT’S THEORY

1. **Distinction between insurable and non-insurable risks.** Knight improves Hawleys’ Risk-Taking theory of profit. Knight says that all the risks are not to be borne by entrepreneurs. In effect, risks can be classified into two types i.e. (1) Insurable Risks (2) Non-Insurable Risks.

(1) **Insurable Risks:** Risks on account of fire, theft, accident and business clashes can be calculated. In modern economy these types of risks are covered by the insurance process. Insurance expenses are added up in the cost of production. Such occurrences or happenings come under anticipated risks. Uncertainty cannot arise here. Anticipated risks are always covered beforehand. Thus, foreseen payments can’t be called risks.

(2) **Non-Insurable Risks:** There are other risks that are non-insurable and are unpredictable and cannot be calculated. They are the unforeseen contingencies, technical changes in machines and equipments, uncertain market conditions from the buyers’ side, uncertain behavior of rivals in the market, business cycles and government intervention. These unforeseen and uninsurable risks are called ‘uncertainty’ by Knight. In times to come the entrepreneurs may face more rivals in the market, obsolete machinery due to innovation, booms and depressions in the market. These are the true uncertainties. Knight emphasizes that profits arise due to this type of uncertainty.

2. UNCERTAINTY BEARING IS THE FUNCTION

Knight says that uncertainty bearing is the main function of entrepreneur. In simple words, the supply of entrepreneurs depends on the degree of uncertainty in any business enterprise. If a certain return is expected from the business venture only then entrepreneur will have the courage to bear the involved uncertainty. Uncertainty leads to variable profits depending upon the ability of the entrepreneur to calculate them beforehand.

3. EXISTENCE OF POSITIVE PROFIT UNDER UNCERTAINTY EVEN IN COMPETITION

Neo-classical economists had stated that in case of linear and homogenous production function and is a function of only physical inputs like labour and capital equipment, then by paying the wages and interest according to their marginal productivity exhausts the total product. But knight made it clear that presence of future uncertainty allows the entrepreneur to earn positive profit despite product exhaustion and competitive equilibrium

4. KNIGHTS' UNCERTAINTY AS A UNIQUE FACTOR GIVING RISE TO PROFITS

Knight's theory does not attribute profit simply to dynamic change. Dynamic change and known risk cannot cause profit. In fact profits are due to unique type of risks not susceptible to the entrepreneur. Only the uniqueness of event that an entrepreneur has to face in his venture leads to uncertainty which in turn causes profit.

5. Political and international factors too cause the uncertainty in the economic System

Political environment, war and peace condition, political instability, economic policies of the nation and conditions of international trade and foreign capital etc. create many uncertainties in the economy. It is not possible to calculate exactly the extent of these uncertainties in a given economy.

All the above stated features of Knights theory indicate the fact that the enterprise is set up in such fluid conditions of uncertainty and the entrepreneur needs to be induced through profits. Greater the uncertainty, more of the profits need to be ensured to the business man. On the contrary, lower the uncertainty will stimulate large no of businessman to start their own venture. Even if they earn lower profits, it will be sufficient for them. Like other factors of production, uncertainty too plays a crucial role in the process of production. Therefore, Knight emphasized that uncertainty should be treated as a separate factor and profit is to be paid as its remuneration.

CRITICISM OF KNIGHTS THEORY

This theory of profit has been discussed widely. It is followed, elaborated and modified by many economists. Critics have pointed out numerous anomalies in the theory. Some of main points of criticism are discussed as follows:

1. Incomplete Theory

Critics say that uncertainty bearing is not the only function of an entrepreneur. Good organization, managerial skill and best bargaining power to reduce the cost of production are the other true responsibilities imbibed in the entrepreneurial activity. Had the uncertainty bearing been a separate factor of production there would be no need for a special theory for profit, since the marginal productive theory in general already exists. Knight makes the theory of profit as a narrow version. Decision making, co-ordination and supervision all these duties are surely performed by the owner of the industry. Profit accrues due to all function performed by the entrepreneur.

2. Certain and uncertain risk classification not true

Hicks claims that the classification of risks as certain or uncertain i.e. An insurable and non-insurable risk is not right. It is not permanent and generally acceptable classification.

3. No Proportionate Relation between uncertainty and profits

Critics say that uncertainty and profit do not have any proportionate relationship. Uncertainty of higher degree sometimes brings heavy losses to the firm. Little uncertainty in business enables businessman to make large profits.

4. Uncertainty and psychology are inseparable

Uncertainty is a psychological factor which is non-insurable and non-measurable. It makes the theory vague and unclear.

5. Not applicable to Joint Stock Companies

It is also widely argued that the theory is not relevant in the case of Joint Stock Companies. Joint Stock Company comprises of board of directors. Major decisions are taken by managing directors and other salaried class officials. Capital is floated to the

company by shareholders and profit too is distributed among shareholders who have nothing to do with the uncertainty of the business.

6. **Valid only under perfect competition not imperfect competition**

Other than market under perfect competition, the theory fails to apply. Under imperfect market conditions like monopoly uncertainty is little yet the monopolist makes high profits.

7. **Not clear on the role of expectations**

The theory does not take into consideration the business expectations of the entrepreneur. In effect short term and long-term expectations play significant role in the determination of profit margin. Prof Shackle has thrown light on this perspective whereas this theory is not clear on the role of expectations.

8. **Only a micro theory**

This theory talks of profit determination of a particular entrepreneur in micro distribution. The determination of profit share is explained better in neo-classical theory of profit.

18.4.3 CLARK'S DYNAMIC THEORY

J.B. Clark gave the dynamic theory of profit. According to Clark continuous changes take place in the economy. In stationery state of economy, the work of production is a routine business. No risk and uncertainty are involved. Salaried managers can manage the whole affair. Since cost and selling prices are always equal; there are no profits apart from the wages for supervisory work. In a static economy, capital invested, the mode of production, kind of technical and managerial organization and the structure of demand remain the same. Only frictional profits can emerge due to possible frictions in the economy.

Clark maintains that today is the world of change and in a dynamic system the entrepreneur has to operate within highly risky, uncertain and dynamic conditions. Therefore, he must get some surplus over and above the cost. This is known as dynamic

surplus. This profit is an inducement to start a venture and then keep on operating. Clark talks of five major dynamic changes in the economy:

1. Population change
2. Change in capital stock
3. Change in technique of production
4. Tastes and habits of consumer change
5. Change in organizational set up of business

Clark clearly states that these changes make the economy dynamic and entrepreneur takes the risk of bearing the results of change which in turn generates a surplus over cost. Since change is the law of nature, merely wages of management cannot induce a businessman to continue the business operation. Dynamic changes lead to real profits. Above stated five generic changes alter the overall standards of economy. Fact remains that typical dynamic change is an invention. An invention induces the entrepreneur to produce more thereby reducing the costs. The difference between selling price and the cost of production leads to profits. Such profits are temporary because when others adopt the same invention, profits tend to disappear. Profits garnered by the entrepreneur due to innovations can't be held by entrepreneur for long. Subsequently, the same money is utilized to such inventions into his business. In short dynamic system brings more changes continuously. Lure of profits brings more improvements and so on.

CRITICISM OF CLARKS THEORY

Despite widespread acceptance, the dynamic theory has been criticized on several fronts:

1. Five generic changes discussed by Clark have not been further categorized into foreseen or unforeseen. Only unanticipated changes can lead to emergence of profit. Anticipated changes can't generate profit.
2. In sharp contrast to the postulates of the theory, it is argued that even without dynamic changes profits may be there. Even when the business fluctuations are predicted, competition continues to exist in the market and profits do arise inevitably.
3. Earlier Knight had asserted that profit is the reward for uncertainty. In his theory Clark stresses that when continues changes take place in an economy only then

- profits arise. Knight elucidated that this continuous change leads to uncertainty. Hence uncertainty and not the changes in system finally lead to profits.
4. The theory has been criticized for its narrow spectrum w.r.t. categories of change. Clarks talks of only five changes. In fact, Clark has over looked many other changes taking place in the economy. It shows that the theory encapsulates a limited perception of dynamic changes.

18.4.4 SCHUMPETER'S INNOVATION THEORY

J.A. Schumpeter explains the theory of Innovation in his book "*The Theory of Economic Development*". This theory throws light on technological aspect of profit emergence. Schumpeter asserts that dynamic changes occur due to innovation in the economy. He further says that innovation is an important function of an entrepreneur. The term innovation is exhaustive including primarily the technical inventions exploited commercially, new ideas brought into the business venture related to organization structure, managerial skill and marketing tactics. An entrepreneur must possess skills and abilities to innovate. A man of ordinary managerial ability can't become an entrepreneur. Schumpeter describes five types of innovations vis-a-vis an entrepreneur.

- (a) Introduction of a new product
- (b) Introduction of a new machine
- (c) Introduction of products in new market
- (d) Discovering new sources of raw materials
- (e) Change in the business organization

Schumpeter points out that Innovation is not only the birth of a new idea evolved but also the commercial use of the idea generated. Idea alone is no innovation. The job of the entrepreneur is to undertake the risk of putting the idea into commercial use. He is able to do so because of his innovative ability. Innovation on his part leads to profits Schumpeter theorizes that innovation is an important function of the entrepreneur. It speeds up the process of production and curtailment of costs. It is important to note that the profit earned due to innovation is a temporary phenomenon. For continuous profits the entrepreneur should strive constantly for newer and sophisticated mode of production,

better organization and higher sales resulting from better marketing strategies and practices. Prof. Schumpeter adds that profit is a temporary surplus for the entrepreneur which appears, disappears and reappears. Consequently, profit is a dynamic income. An imitator cannot earn profit; he can simply get wages for his management. Both the costs and sales curves of the firm can be altered by innovations. It is already established that profit maximization is the sole aim of the entrepreneur. To achieve this an innovator shifts costs and sales curve either by changing the production function or the type of the product. To conclude, entrepreneur is lured by profits which induce him towards innovation again and again.

CRITICISM OF SCHUMPETER THEORY

Even though the basic premise of the theory stands the test of time, it has been criticized due to the reasons given below:

1. Profits is not only a reward for innovation

In order to have a proper and complete explanation of profits, innovation theory is insufficient. In addition to innovation, efficient management, good governance, bargaining power, risk taking uncertainty bearing, changes in technical know-how are the keys to handsome profits.

2. Assumption of Perfect Competition in Market

The theory presumes perennial existence of perfect competition in the market. However in reality imperfect market is the order of the day. In Monopoly there is absence of competition questioning the assumption of theory of innovation. Here, technical changes are not required to earn profits. By virtue of his position a monopolist reaps high profits.

3. Limited Innovation

Schumpeter has mentioned the types of innovation without further segregating them into technical and non-technical divisions. Other than five innovations of Schumpeter, there are many more innovations in the economy later on discussed by other economists.

4. Profits are not temporary phenomenon

As a matter of fact certain firms continue to reap profits for a secular period (indefinite time) and that too without any break. Innovation theory cannot explain this kind of situation.

5. **Direct relation between Profit and Innovational Ability is impractical**

The theory has proposed a direct relation between profit and innovation ability. Critics refute this argument because of existence of wind fall gains and losses. The situation clearly shows that ordinary businessman makes a lot of profit that is not related with their capacity.

6. **Only an Institutional Theory**

The theory focuses more on the attributes of the entrepreneur. Entrepreneur is supposed to be an institution in the Innovation theory, thus by nature it is said to be sociological. As a matter of fact, an economic theory should be based on economic factors.

18.4.5 SHACKLES THEORY OF DECISION MAKING AND PROFIT

Prof. G.I.S. Shackle's theory of profit is based on the view that theories of probability are not relevant in assessment of uncertainty which is necessary for construction of a theory of profit. He argues that an effective theory of profit should be rooted in the fundamentals concerned with the entrepreneur's decision to invest instead. The decision to invest arises because of the presence of uncertainty. Bearing uncertainty is one major job of an entrepreneur. How much uncertainty is involved, it should be assessed properly, this assessment in turn is related with decision making. Clearly decision to invest is a one particular decision which only an entrepreneur is expected to make before indulging in any business venture, due to presence of uncertainty. Whereas knight opined that uncertainty is not measurable, Shackles emphasized that such uncertainty has its limits. Usually, an entrepreneur can set limits for their actions of investment.

In this theory, Prof. Shackles introduced the notion of disbelief. In the presence of uncertainties which are objective in nature, entrepreneurs form expectations. They are known as business expectation in theory of economics which may be short- or long-term expectations. An expectation is a sort of 'feeling' for the situation termed as 'subjective

certainty' by Keirstead. On this basis they developed hypothesis for the possible result of their actions.

A strong feeling of satisfaction and dissatisfaction for the actions of investment leads to the notion of belief or disbelief. Shackle's notion of disbelief leads to the concept of 'Potential surprise'. Shackle observes that there are different hypothesis about future investment which have different degree of 'potential surprise' for the entrepreneur. A zero potential surprise can be regarded as the best and perfectly possible hypothesis.

Potential surplus further leads to the idea of 'stimulus functions'. Shackles notion of 'potential surprise' takes two limits of expectations. 'A zero potential surprise' and 'maximum potential surprise' are the two extremes of the hypothesis. In between these two limits there are possibilities which are doubled in varying degree. So degree of potential surprises is said to be a 'continuous function'. Stimulus function' associates with this continuous function. Again Shackles concept of 'neutral outcome' is developed on the basis of stimulus function. 'Neutral outcome' is a balancing point on the scale of 'potential surprise'. Entrepreneur has to make decision to invest on the basis of 'net attractiveness' of a venture as neutral outcome to profit and loss expectations.

In Shackle approach routine decisions are taken by the corporate in hierarchical order but critical decisions are taken by the entrepreneur. Under uncertainty decision making is unique and pertinent act of entrepreneur taken at a particular moment or over a period of time. Shackles theory is fundamentally a psychological construct which can't be verified easily.

CRITICISM

Although Shackles theory of decision making is a psychological construct and nearer to the applied approach of an entrepreneur, yet it can't be considered a perfect theory. This too has many flaws:

1. Decision making is not the only function of entrepreneur. Profit is a reward of all other functions of the organizer as well. So it is not a complete theory.
2. Assessment of uncertainty was the aim of this theory. In the description of the theory measurement of this uncertainty virtually could not be possible due to the

ideas of 'Potential surprise' 'stimulus function' and 'Neutral outcome', which cannot be easily explained.

18.4.6 MONOPOLY THEORY OF PROFIT

Eminent economists Kalecki and Samuelson jointly propounded the monopoly theory of profits. According to the theory, when a producer or investor is one and only one in the market, it is said to be an advantages position for the producer. A monopolist has a complete control over the supply of the product. Therefore, he can dictate the price. Besides, he has the capacity to block the entry of rivals or competitors in the market. Copyrights and patents of producers in the market protect his position . In the absence of trade unions, even in the labour market a monopolist can earn profits due to his monopolistic position.

Technological improvements i.e. innovations, product differentiation, price discrimination, collusions or forming cartels are other various ways to earn surplus profits by the monopolist. Absence of rivals in the market results in higher monopoly price. A monopolist can get the means of production at cheaper rates leading to 'earning a surplus'. A process of dynamic change and monopolistic tendency bring in monopolist profits.

Surely monopoly power of the producer is the cause of super normal profits in the market. Not only in the short run, the monopolist earns higher profits even in the long run super normal profits are earned by the monopolist. Only a monopolist is able to earn these super normal profits in the long run. In line with the theory, Schumpeter had mentioned that monopoly profits arise when the entrepreneur has no competition as the new product enters the market. It is evident that the state of equilibrium i.e. $MR=MC$ prevails in the monopoly market for price determination

CRITICISM

Following are the grounds on which monopoly theory of profits is attacked

1. Monopoly position of producer is not the only factor contributing to the creation of surplus profit. The monopolistic practices adopted by him also play a significant role in generating surplus profits. At the same time bargaining power, managerial efficiency, risk taking, uncertainty bearing by the producer and application of latest techniques of production are far more effective factors to influence profits. Monopoly theory neglects all these factors.
2. Monopoly power is not an absolute term. Degree of monopoly power in a market is an important variable in the monopoly market. Monopoly theory states that the degree of monopoly power is the index of amount of profits whereas under perfect competition there is zero degree of monopoly power in the market there exists the possibility of excess profits. However, in the long run super normal profits do not exist. The theory fails to explain this situation.
3. Monopoly market in itself is not a general feature of a market. Pure monopoly, monopolosony etc. are the special cases of market. So, monopoly profits are only special profits arising under specific condition for the producer or the buyer.

18.4.7 RENT THEORY OF PROFIT

F.L. Walker an American economist developed the rent theory of profit. Entrepreneurial ability fetches rent in the form of profit. Ricardian Theory of Rent maintained that different grades of land and niggardliness of nature (not the bounty of nature) is the cause of rent. Marginal land is a no rent land. This marginal land gives birth to the accrual of rent to superior lands. The concept of differential rent has been applied to differential ability of an entrepreneur in the Walker's theory. The theory expostulates that the entrepreneurs are also of different ability. Superior ability entrepreneur earns profit over the one with marginal entrepreneurial ability. Just as marginal land does not earn any rent marginal entrepreneurial also earns no profit. Profit is not included in the cost of production. Similar to the concept of rent, when price is equal to the cost of production, profit does not enter into the equation. Profit is in fact a differential surplus which is earned by superior ability of the entrepreneur over marginal or no profit entrepreneur.

CRITICISM OF RENT THEORY OF PROFIT

Like other versions of profit, Rent Theory of Profit is also attacked on various fronts:

1. Marshal comments that profits do not form a true surplus. Even though there exists a no-rent land but negative rents are never found. But we find in practice profits not only tend to be zero they are said to be negative i.e. losses to the entrepreneur. Profits and rent do not share similar connotations.
2. Modern economy consists of joint stock companies where a large chunk of capital comes from the shareholders. They have a stake in company's profit & loss according to their shareholding. Superior or any ability of entrepreneur does not count in the share of shareholder's part of profit.
3. Rent arises both in static and dynamic state of economy whereas profit emerges only in the dynamic state.
4. Does profit enter into price is answered by the fact that normal profits are an important part of cost of production. So profits do enter into price challenging the key assumption of the theory.
5. Ability is not the sole criterion of earning profits. Risk taking, uncertainty bearing, using innovations commercially and monopoly positions / power of the entrepreneur are the other major causes of emergence of profit.
6. Marginal or no profit entrepreneur notion of Walker is far from reality. In such a case, no entrepreneur will invest induces the business venture. This may lead to the closure of the firm.

18.4.8 WAGE THEORY OF PROFIT

American economist Taussig, put forth Wage Theory of Profit in 19th century. Taussig finds compares the special ability in an entrepreneur and with that of a labourer. He states that there are two types of abilities: physical and mental. While the labourers makes use of his physical ability the entrepreneur like other service rendering persons as teachers, doctors, lawyers, administrators etc uses his mental ability to achieve the objective. This mental ability is referred to as special mental labour ability. Profits are rewards for his special mental labour ability. The difference in profits and wages is that while profit is a surplus after making all payments to factors of production and meeting

all other expenses of production including transportation cost wages are only a part of cost of production. So, profits do not enter into price.

CRITICISIM OF WAGE THEORY OF PROFIT

1. Along with special mental ability, an entrepreneur's work involves risk and uncertainty of business. So profit can't be called merely wages for his work.
2. Wages are certain & predetermined, but profits are not. He may sometimes have negative or zero profit as well.
3. Company's shareholders receive profit but hardly perform any function. Dividends are given to them for the risk of capital invested by them. Wage theory throws no light on this important point in modern economy.
4. Windfall or chance gains or losses are only found with entrepreneur. Labourer never gets them.

Above stated large number of theories of profit critically examine various facets of profit in relation to risks, uncertainty, innovation, monopoly, rent and wages. The theories attempt to explain the nature and extent of profit. It is evident that no single theory has been able to satisfactorily explain profit determination as a whole. All are incomplete and full of flaws. No satisfactory theory is put forward by any economist so far.

18.5 NORMAL AND SURPLUS PROFITS

Economists worldwide have discussed the concept of profit with regard to normal and surplus profits. Normal profits are the wages of management received by the entrepreneur, thus forming a part of cost of production of firm. Normal profit is the reward of entrepreneurial effort. Normal profits are defined as the minimum income that an entrepreneur must earn in order, to induce him to remain in the current business or industry, if the entrepreneur does not get this basic minimum, he will not production.

This profit is a fixed amount which is included in the cost of production. Normal profit gets distributed over the large volume of output. Normal profit is thus an incentive to produce output.

Any firm requires certain minimum amount of entrepreneurial ability for which normal profits are received. In the words of **Stonier and Hague** 'Normal Profits are just sufficient to induce an entrepreneur to stay in the industry'. Long run industry earns normal profits. It is a tendency where neither a new firm wants to enter nor an existing firm tends to disappear in the industry. The state of equilibrium remains where all resources are fully employed. There is no uncertainty. The existing pure profits are in fact wages of management. On the other hand, short run dynamic state of economy gives rise to surplus or Super Normal Profits. Super normal or surplus profits are stated to be above normal profits. Supernormal profits are the profits earned by the entrepreneur in excess of normal profits which form a part of the cost of production. Supernormal profit or otherwise called abnormal profit arises due to risks and uncertainty bearing in the business. It also arises because of monopoly advantage and chance factors. According to Hawley an entrepreneur earns abnormal profit because of risks in the business. Abnormal profit arises on account of non- insurable risks. Non insurable risks are not predictable. These risks cannot be known beforehand. Greater and lesser efficiency of the entrepreneur affects the margin of profit. Even in the long run this fact may lead to super normal profits. Monopoly profits are that special case, where demand is rigid and uncertainty is prevalent in the long run.

Contrary to the concept of normal and super normal profits, idea of negative gains also remains i.e. losses are also borne by entrepreneur sometime but this situation is not a long run phenomenon. If despite cost-cutting ability of entrepreneur, he is not able to make normal profits, he will shut down his firm in the long run.

18.6 DO PROFITS TEND TO BE ZERO?

One major question regarding profits tending to be zero is still a mystery. Economists like Ricardo, Schumpeter and Clark have the opinion that in the long run, under perfectly competitive market, super normal profits no longer exist. Entry of new firms enlarges the supply of entrepreneur in industry making the price to fall. As a result price is equal to average cost. Intensity of competition in the market compels super normal profits to vanish. Innovations are made but they too are imitated by others in the industry. Net

result is prevalence of normal profits only. Net profit notion of zero or negative profit is only a short run analysis. In the long run normal profit is the order of the market.

Economists like Samuelson, Kalecki and Knight have the contrary viewpoint. Pure competition is said to be a myth, in reality imperfect competition is found. In monopoly and oligopoly forms of market, super normal profits are obtained by entrepreneurs both in short run as well as in the long run. Under such conditions profit do not tend to decline so profits are neither equalized nor become zero. There are no losses in the market.

18.7 SUMMARY

Profits are the rewards for undertaking risk, bearing uncertainties, cutting cost of production, being innovative and for gaining monopoly power. There are mainly two forms of profits i.e. Gross Profit and Net Profit. Gross Profit is the difference between total revenue and explicit cost and net profit is arrived at after deducting implicit costs from the gross profits. Many theories have been put forward by different economists for assessing profit, but no single theory determines the profits. Although theory put forward by Schumpeter is recognized in modern business world as he has emphasized the role of business innovations to be the key the function of an entrepreneur and for this function he is rewarded with profits.

18.8 GLOSSARY

- **Profit:** Income earned from business after making current payments.
- **Gross Profit:** The excess of revenue over total explicit costs.
- **Abnormal Profit (Supernormal Profit):** Profit earned due to monopoly power.

18.9 CHECK YOUR PROGRESS

A. Fill in the blanks

- 1.....is the reward for entrepreneur for bearing risk and uncertainty
2. There are.....elements of Gross Profit
3. Windfall gain is an element of... profit
4. Reward for making innovations is an element of.....profit
5. Net Profit = Gross Profit -

B. True/False

1. Knight's theory of profit was propounded by F.H. Knight in his classical book 'Risk, Uncertainty and Profit'.
2. Schumpeter an American economist developed the rent theory of profit.
3. American economist Taussig, put forth 'wage theory of profit' in 19th century.
4. Economist like Likert and Clark talked of monopoly theory of profits.
5. $\text{Net Profit} = \text{Total Revenue} - (\text{Explicit costs} - \text{Implicit costs})$

18.10 ANSWERS TO CHECK YOUR PROGRESS

A. 1. Net Profit 2. Four 3. Net 4. Net 5. Implicit

B. 1. True 2. False 3. True 4. False 5. False

18.11 TERMINAL QUESTIONS

Long Answer Type Questions

1. What do you mean by 'profit'? Differentiate between Gross and Net Profit.
 2. Describe the salient postulates of Rent and Wage Theory of profit.
 3. Critically examine the Schumpeter's Innovation Theory of profit.
 4. Compare and contrast Hawley's risk and Knight Uncertainty bearing theory of profits.
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18.12 SUGGESTED READINGS

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