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Business Economics

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PAPER V - BUSINESS ECONOMICS

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Definition and Concept of Economics – Nature of Economic Laws – Methods of Economic Enquiry – Meaning of Micro and Macro Economics – Fundamental Concepts – Wants – Utility- Value - Wealth - Welfare.

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Demand Analysis – Meaning of Demand - Types of Demand – Determinants of Demand – Law of Demand – Types of Consumers – Marginal Utility Analysis – Elasticity of Demand – Consumer's Surplus.

UNIT III

Supply Analysis – Meaning - Factors of Production - Land, Labour Capital and Organisation – Law of Returns – Production Function – Return to Scale.

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TEXT BOOK:

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UNIT-I

LESSON – 1.1 CONCEPT OF ECONOMICS

Introduction – Subject matter of Economics – Division of Economics Definition –Nature and Significance of Business Economics.

1.1.1 INTRODUCTION

Knowledge of economic science is essential for every citizen in a country as its study endeavors to open up to all the material means of a refined and noble life. The role played by economic conditions of a nation could be well appreciated by people who know economics. The statesmen, the social scientists, the workers, the businessmen, and almost all in all walks of life should have knowledge of economics for their own betterment as well as the improvement of the society and the economy. Thus the importance of understanding economics which Paul Samuelson described as “the oldest of the arts, the newest of the sciences, indeed the queen of the social sciences” should not be underestimated.

Economics, as a branch of knowledge, has assumed immense importance in the modern complex world, for knowledge of economic science is being more and more applied to solve problems like want, poverty, unemployment, inflation, depression, recession, stagflation, underdevelopment, adverse balance of trade and balance of payments, over population, food etc. in developed as well as less developed countries. Economics is applied scientifically and increasingly to business management and economic theory to business practice, thereby helping decision-making and forward planning in business organizations.

1.1.2 SUBJECT MATTER OF ECONOMICS

The subject matter of such an important and useful branch of knowledge called economics is quite obvious. Looking around us, we observe people performing manifold activities in different walks of life. They are all engaged in the “ordinary business of life” so to say. The farmer in his agricultural field, the shopkeeper in his shop counter, the teacher in the class room, the lawyer pleading in the court, the engineer in his work site, the doctor dispensing at the hospital, the scientist in his laboratory, the butcher in the slaughter-house, the acrobat in his circus. In short the multitude of human beings engaged in various forms of work and service are all employed either on their own or by others with the objective of earning money. With the income so earned, they purchase goods and

services which they need and thereby satisfy their wants. Thus 'want' is the starting point of all economic activity. If wants are to be satisfied, efforts in different ways have to be made with a view to earning income with which one can satisfy human wants. Wants lead to efforts which lead to satisfaction. As Bastiat observed in his book "Harmonies of Political Economy", "Wants, efforts, satisfaction – this is the cycle of political economy" Wants → Efforts → Satisfaction. The existence of human wants is the driving force of economic activity. The purpose of economic activity is the satisfaction of human wants through efforts.

1.1.3 DIVISIONS OF ECONOMICS

Since 'wants' are the beginning point of economics, the first branch of economic studies is concerned with human wants and their satisfaction. This branch is known as 'Consumption', under which we study the character of human wants, the Determinants of Demand, the Law of Demand, Elasticity of Demand, Consumers Surplus and the Analysis of Demand.

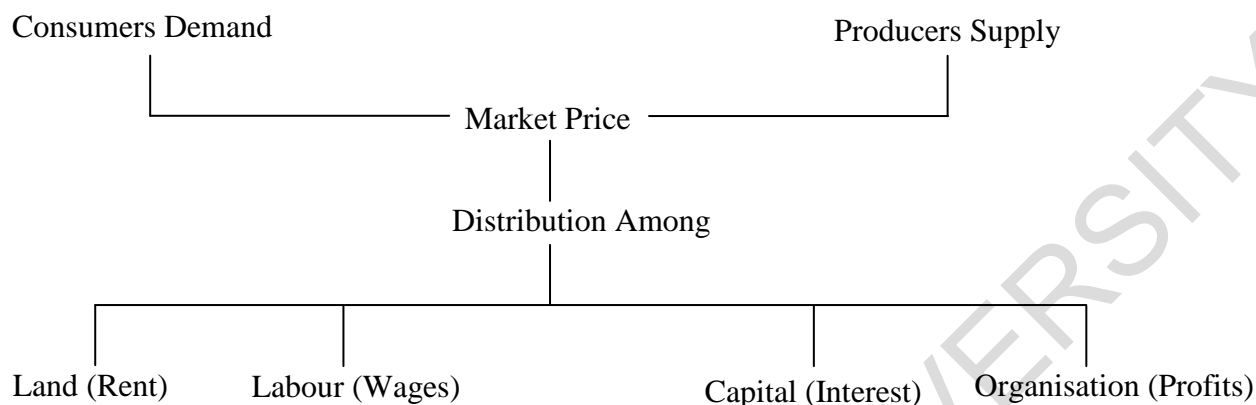
In order to satisfy human wants, we must produce goods and services required. If consumption is the end, production is the means. Hence we have the second branch of economic studies called 'Production' under which come factors of production, size and economies of production, production function and the laws of returns. Herein, we study costs of production, cost curves, supply and its elasticity, revenue curves, cost-revenue relationship, etc.

'Exchange' constitutes the third branch of economics which links producers with consumers in the market for sale and purchase of commodities at prices differing with market forms and conditions. It comprises of pricing under perfect competition, monopoly, imperfect and monopolistic competition, oligopoly and so on. The study of exchange is central and crucial, for as Robert Dorman states: "An economy consists of producers and consumers connected by markets in which they exchange goods and services at prices that reflect both the desires of the consumers and the capabilities of the producers".

The fourth branch of economics known as 'Distribution' is concerned with what is to be distributed, among whom and according to what principle the sharing must be effected. It deals with the theories, principles and practice of determining rent, wages, interest and profits. As production is the result of the combined efforts of four groups, namely the landlords supplying the land, the laborers supplying labor, the capitalists

supplying enterprise, the values of the commodities produced will have to be divided among them as rent, wages, interest and profits respectively.

The different branches of economics, stated above, are inter-connected with one another in the following manner.



‘Public Finance’ is the last branch of economics which encompasses the economic activities of the state, the principles governing public expenditure, the ways by which public revenue should be raised effectively, how public debt should be incurred and how the fiscal deficit be covered and the like. There is an intimate connection between Public Finance and the other four branches of economics. The way in which the state spends or raises revenue or covers a deficit exerts a great influence on the volume of production, distribution of income, consumption of goods and services etc.

1.1.4 DEFINITION OF ECONOMICS

As the scope of economics is unlimited, an attempt at delimiting the scope of economic science by defining it is not appreciated even by eminent economists. Prof. Gunnar Myrdal, the Swedish economist, stated. “Definitions are both unnecessary and undesirable”. J. M. Keynes remarked, “political economy is said to have strangled itself with definitions”. Different economists defined economics differently from time to time mainly due to the fact that, as F. Zeuthen pointed out. “Economics is an unfinished science”. The passage of time has witnessed significant changes and remarkable developments both in economic theory and practice and growing science like economics which is essentially a human and social science could not be delimited easily. Hence, Prof. Maurice Dobb was highly critical of the utility of any precise definition of economics and said that such attempt can only be barren, arid, scholastic dogmatism. In her view very safely and clearly did Prof. Jacob Viner conclude by saying, “Economics is what economist does”. On the contrary, lack of clear-cut definitions would come in the way of

the progress of a social science like economics. In the words of Eric Roll, “the definition is not the idle pursuit of the pedant; it is an essential part of any systematic discipline”.

FOUR STAGES IN DEFINING ECONOMICS

The problem of defining assumes immense importance because of multiple definitions. Hence, for convenience, a detailed study of the definitions can be classified into four distinct stages. The initial stage is represented by classical economist headed by Adam Smith who defined economics as the “science of wealth”. The next stage is represented by neo-classical economist led by Alfred Marshall who defined economics as a “science of material welfare”. The third stage was initiated by Lionel Robbins who gave rise to the widely accepted definition of economics as a “science of scarcity”. The present day trend which is the fourth stage is set by Paul Samuelsson who gave a “growth oriented” definition of the subject and because of its applicability to all kinds of economics-past, present and future as well as capitalist, socialist and mixed – it has a universal appeal and therefore it holds the field as the most acclaimed and universally acceptable definitions of economics.

I.WEALTH DEFINITIONS: In the early days, economics was called the political economy because of the close relation between politics and economics. Adam Smith, the father of political economy, gave the title to his magnum opus as “an enquiry into the nature and causes of the wealth of nations”. According to classical economists, economics is concerned with the earning and spending of wealth. They conceived of an economic man whom they described as a selfish, scheming and calculated individual ever engaged in making money. Their strong conviction was that human actions are spurred by selfishness.

Through accepted for quite a long time, these definitions were condemned by many for its defects:-

1. These definitions are both narrow and incomplete as it includes only goods and excluding services from its purview. In fact the services of teachers, engineers, doctors, cooks, dancers etc. are all wealth.
2. Scholars like John Ruskin and Thomas Carlyle who were moralists were shocked by the gospel of mammon worship preached by economic science, and therefore, condemned it as a dismal science, as a science of “illith” rather than wealth.
3. Many critics stated that wealth is not an end in itself and it is not the end all of economic activity.

4. The concept of economic man created by classicists is merely a figment of imaginations.
5. They say that all actions of human beings are induced by sheer selfishness is clearly false.

II. Welfare definitions: Dr. Alfred Marshall an eminent English economist defined the subject as follows:

“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 wellbeing. Thus it is on the one side a study of wealth: and on the other and more important side, a part of the study man”. Following Marshall a number of neo classical economists defined economics as a science or material welfare.

Alfred Marshall was the first economist to lift the science of economist from the morass of disrepute into which it had fallen, due to its association with the study of wealth. Marshall’s shift of the emphasis from wealth is not an end itself. He described wealth as only a means to an end and the end is the promotion of human welfare. Wealth was relegated to the background and man was placed in the fore front. Marshall’s attempt to glorify the study of economics, as an engine of social betterment was a welcome move.

But Marshall’s definition has also been subjected to severe criticism on a number of grounds. Lionel Robbins led a frontal attack on the definition and stated that “whatever economics is concerned with it is not concerned with the causes of material welfare as such”.

1. This definition has unduly restricted the scope of economics by unnecessarily laying emphasis on “material” things that would lie outside the ambit of economics. This is not the reality as non-material things like the services of teachers, singers, etc. also contribute to our wellbeing and their study also lies within the scope of economics.
2. All material things do not give welfare. Drinking liquor or consuming harmful drugs is not good for our welfare. The use of narcotics and intoxicants, except for medical purposes is not conducive to human welfare. Yet the activities are related to production. Sale and distribution of such goods have to be studied by economists, since they fall under the category of scarce goods which satisfy human wants. If economics were to be concerned with the causes of material welfare, then we have to adjudge what will promote welfare and what will lesson welfare. This would pave the way for economists

to enter into the field of ethics and pass moral judgments on what ought to be and what ought not to be. But positive economists like Robbins deny that economics is a normative science. To Robbins, economics is neutral between ends and it is not for economists to prescribe what should be done and what should not be done, or what is good and what is bad, or between just and unjust things.

3. Yet another objection is on the very concept of welfare itself. Welfare is subjective and cannot be quantified. Welfare is an experience that cannot be measured precisely. Hence it is unscientific to lay the superstructure of economic science on sandy base like welfare. Hence Robbins asks, “why talk of welfare at all; why not throw away the mask together?”
4. Robbins further criticized the Marshall’s definition as classificatory instead of being analytical. Marshall’s welfare definition which is concerned with group of activities rather than with “aspect” of activities is illogical, unscientific and defective. Robbin’s view is that only a particular aspect of activities should be studied in economics, i.e., such activities which are undertaken because of scarcity.

III. SCARCITY DEFINITION: Prof. Lionel Robinson of the London School of Economics wrote, in 1932, a book titled “the nature and significance of economic science”, in which he constructed a new definition which runs as follows.

“Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses.” Three basic propositions are laid down by this definition which are as follows:

1. ‘Ends’ which refer to human wants are unlimited. There is no limit to our wants which keep on multiplying with the progress of civilization. But all of our wants are not of equal importance or urgency for satisfying them. It is possible to prepare a scale of preference for each and every person by grading wants on the basis of their urgency or intensity.
2. The ‘means’ which refer to available resources are quite limited. When wants multiple, the resources at the disposal of human beings like money, materials time, energy, etc. are relatively scarce, i.e., means are limited relative to their needs.

3. The 'means or resources can be put to alternative uses. If good can be put to only a single use, there would arise no economic problem in its use. When the good has been put to any other use arises there issues. But in actual life, it can be easily observed that a good is capable of being put to several alternative uses. Hence its total demand is so high that its existing supply is not adequate to meet it. Thus the good concerned gains economic significance.

From the three fundamental propositions stated above, it is evident that an economic problem arises only because all these conditions are not fulfilled simultaneously. Hence, there is need for "economic" use of resources. It is the problem of choice the resources. We have to choose between the more urgent and less urgent wants, and decide which wants should be satisfied first and which wants should be postponed for future satisfaction.

Lionel Robbins demolished the Marshallian structure of economics based on "material welfare" and erected an altogether new edifice on two foundations namely multiplicity of wants and scarcity of resources. This definition is scientific, analytical universal, clear, general, precise and hence superior to earlier definitions.

In spite of its scientific nature, Robbins' definition was put to stringent criticism on the following grounds:

1. It is said that since wealth consist of economic goods (scarce goods), the wealth definition and scarcity definition are not very different.
2. It is too wide as it creates a new ground for individual economics. Economics, being a social science, is relevant only in the context of social behavior.
3. It is not as exact and scientific as it claims to be, because of the fact that "exchange", "market process" and "pricing" are essential for the economic process rather than "scarcity" and "husbandry of resources".
4. To Robbins' economics is nothing but a positive science. But many others feel that economics is also a normative science. It should not merely describe but also prescribe. The famous economist John Maynard Keynes stated that, "the theory of economics does not furnish a body of rather than a doctrine, an apparatus of mind, a technique of thinking which helps its possessors to draw correct conclusions".
5. Robbins' definition deals too much with "means" but almost very little with "ends".

6. It dehumanizes economics by reducing economics to equilibrium analysis.
7. Macroeconomics falls outside the purview of Robbins' definition and thus an important branch is outside of its fold.

IV. GROWTH ORIENTED DEFINITION: Paul A. Samuelson gave a definition of economics which seeks to remove the defects in Robbins' view. It includes the aspect of economic growth and has the chief merit of taking cognizance of the dynamic changes occurring in the "ends" as well as the "means" with the passage of time. According to Samuelson, "economics is the study of how men and society choose with or without the use of money, to employ scarce productive resources which could have alternative uses to produce various commodities over time, and distribute them for consumption now and in the future among various people and groups of society".

This definition has included the element of time which has made it dynamic. The problem of growth in ends and means have now been included and hence the superiority of this definition over that of Robbins. This appears to be the most satisfactory and acceptable definition of economics.

1.1.5 NATURE AND SIGNIFICANCE OF BUSINESS ECONOMICS

The terms "Economics for Business Decisions", "Economic Analysis for Business Decisions", "Economics of Business Management", "Economics of the Enterprise", "Economics of the firm", "Business Economics" and "Managerial Economics" have all been used interchangeably. The use of economic tools to analyse situations, of economic reasoning to solve business problems, of economic theory to business practice has come to be accepted by management or business executives in business organizations in their prime functions of decisions making and forward planning.

Decision-making is the process of choosing one among alternative courses of action and forward planning is the process of planning for the future. Since factors of production like land, capital, labour and enterprise are scarce and they can be put to alternative uses. It is a question of choice or decision-making regarding the most efficient allocation of resources or inputs to attain the maximum output and the most effective means of achieving the desired goal, say maximization of profits. Once choice of the goal to be achieved is made, then plans relating to inputs, output, pricing, etc. are drawn. Thus forward planning and decision-taking are simultaneously undertaken. Further, business people are engaged in a continuous process of decision-making in an environment of

uncertainty and change. In permitting the prime function of taking decisions in an uncertain environment, economic tools, theory and analysis can be best put into service. Input-output analysis, optimization techniques and linear programming have all become popular. Economic forecasting, demand forecasting, price forecasting, profit forecasting, etc. have come to use econometrics for formulating business policies.

Self Assessment Questions

1. State and assess the wealth definition of Economics.
2. State and assess the welfare definition of Economics.
3. How did Lionel Robbins give a new definition of Economics? Explain its content, merits and demerits.
4. The growth-oriented definition of Economics is superior to that of others. Elucidate.
5. Examine the nature and significance of business economics
6. Distinguish between positive and normative economics.

LESSON 1.2

ECONOMIC ANALYSIS

Introduction – Nature of Economic Laws – Methods of Economic Enquiry – Meaning of Micro and Macro Economics.

1.2.1 INTRODUCTION

Economic analysis is concerned with how an economy works the formulation of economic laws, the methods of economic enquiry and the different approaches to economics. Economic laws, unlike the exact laws of physical sciences, are more exact than laws of other social sciences. The two methods of economic enquiry namely deduction and induction play a vital part in economic reasoning. The two branches of economic analysis, viz. 1) Micro-economics and 2) Macro-economic are two different approaches, the one analyzing small individual units of the economy microscopically, whereas the other looks at the economy as a whole and its large aggregates respectively. Each has its advocates, but now every economics student recognizes the importance and complementarity of both.

1.2.2 NATURE OF ECONOMIC LAWS

Every science, natural or social, has its laws. These laws are generalizations build upon the bases of facts, reasoning and scientific verification. In economic science also, there are many such laws. But, by their nature, economic laws are different from those of physical sciences like physics and chemistry.

First of all, economic laws are hypothetical; they are valid with the qualifying phrase “ceteris paribus” which means “other things being equal”. This condition qualifies all economic laws. In actual life, other things seldom remain equal. But this does not deter the validity of economic laws. All social sciences are under the necessity to make certain assumptions. To quote Alfred Marshall, “Economic laws or statements of economic tendencies are those social laws which relate to branches of conduct in which the strength of the motives chiefly concerned can be measured by a money price”. The implication of this definition is that given certain conditions, certain results are likely to occur. There is an element of uncertainty about them. For instance, the Law of Demand states that, if price rises, the demand for the commodity will contract. This is true and the law is quite valid, only when counteracting forces do not operate. Hence we say that economic laws are merely statements of tendencies. The hypothetical nature of economic laws contradict with laws of natural sciences due to the following reasons:

1. Economic laws are concerned with human behavior which is subject to emotions, impulses and feelings.
2. Time factor also makes for the hypothetical nature of economic laws. With the passage of time, conditions change, so also economic laws. However, economic laws are more exact than other social laws, because economic science makes use of the “measuring rod of money”. To Marshall, the laws of economics are to be compared with the laws of tides rather than with the simple and exact law of gravitation. Economic laws, like tides, lack predictability and exactness.
3. Lionel Robbins, however, did not subscribe to this narrow view and broadened the scope of economic laws. Whether any objective or conduct of man is concerned with money or not is immaterial; still, it will fall within the ambit of economic laws, if it is involving the problem of choice, i.e., allocation of limited means among competing ends. In the view of Lionel Robbins, economic laws are statements of tendencies which govern human behavior relating to the use of scarce means for the achievement of unlimited wants.
4. Economic laws are not permanent, general and everlasting because they are framed in a particular social and institutional set-up. When the set-up itself changes, no longer the established law will remain relevant. Economic laws will undergo change with the evolution of economic life of man and transformation in the institutional set-up. Thus, economic laws applying to hunting and pastoral stages did not make sense in the agricultural and industrial stages. Economic laws framed in the contest of capitalistic institutional set-up may not apply to the socialist countries. Laws of economics, valid for developed economies, may fail to apply to less developed countries because different conditions and factors obtain in these countries. Economic laws are not statutory commands or moral laws or even customary laws. They are merely in the indicative mood and not in the imperative mood.

1.2.3 METHODS OF ECONOMIC ANALYSIS

As in the case of every other science, so in the field of economic analysis, there are two important methods useful for investigation and formulation of its principles, laws, generalizations or theorems. They are deductive method and inductive method. The issue of whether deductive method is preferable to inductive method or vice versa was a raging controversy in the 19th century. The English classical economists like David Ricardo, T.R.Malthus, John Stuart Mill and Nassau Senior were solid advocates of deductive methodology.

Deductive Method:

The deductive method is also called the abstract, analytical or a priori method. In this method, we start from a few indispensable facts and after making certain assumptions,

through logical reasoning, certain conclusion are reached. It consists of three important stages, namely (i) observation, (ii) logical reasoning, and (iii) inference and testing by means of further observations. Deductive reasoning provides us with hypothesis which are tested and verified with relevance to facts and figures and then we draw valid economic laws.

In economics, we start with simple premises and step by step work up to more complex and refined hypothesis. In this method, we descend from the general to the particular.

The following merits are found in the deductive method;

1. It is simple and logical
2. It does away with the need for experimentation.
3. It leads to accuracy in generalization due to logical reasoning

However, there are certain defects:

1. If assumptions made are wrong, generalizations made on the basis of wrong assumptions will also be invalid.
2. There is too much abstraction and economists through their intellectual exercise give rise to only “intellectual toys” without any reality.
3. Generalizations of deduction based on wrong premises may become dangerous and disastrous results will follow when governments frame policies on such premises.

Induction

Method:

The inductive method is also known as the empirical method. It derives economic generalizations based on experience and observations. In this, data are collected with reference to certain economic phenomena and finally generalizations are derived from the collected data and observations. Here, we mount from the particular to the general. From observations we build up through reasoning founded on experience, to formulate generalizations based on observed data. The historical school of Germany represented by Carl Knies, Hildebrand, Prof. Roscher and Von Thunen were strong and staunch supporters of the inductive method. It should however, be emphasized that the division of opinion between the two schools of thought was neither complete nor clear-cut.

In the inductive method, economic scientists proceed from a particular angle to scientific problems to bridge the gap between theory and practice. Induction is done by either experimentation or the statistical approach and these are the two forms of induction.

Experimentation has larger scope in the physical sciences and whereas the statistical approach in social sciences like economics. The famous Malthusian Theory of Population and Engel's Law of Consumption are based on the statistical approach.

The merits of the inductive method are as follows:

1. It leads to precise, measurable conclusions.
2. It is highly practical and realistic.
3. It is helpful in verifying the conclusions of the deductive method.
4. It emphasises relativity of economic laws which are valid only under certain conditions and circumstance.

The following are the drawbacks of the inductive method:

1. There is an underlying risk of drawing false and hurried conclusions from inadequate data and facts.
2. The collection of data and facts in itself is no easy work.
3. Divorced from deduction which uses logical analysis, it would only produce a mass of unrelated and unconnected facts and figures. Induction alone would not deliver the goods unless it is supplemented by using deductive reasoning.

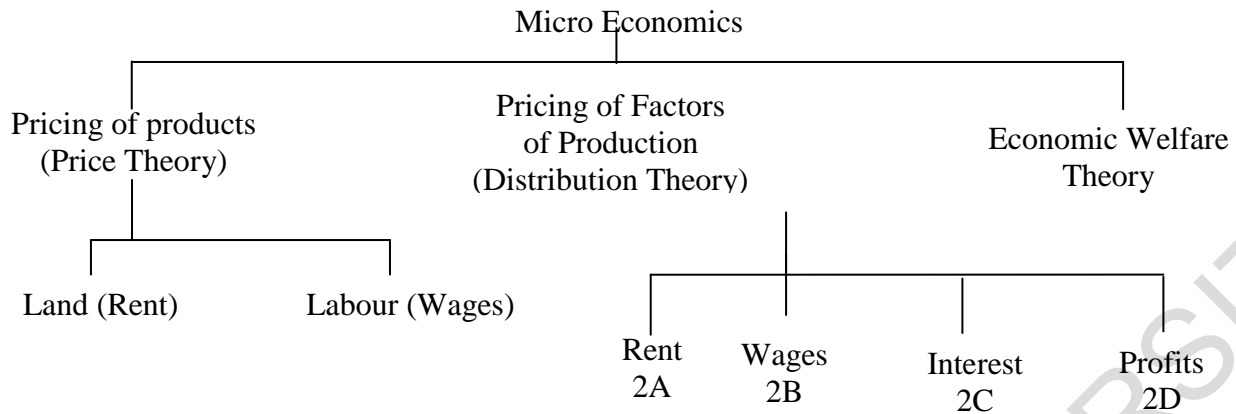
Interdependence between the two methods:

The two methods are equally useful and the controversy over the superiority of any one over the other was held at rest by the eminent compromising genius, Alfred Marshall, who stated, "Induction and Deduction are both needed for scientific thought, as the right foot and the left foot are both needed for walking". The interdependence of the two methods for economic analysis was well stated by J.N.Keynes "As a matter of fact, it is only by the unprejudiced combination of the two methods that any complete development of economic science is possible". "That they are complementary rather than competitive to each other", has been pointed out by P Samuelson who emphasised that, "if properly understood, therefore, theory and observation, deduction and induction cannot be in conflict".

1.2.4 MICRO-ECONOMIC ANALYSIS

The subject matter of economics consists of two parts, namely Micro economics and Macroeconomics. Ragnar Frisch, who is among the first Nobel laureates in Economics coined these terms which are now universally used. "Micro" is derived from the Greek word "mikros" meaning small and "Macro" from "makros" meaning large.

The ingredients of micro economics are presented through the following chart:



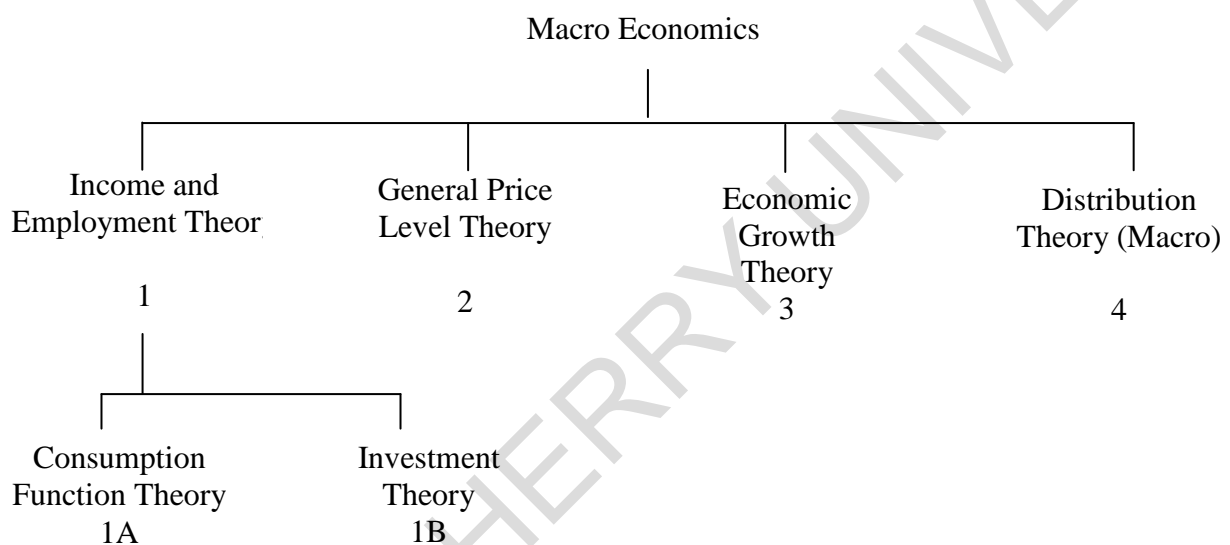
Thus, micro economics studies:

1. Demand and theory of consumption
2. Supply and theory of production
3. Price theory or exchange theory
4. Theory of distribution which also includes theories of rent, wages, interest and profits, and
5. Theory of Economic Welfare.

According to K.E.Boulding, "Micro economics is the study of particular firms, particular households, individual prices, wages, incomes, individual industries, particular commodities". Thus, it deals with the analysis of small individual units of the economy such as individual consumers, firms and small groups of individual units such as various industries and markets. It is a microscopic study of the economy. Herein it should be emphasized that it does not study the economy in its totality. It looks at the economy through a microscope, to analyse how the millions of units in the economy (analogous to cells in any organism) play their part in the functioning of the entire economic organisation. To quote Prof.Mc.Connel, "Micro Economics is concerned with specific economic units and a detailed consideration of the behaviour of these individual units. Micro Economics examines the trees and not the forest. Micro Economics is useful in achieving a worm's-eye view of some very specific component of our economic system. Alfred Marshall's magnificent book named "Principles of Economics" published in 1890 is concerned mainly with Micro Economics. Using Marginal Analysis which is an important tool of microanalysis, it studies the functioning and behaviour of micro-variables or micro-quantities. As it splits the whole economy into smaller parts for intensive study, it uses the Slicing Method.

1.2.5 MACRO ECONOMIC ANALYSIS

Macroeconomics is the study of aggregates; hence called Aggregative Economics. It is the analysis of the entire economic system, the overall conditions of an economy like total investment and total production. In the words of K.E.Boulding, "Macroeconomics deals not with individual quantities as such but with aggregates of these quantities; not with individual incomes, but with the national income; not with individual prices but with the price levels; not with individual outputs but with the national output". It analyses the entire economy and its large aggregates like total national income and output, aggregate consumption, savings and investment and total employment. The ingredients of macroeconomics are present in the following chart:



In the view of Prof. Mc Connel. "The level of Macroeconomics is concerned either with the economy as a whole or with the basic sub-divisions or aggregates such as governments, households and businesses which make up the economy. It gives us a bird's-eye view of the economy". It deals with the great averages and aggregates of the system rather than with particular units composing it. It studies the functioning and behaviour of macro-variables or macro-quantities. Since it breaks up the economy into big lumps or sectors for intensive analysis, it is also called the Lumping Method. John Maynard Keynes' magnum opus named "General Theory of Employment, Interest and Money" published in 1936, is concerned mainly with macroeconomics.

Interdependence between the two

The two approaches are complementary and interdependent and neither is complete without the other. Both are absolutely vital to a proper study of economics. As Paul

Samuelson said, "you are less than half-educated if you understand the one while being ignorant of the other". The relation between the two approaches is "a two-way street". To conclude, in the words of G.Ackley the micro-economic theory should provide the building blocks for our aggregate theories. But macro-economic may also contribute to micro-economic understandings".

Self Assessment Questions

1. Economic laws are statements of tendencies - Comment.
2. Induction and Deduction are both needed for scientific thought, as right foot and the left foot are both needed for walkin. - Discuss.
3. What do you understand by Micro and Macro Economics? Explain the differences between the two.

LESSON 1.3

FUNDAMENTAL CONCEPTS

Introduction - Fundamental Concepts: Wants - Utility - Value & Price - Wealth and Welfare

1.3.1 INTRODUCTION

The beginning of all subjects generally commence with definition of important concepts which we have to use frequently in that branch of knowledge. However, it should be noted that with the growth of the subject with the passage of time, new perceptions and more and more terms come into usage and, therefore, it is very difficult to give an exhaustive list of all terms. Still essentially a few fundamental concepts must be known to all students of economics because of their frequent use in the subject.

1.3.2 WANTS

The starting point of all economic activity is the existence of human wants. The presence of want denotes the absence of satisfaction. It refers to the desire felt by an individual. When one says he wants a book, he feels a desire for it and without it he is not satisfied. There are fine distinctions between want, desire and need. Desire refers to the want for a particular commodity. Need refers to a primary want which one feels instinctively, such as thirst and hunger. In spite of these finer distinctions, people generally include desires and needs in the category of wants.

Characteristics of Human Wants

- 1. Wants are multiple:** There is no limit to human wants. With the passage of time and the growth of civilisation, human wants have increased in number and variety. Our forefathers and grandparents perhaps did not know the transistor radios, mobile phones, television sets, air travel to mention a few.
- 2. Wants are satiable:** It is possible to satisfy a single or individual want, though not all of them. The law of Diminishing Marginal Utility is based on this characteristic of the satiability of a single want at a time. The more and more units we have of a thing the less and less of it we want. This is common human experience.
- 3. Wants are complementary:** The satisfaction of certain wants depends upon the availability of more than one commodity. A mobile phone to give us satisfaction must have battery in it. That is to say that many wants go together, for example car and petrol; coffee, milk and sugar which are complementary goods.

4. Wants are alternative: It is possible to satisfy some of our wants by choosing from many available substitutes. The reader can buy "The Hindu" or "The Indian Express" or any other daily to satisfy his want. In order to satisfy thirst, one can drink buttermilk or coconut water or any other drink of his liking. Many commodities, known as substitute goods, are competing with one another for our satisfaction.

5. Wants are recurrent: Some wants occur again and again. Some of them repeat themselves after a few hours (hunger, thirst), some others after a few days (washed clothes, toothpaste, haircuts), a few others after months (electric bulbs, fresh clothes), many others after a few years (mobile phone, car) and some others after decades (houses, furniture). Thus either after a short or a long interval, wants are bound to recur.

Classification of Wants

Since all human wants are not of equal importance, it is possible to classify them based on their urgency or importance into necessities, comforts and luxuries.

I. Necessaries: Necessaries are those wants which occupy topmost priority in consumer budgets, as they are indispensable for human beings. They are, however, subdivided into:

- a) **Necessaries of Life:** They are those which are indispensable for human existence. These are the primary needs of human beings for life, e.g. water, food, clothing, shelter, etc.
- b) **Necessaries for efficiency:** They are those that make us efficient in our work, e.g. nutritive food, houses with amenities, well-equipped colleges or office. These create the framework for efficient study, work and so on.
- c) **Conventional necessities:** They refer to those which are felt because of social customs or regular habit, e.g. alcohol, snuff, coffee, tea, cigarettes, etc. They are unavoidable for those who are habituated to them. In a similar way, we can cite the instances of many social functions like wedding and other ceremonies which are the accepted way of social life.

II. Comforts: These are wants that make for a comfortable life, even though they are not indispensable, e.g. cushioned furniture, air-conditioned offices or houses etc. These comforts add to our comfort but not in proportion to our expenditure on them.

III. Luxuries: These are called superfluous wants and often people spend money on luxuries to elevate their status in society or show off as superior people. Veblen called them "conspicuous consumption" because they are used to display one's wealth, e.g. expensive ornaments, private swimming pools, rearing pets at home, etc.

Whether a good falls under the category of necessity, comfort or luxury is a matter

of subjective feeling and judgment. It should be emphasised here that they are relative. What is deemed a necessity by one may be considered a comfort by another and a luxury by yet another. A refrigerator and car may be a necessity for the richer class, and a luxury for workers. With the lapse of time, it is quite possible that these individual valuations may vary. Time was when electric fans and television sets were considered either comforts or luxuries but now they are deemed necessary. These individual evaluations also vary from country to country or from society to society. The question of deciding whether a commodity is a necessity, comfort or luxury depends upon the country, the age and class to which the individual belongs as also his own judgment.

1.3.3 UTILITY

In ordinary parlance, utility means usefulness. In economic science, it refers to the power of a commodity to satisfy a human want. It means the want satisfying capacity of a good. A thing may be completely useless or even harmful like wine or cigarette. But since it possesses want satisfying power, it has utility. It is a subjective concept. It is also a relative concept. The utility one gets from drinking a cup of coffee may not be the same for another person or even for the same person it may vary at two different times. It is therefore difficult to make inter-personal comparisons of utility.

The utility of a commodity depends on the place, time and form. By place utility, we mean that a commodity has utility at one place and not at another. Thick woollen blankets are having utility in places with cold climate like Kodaikanal and Ooty than in Trichy and Pondicherry.

Time utility refers to the period or season in which certain goods acquire utility. Cool drinks and ice cream add to our utility in summer and hot drinks like tea and coffee during winter. Form utility is created when shape and form are changed in some things. For example, form utility is created when raw wood is changed into furniture, rice flour is changed into idlies, and cloth piece is altered into shirts and trousers.

It should also be stated that service utility is created when a service is rendered. For instance, when a doctor performs a surgical operation, he renders a service, namely surgery has service utility. Singing, dancing, etc. also fall under the same category.

Law of Diminishing Utility

Since the desire for a thing diminishes as we have more of it, its capacity to satisfy our desire, namely its utility must also diminish. This tendency can be stated as the law of diminishing utility as follows; -The more and more we have of a thing, the less and less

we want additional units of it". The basis of this economic law is the common experience of consumers.

1.3.4 VALUE AND PRICE

The term 'Value' has a special meaning in economic science. It means the power of a commodity to obtain other commodities in exchange for it. All economic goods have value. Value is a ratio, measuring the purchasing power of one commodity over another. For example, five chocolates are exchanged for fifteen biscuits; it means that the value of a chocolate is three biscuits or the value of a biscuit is one-third of a chocolate.

While value-in-use refers to utility, value-in-exchange means the purchasing power of a commodity. Commodities like water have high value - in- use (Utility) but low or no value-in-exchange. When the value of a commodity is expressed in terms of money, it is known as the price of the commodity. If two chocolates are purchased for ten rupee, then one chocolate is having a price of 5 rupees. Value is a relative term which is a measure of comparison. When the value of one commodity falls, the value of other things it can get in exchange rises. Thus it must be clear that there can be a general rise or fall of prices of all commodities but there cannot be a general fall or rise of all values.

1.3.5 WEALTH AND WELFARE

Wealth refers to all economic goods. Anything that directly or indirectly satisfies a human want is known as wealth. It includes the entire stock of resources of a country like labour, natural resources including land, man-made goods which enable people to produce goods and services. If wealth denotes the stock of productive resources, income refers to the flow of goods or services from wealth.

There are four characteristics of wealth. They are utility, scarcity, transferability, and externality. In order to be regarded as wealth. A commodity must have the power or capacity to satisfy a human want, must be limited in supply relative to demand, must be capable of being transferred physically and must be outside of and visible to us.

A distinction can be made between different categories of wealth like personal wealth, social wealth and national wealth. Personal wealth denotes all material possessions owned by a person, non-material possessions like goodwill, professional contacts, and the like but excludes personal qualities. Social wealth refers to things such as public buildings, roads. libraries, museums, water-supply and electricity and the like. National wealth consists of national highways, railways and other such transport facilities,

rivers, mountains, etc.

Welfare is a state of mind, a subjective feeling of being satisfied. Thus wealth and welfare are different, while wealth refers to a stock of goods, welfare denotes a state of mind. In early times there was a controversy between scholars about wealth and welfare. Carlyle and Ruskin criticised economics as a dismal science, saying it taught men how to accumulate wealth. This criticism was unfair because they were ignorant of the objectives of economics. viz. improving human welfare through the optimum utilisation of available wealth or resources. There is no such conflict, indeed, between the nobler aim of life and economics. Economic well-being is the concern of economics. Economists speak of wealth in a practical sense. They claim that wealth refers to only those things which have a price in the market. One cannot lead a good life in this world without material wealth. So there is nothing wrong in trying to acquire wealth.

Certain types of wealth, however, adversely affect material welfare. It is also true that certain goods which are not wealth in the economic sense, contribute to the material welfare of human beings. Some goods, which are wealth in economic parlance, cause ill fare and ill health to human beings, e.g. intoxicants, narcotics, yellow journalism, bad films. etc. Yet they are studied in economics because they are purchased and sold in the markets; their demand, supply and pricing are all relevant to economic science. Economists leave to the study of other sciences like ethics, philosophy, the study of moral principles, whether a thing is good or bad, just or unjust, and the like.

Self Assessment Questions

1. What are wants? What are their characteristics? How is wants classified?
2. What is Utility? What are the types of utility?
3. What is wealth? What are its characteristics?

UNIT - II

LESSON 2.1 DEMAND ANALYSIS

Introduction-Demand Analysis - Meaning of Demand - Determinants of Demand - Law of Demand - Types of Demand

2.1.1 INTRODUCTION

In day-to-day conversation, almost all people have been talking about demand and supply. The terms are frequently used in newspapers, magazines, financial pages. The fluctuations in prices are usually explained in terms of changes in demand and supply. It has been rightly observed by an unknown person: "You can make even a parrot into a learned political economist by making it utter the two words "demand and supply".

2.1.2 DEMAND ANALYSIS

It seeks to search out and measure the forces that determine sales and as Joel Dean mentions in the book "Managerial Economics", there are two main managerial purposes for it: 1) forecasting sales and 2) manipulating demand. All other purposes are subsidiary to the main economic problem. viz. planning for profit. If demand analysis which helps solving management problems is to be undertaken, an understanding of the theory of demand is quite essential.

2.1.3 MEANING OF DEMAND

In economic science, the term "demand" refers to the desire, backed by the necessary ability to pay. The demand for a good at a given price, is the quantity of it that can be bought per unit of time at the price. There are three important things about the demand: 1. **It is** the quantity desired at a given price. 2. It is the demand at a price during a given time. 3. It is the quantity demanded per unit of time. For instance, the demand is stated as, say, 90 litres of milk per month or 3 litters of milk per day.

2.1.4. DETERMINANTS OF DEMAND

The factors that determine the size and amount of demand are manifold. The term "function" is employed to show such "determined" and "determinant" relationship. For instance, we say that the quantity of a good demanded

is a function of its price

$$\text{i.e., } Q = f(p)$$

Where Q represents quantity demanded
f means function, and
p represents price of the good.

There are many important determinants of the demand for a commodity:

1. **Price of the good:** The first and foremost determinant of the demand for a good is its price. Usually, higher the price of a good, lesser will be the quantity demanded of it.
2. **Income of the buyer:** The size of income of the buyers also influences the demand for a commodity. Mostly it is true that "larger the income, more will be the quantity demanded".
3. **Prices of related goods:** The prices of related goods also affect the demand for a good. In some cases, the demand for a good will go up as the price of related good rises. The goods so inter-related are known as substitutes, e.g. vacant land and house. In some other cases, demand for a good will come down as the price of related good rises. The goods so inter-related are complements, e.g. car and petrol. .
4. **Tastes of the buyer:** This is a subjective factor. A commodity may not be purchased by the consumer even though it is very cheap and useful, if the commodity is not up to his taste or liking. Contrarily, a good may be purchased by the buyer, even though it is very costly, if it is very much liked by him.
5. **Seasons prevailing at the time of purchase:** In winter, the demand for woollen clothes will rise; in summer, the demand for cool drinks rises substantially; in the rainy season, the demand for umbrellas goes up.
6. **Fashion:** When a new film becomes a success, the type of garments worn by the hero or the heroine or both becomes an article of fashion and the demand goes up for such garments.
7. **Advertisement and Sales promotion:** Advertisement in newspapers and magazines, on outdoor hoardings on buses and trains and in radio and television broadcasts, etc., have a substantial effect on the demand for the good and thereby improves sales.

The need to have clarity in demand analysis makes us adopt a 'ceteris paribus' assumption, i.e. all other things remain the same except one. This enables us to consider the relation between demand and each of the variable factors considered in isolation.

2.1.5 LAW OF DEMAND

Among the many causal factors affecting demand, price is the most significant and the price- quantity relationship called as the Law of Demand is stated 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" (Alfred Marshall). In simple words other things being equal, quantity demanded will be more at a lower price than at higher price. The law assumes that income, taste, fashion, prices of related goods, etc. remain the same in a given period. The law indicates the inverse relation between the price of a commodity and its quantity demanded in the market. However, it should be remembered that the law is only an indicative and not a quantitative statement. This means that it is not necessary that such variation in demand be proportionate to the change in price.

Demand Schedule

It is a basket of alternative hypothetical prices and the quantities demanded of a good corresponding to these prices. It refers to the series of quantities an individual is ready to buy at different prices. An imaginary demand schedule of an individual for apples is given below:

Table 1. Demand of a Consumer for apples

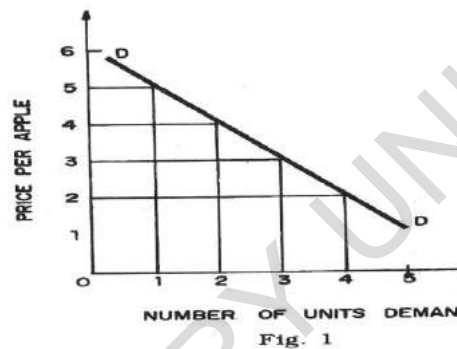
Price of apple per unit (in rupees)	Quantity of apples demanded (in dozens)
5	1
4	2
3	3
2	4

Assuming the individual to be rational in his purchasing behaviour, the above schedule illustrates the law of demand. At **Rs.5/-** per apple, the consumer demands 1 dozen of apples; at

Rs.4/- per unit 2 dozens, at Rs.3/- per unit 3 dozens and at Rs.2/- per unit 4 dozens. Thus the inverse relationship between price and demand is shown in the demand schedule.

Demand Curve

When the data presented in the demand schedule can be plotted on a graph with quantities demanded on the horizontal or X-axis and hypothetical prices on the vertical or Y-axis, and a smooth curve is drawn joining all the points so plotted, it gives a demand curve. Thus, the demand schedule is translated into a diagram known as the demand curve. The demand curve slopes downwards from left to right, showing the inverse relationship between price and quantity as in Figure 1.



Market Demand

The market demand reflects the total quantity purchased by all consumers at alternative hypothetical prices. It is the sum-total of all individual demands. It is derived by adding the quantities demanded by each consumer for the product in the market at a particular price. The table presenting the series of quantities demanded of all consumers for a product in the market at alternative hypothetical prices is known as the Market Demand Schedule. If the data are represented on a two dimensional graph, the resulting curve will be the Market Demand Curve. From the point of view of the seller of the product, the market demand curve shows the various quantities that he can sell at different prices. Since the demand curve of an individual is downward sloping, the lateral addition of such curves to get market demand curve will also result in downward sloping curve.

Shifts in Demand Curve

The price-quantity relationship represented by the law of demand is important. But it is more important for the manager of the firm to know about the shifts in the demand function (or curve). For many products,

change in price has little effect in the quantity demanded in relevant price ranges. Many other determinants like incomes, tastes, fashion, business activity, have larger effect on demand for such product. Thus, changes or shifts in demand curve rather than movement along the demand curve is of greater significance to the decision-maker in the firm.

Let us clearly know the difference between movement along one and the same demand curve and shift in demand curve due to changes in demand. When price of a good alone varies, *ceteris paribus*, the quantity demanded of the good changes. These changes due to price variations alone are called as extension or contraction of demand represented by movement along the same demand curve. Such movement along the same demand curve is shown in Figure 2(a).

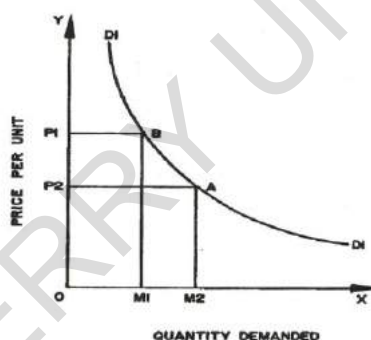


Fig. 2. (a)

Price declines from OP_1 to OP_2 and demand goes up from OM_1 to OM_2 . Here the demand for the good is said to have extended or expanded. This is represented by movement from point A to point B along the demand curve. On the contrary, if price rises from OP_2 to OP_1 , demand falls from OM_2 to OM_1 . Here the demand for the good is said to have contracted. This is represented by movement from point B to point A along the demand curve D_1D_1 .

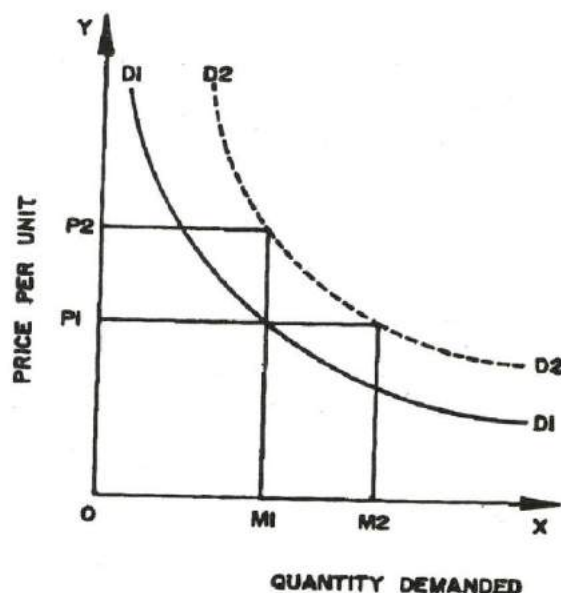


Fig. 2. (b)

Shifts in demand curve take place on account of determinants other than price such as changes in income, fashion, tastes, etc. The *ceteris paribus* assumption is relaxed; other factors than price influence demand and the impact of these factors on demand is described as changes in demand or shifts in demand, showing increase or decrease in demand. This kind of change is shown in Figure 2(b). The quantity demanded at OP_1 is OM_1 . If, as a result of increase in income, more of the product is demanded, say OM_2 at the same price OP_1 . Note that OM_2 is due to the new demand curve D_2D_2 . This is a case of shift in demand. Due to fall in income, less of the good may be demanded at the same price and this will be a case of decrease in demand. Thus increase or decrease in demand with shifts in demand curves upward or downward are different from extension or contraction of demand.

Causes of changes in demand may be due to:

- 1.Changes in the consumer's income.
2. Changes in the tastes of the consumer.
3. Changes in the prices of related goods (substitutes and complements).
4. Changes in exogenous factors like fashion, social structure, etc.

Why does the Demand Curve slope downwards?

The demand curve is only a geometrical representation of the law

of demand with quantity demanded in the horizontal axis and price in the vertical axis; hence the shape of the demand curve has to be one of downward slope, showing that more quantity is demanded at a lower price. This shape is explained by the following causes:

1. **Operation of the Law of Diminishing Marginal Utility:** It is in consonance with the law of diminishing marginal utility that the law of demand operates. In fact the Law of Demand is only a corollary from the Law of Diminishing Marginal Utility. Even though an average consumer does not measure exactly the marginal utility, he is no doubt influenced by the fact that additional expenditure on a given commodity yields him lesser and lesser satisfaction or utility as he purchases more and more units of it. The consumer will never pay for a good more than the money value of its marginal utility to him. It is clear, therefore, that he will not purchase a large quantity unless the price is low.
2. **Operation of the Principle of Different uses:** There are certain commodities which have several uses. If the price of that good is too high, the demand will be restricted to that purpose which the consumer considers to be the most important. When the price falls, the good will be utilised in less important uses and as a result the demand will rise. To give an example, when the electricity charge is very high, it will be used for lighting only. As it becomes cheaper, it will be used for fans, air-conditioners, refrigerators, cooking range etc.
3. **New purchasers:** If the price of a good falls, some people who were unable to purchase it would now be able to buy it. Therefore the new purchasers will add to the total demand
4. **Income Effect:** A decline in the price of a good gives rise to an increase in the consumers' real income. He can, therefore, buy more of the good. On the other hand, a rise in the price of a good results in a fall in his real income. Hence he will buy less of the good. Generally, a consumer does not spend a major portion of his income on any single good and so the income effect is not very strong. However in the case of any single essential good in whose purchase the buyer spends a large part of his income, the income effect will be very strong.

5. **Substitution Effect:** The decline in the price of a good not followed by a decline in the prices of its substitutes makes the good more attractive to the consumers. They now use more of the good and this leads to an extension or expansion of its demand. Thus the substitution effect operates. The contrary is also valid.

The change in the demand for a good, caused by a change in price is the combined result of these two effects. Normally the substitution effect will be stronger than income effect because the consumer would not prefer the same good; rather he would go in for other goods.

Exceptions to the Law of Demand

The Law of Demand will not hold good in certain peculiar cases in which more will be demanded at a higher price and less at a lower price. In these cases, the demand curves will be exceptionally different, differing from the usual downward sloping shape of the demand curve. The exceptions are as follows:

1. **Veblen Effect:** Thorstein Veblen, a social critic of his time, pointed out in his doctrine of "Conspicuous Consumption" that there are some goods which are bought by very rich people because of "snob-appeal", i.e., prestige-value. Citing the example of diamonds as articles used for ostentatious display by wealthy people, he said that when prices of such goods rise, their use becomes more attractive and hence their purchases are effected in larger quantities. If such goods were cheaper, the rich would not purchase them at all. It is only because of the "status symbol" or prestige value, diamonds and precious stones are bought by them. Veblen has considered the case of diamonds only from the social point of view and not the industrialists who use diamonds as a means of cutting edges in machine tools.

2. **Giffen Paradox:** Sir Robert Giffen observed that a rise in the price of bread caused low-paid British wage-earners in the nineteenth century to purchase more or at least as much bread as they did before, since they lived primarily on a diet comprising of bread. When the price of bread rose, they had to purchase the same quantity of bread by spending more on it. They were, of course, left with smaller amount - of money

with which they could buy only lesser quantity of meat. Faced with a rise in the price of bread, British working-class families curtailed their consumption of meat so as to be able to buy more of bread. This discovery of Sir Robert Giffen is known as the Giffen Effect or Giffen Paradox. Such exceptions lead to upward sloping demand curves.

3. Future Expectations: During inflationary and deflationary periods in an economy, expectations regarding the future play a vital role in price determination. In an inflationary situation, prices rise fast and the buyers anticipate further rise in prices. So they rush to the market to purchase additional quantities of goods required. In a depression or even a recessionary situation, prices decline and, in anticipation of further decline in prices, people may postpone purchases of goods and take advantage of the fall in prices. Thus at higher prices, more quantity is demanded and at lower prices, less quantity is demanded. Thus a negatively sloping demand curve which is the normal case does not obtain but a positively sloping demand curve, results.

All these exceptional cases are either deviation from the norm or of only lesser significance from the quantitative point of view.

2.1.5 TYPES OF DEMAND

There are three types of demand. They are

1. Price Demand
2. Income Demand and
3. Cross Demand

1. Price Demand

It refers to various quantities of the good which consumers will purchase at a given time and at certain hypothetical prices assuming that other conditions remain the same. We are generally concerned with price demand only. In the explanation of the law of demand given above, we dealt in detail with price demand only.

2. Income Demand

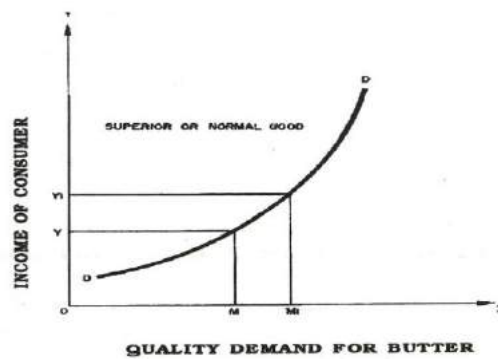


Fig. 3.

Income demand refers to various quantities of a good which consumers will purchase at different levels of income, other things being same. The other things which should remain the same include the price of the goods among others. The income demand schedule will show different incomes on the one side and the corresponding quantities of the good demanded on the other side. Usually, the larger the income of the consumer, the greater would be the quantity demanded of the good. This is particularly true in so far as superior goods, say, luxuries and comforts, are concerned. Figure 3 illustrates this. In the horizontal axis, the quantity demanded of the income of the consumer is represented.

When consumers' income is OY his demand is OM and when his income goes up to OY1, his demand increase to OM1. This is the case of a superior or normal good, say butter as in the present one.

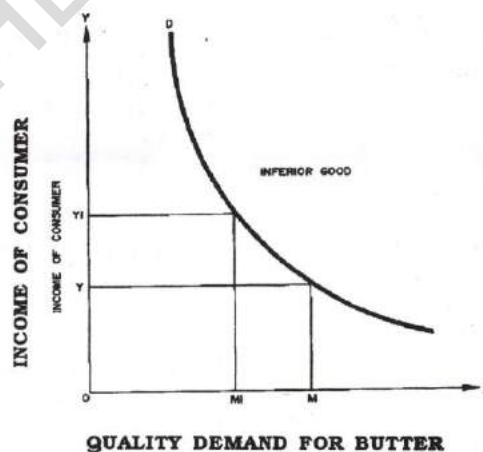


Fig. 4

When a consumer acquires more income, his demand for basic necessities, known as inferior goods, will come down. Whereas his demand for superior goods will go up. For example, when a person has more income, his demand for pulses, vegetables, butter, eggs, meat, etc. (known as superior goods) will rise and as a result his demand for

wheat (known as inferior good) will decrease. The income demand for an inferior good, therefore, will have the shape of a negative slope as represented in Figure 4. The demand of the inferior good, wheat, comes down with an increase in income of the consumer. At OY income the demand is OM. But when income increases to OY1, the demand falls to OM1.

3. Cross Demand

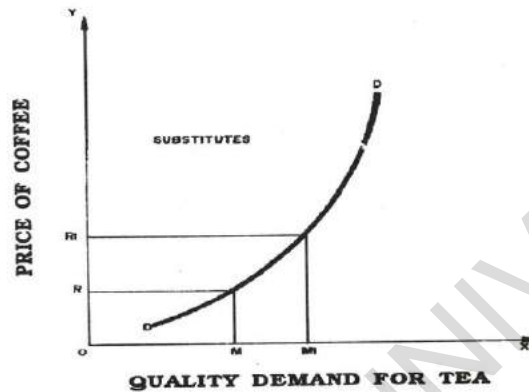
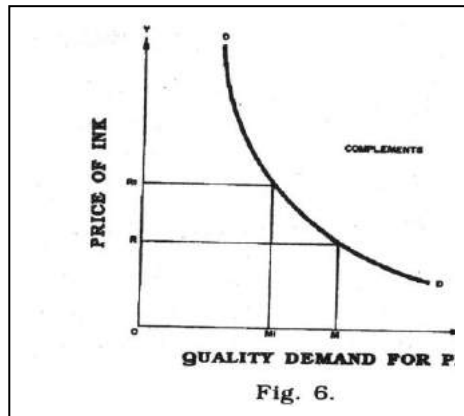


Fig. 5.

It refers to the various quantities of a good that consumers buy per unit of time at different prices of a related good, other things being equal. The other things which should remain the same include consumer's income as well as the price of the good concerned among other things. The correlation between the demand of one good and the price of the related good may be either positive or negative, depending upon the manner in which the two goods are related to each other. The two goods may be substitutes (rivals for consumption) or complements. In the case of substitutes, since they satisfy the same want, it is true that the more the consumer purchases of one good, the less he would require of the other good. To give an example, tea and coffee being substitutes, when the price of coffee raises the consumers purchase less of coffee and instead they may buy more of tea. Thus a rise in the price of coffee increases the demand for tea. On the contrary a fall in the price of coffee may lessen the demand for tea because the consumers are now inclined to increase their consumption of coffee. The cross demand curve of tea in relation to the price of coffee will slope upwards to the right. It will have a positive slope as shown in Figure 5. When the price of coffee rises from OR to OR1, the demand for tea goes up from OM to OM1.



Goods are many times jointly demanded to satisfy the same want and so the demand for one good will automatically lead to the demand for another good. They are known as complements, e.g. cups and saucers, car and petrol, pen and ink, bread and butter, etc. In the case of complements, the price of ink will have a negative or downward slope from left to right. It means that a fall in the price of ink will increase the demand for pens and the contrary is also true. When the price of ink falls from ORI to OR, the demand for pen increases from OM I to OM as illustrated in Figure 6.

To conclude, the demand of a consumer for a good is governed by:

- a) The prices of that good, (b) the prices of the related goods, viz. substitutes and complements, and c) income levels of the consumer. To these can be added demand due to advertising and sales promotion, a concept very important to the business community.

Self Assessment Questions

1. What is demand? What are its determinants? Why does a demand curve slope downwards?
2. State the law of demand and mention the factors which determine demand.
3. Explain the nature and causes of shifts in demand curve. What are the exceptions to the law of demand?
4. What is meant by price elasticity of demand? How is it measured?
5. On what conditions does the elasticity of demand depend? Describe the practical uses of the price elasticity measurement?
6. Elasticity for 'necessaries' is less as compared to the luxuries. Discuss this Statement.

LESSON - 2.2

CONSUMER'S EQUILIBRIUM - MARGINAL UTILITY ANALYSIS

Introduction - Meaning of utility - Cardinal and Ordinal Utility Consumer's Equilibrium - Law of Diminishing Marginal Utility - Law of Equimarginal Utility - Defect of Utility Analysts.

2.2.1 INTRODUCTION

A consumer aims at maximum satisfaction by spending his available income on several desired goods. The central problem is how he allocates his limited monetary resources so as to get maximum satisfaction. The goods have to be purchased at the market prices. Thus the consumer behaviour in allocating his limited resources to maximise his satisfaction explains the demand decisions of the consumer at higher or lower prices of the product. In other words, the consumer behaviour explains the relation between the price and the quantity demanded. The consumer is assumed to have full knowledge of the availability of goods and their market prices. If this is so, he has to compare the utility of different goods which he can buy in order to attain his objective of attaining equilibrium.

2.2.2 UTILITY - ITS MEANING

The term 'utility' is different from satisfaction. It refers to the "expected satisfaction" which a consumer hopes to obtain from a good, whereas satisfaction signifies "realised satisfaction". Utility may be measured, according to the Cardinalists. Some economists have suggested that the utility of a good can be measured in terms of the monetary units an individual is ready to pay to obtain a unit of the good. Some others maintain that the measurement of utility can only be subjective; therefore, it can be measured in subjective units called 'utils'.

2.2.8 CARDINAL AND ORDINAL UTILITY

For a clear understanding of utility analysis the distinction between cardinal and ordinal utility must be known. The terms 'cardinal' and 'ordinal' were contributed by mathematics. The numbers 1, 2, 3, 4, 5 and so on are cardinal numbers. For example, number 2 is twice the size of number 1. In contrast to this, the numbers 1st, 2nd, 3rd, 4th, 5th, etc. are ordinal numbers which are ordered or ranked. It is

impossible to know from the ranking, the actual size relation of these numbers. The 2nd number might be or might not be twice as big as the 1st number. The ordinal numbers 1st, 2nd, 3rd, 4th and 5th may be 2, 6, 9, 10 and 11 or 5, 10, 12, 13 and 14. According to the Cardinalists, it is possible to measure and compare the utilities of two goods, e.g. oranges and apples. To cite an example, an orange may give to the consumer a utility of 10 units, whereas an apple a utility of 20 units. In this example, it is clear that the consumer derives twice as much utility from an apple as from an orange. On the contrary, according to the Ordinalists, the utilities derived from the consumption of good can neither be measured nor compared. The ordinal concept allows us to state only that the consumer prefers an apple to an orange, but it cannot show by how much. Quantities of utility are inherently not measurable in theory, concept or practice. They explain the theory of consumer's behaviour without the idea of measurable utility. Alfred Marshall advocated the cardinal approach to utility, whereas J.R. Hicks and R.G.D. Allen gave rise to the ordinal approach through the indifference curve analysis.

2.2.4 CONSUMER'S EQUILIBRIUM

A consumer is stated to have attained equilibrium when he gets maximum utility or satisfaction by spending his available or disposable income on several desired goods. The crux of the problem is the optimum allocation of his limited money income in such a way as to derive maximum utility or satisfaction. The ordinal utility theory makes the following assumptions:

1. The consumer is rational, i.e. he aims at maximising his utility.
2. The consumer is able to derive a certain amount of utility from the consumption of each particular good.
3. The utility of each unit of good is measurable. Money is the convenient measure. The utility of the unit of good is measured by the amount of money which the consumer is willing to give in exchange for the unit of the good.
4. The marginal utility of money units is assumed to be constant.
5. The utility gained from successive units of a good diminishes. This is called the law of diminishing marginal utility.

2.2.5 LAW OF DIMINISHING MARGINAL UTILITY

It is the common experience of all consumers that when we consume a good which we desire, we obtain the greatest utility or satisfaction from the first unit but when we consume more and more of the good, we get less and less utility or satisfaction from the consumption of subsequent units of the good. This tendency is based upon the satiability of human wants.

Prof. Kenneth Boulding defines the law as follows: "As the consumer increases the consumption of any one commodity, keeping constant the consumption of all other commodities, the marginal utility of the variable commodity must eventually decline". Simply speaking, the more and more we have of a thing, the less and less we want additional units of it. For example - when hungry person is given a plate of loaves of bread, he will obtain the greatest utility from the first one; the second, the third and the fourth will give him less and less satisfaction or utility. In case he goes on consuming more and more, there will come a particular stage when he will reject another loaf of bread, because that would cause him discomfort or disutility.

Alfred Marshall has stated the law as follows - "The additional benefit which a person derives from a given increase of his stock of anything diminishes with the growth of the stock that he already has as the stock of a good increases, the total utility he derives from it increases at a diminishing rate.

TABLE SHOWING TOTAL AND MARGINAL UTILITY

Units Consumed	Total Utility	Marginal Utility
1	25	-
2	48	23
3	68	20
4	84	16
5	96	12
6	105	9
7	110	5
8	110	0
9	104	-6
10	94	-10

In the above table every successive unit of a commodity does add to the total utility but at a diminishing rate. In other words, marginal utility goes on diminishing until it becomes zero and then negative. The law can be graphically illustrated as in Figure 7. By marginal utility is

meant the additional satisfaction or utility obtained from one more unit. Total utility refers to the sum total of utility derived from all the units consumed. However one is concerned with marginal utility more than total utility.

We can observe the following relationship between marginal utility and total utility from the given table:

1. When total utility increases at a diminishing rate, marginal utility diminishes
2. When total utility is at the maximum, marginal utility is zero.
3. When total utility declines from the maximum, marginal utility tends to become negative.

Consumption proceeds not on the basis of whether total utility has increased or come to a standstill. The consumer calculates the addition to total utility from an extra unit and ensures that the price he pays is not higher than the utility derived from it. When we make purchases in the market, we are unconsciously weighing in our minds the extra utility we get from each successive unit. If the shop-keeper is to induce us to buy more, he has to reduce the price. We are measuring utility indirectly in terms of money. The following table illustrates this:-

TABLE SHOWING MARGINAL UTILITY AND PRICE

Unit	Total Utility	Marginal Utility	Price
1 st	20 paise	20 paise	5 paise
2 nd	32 paise	12 paise	5 paise
3 rd	39 paise	7 paise	5 paise
4 th	44 paise	5 paise	5 paise
5 th	46 paise	2 paise	5 paise
6 th	46 paise	0 paise	5 paise
7 th	44 paise	-2 paise	5 paise

Each unit is sold at 5 paise and the first three units give us more than 5 paise worth of marginal utility. At the fourth unit price is equal to marginal utility, so consumption equates price with marginal utility. We go on buying units of a thing until its price and marginal utility (measured in money) are equal.

The law of diminishing utility operates only under certain conditions as follows:

1. The units of the commodity consumed are identical in quality. Suppose

oranges are consumed. If one orange is sweeter than the other it becomes difficult to measure utility.

2. The commodity has to be consumed in quick succession. If the consumption is spread over a period of time, say an orange every hour, the want becomes recurring and utility may remain constant.
3. The consumer must be a normal person with normal habits. For gluttons the law is equally applicable, but takes time.

We may ask the question whether the law is true of money. For people with low income, every Balsa is precious and so the marginal utility of money is high. For the rich people, money has a low marginal utility. That is why they are unmindful of spending. So the law is true of money also. But money has no direct utility but only derived utility. Money is demanded not for its own sake, but for what it will buy. From the social point of view, as the income of a person rises, he is inclined to spend it on comforts and luxuries that are on socially less urgent wants. So, social justice demands that part of income spent on luxuries and comforts is to be taxed heavily and transferred to the poor people in the form of urgent wants like free education, free medical facilities, etc. Thus, the law has practical utility in the field of public finance.

2.2.6 LAW OF EQUI-MARGINAL UTILITY OR LAW OF SUSTITUTION

From a single commodity model let us pass on to two or multi-commodity model. How does the consumer reach equilibrium when he has a limited income to spend, but is faced by the two or an array of commodities to spend his income upon? The law of equi-marginal utility or the law of substitution or the law of maximum satisfaction is only an extension of the law of diminishing marginal utility to the demand and consumption of more than one commodity. Alfred Marshall stated the law as follows: "If a person has a thing which can be put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility, for if it had a greater marginal utility in one use than in another, he would gain by taking away some of it from the second use and applying it to the first".

If there are two commodities X and Y and the consumer has a given income to spend, the rational behaviour of the consumer would be governed by two factors:

1. The marginal utilities of the two commodities and
2. The price of the two commodities.

If the prices of the two commodities are given for the consumer, the law can be stated as follows:

The consumer should distribute his money income between the two commodities in such a manner that the utility derived from the last unit of money, say, rupee spent on each commodity is equal. To put it otherwise, the consumer will be in equilibrium when the marginal utility of money expenditure on each commodity is equal to the marginal utility, of the commodity divided by its price. Symbolically,

$$MU_e = \frac{MU_x}{P_x};$$

Where

MU_e represents marginal utility of money expenditure

MU_x represents marginal utility of commodity X, and

P_x represents price of commodity X

It is now possible to state the law thus: the consumer will spend his money income on various commodities in such a manner that marginal utility of each commodity is proportional to its price. When X and Y are two commodities,

$$\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y}$$

The equality can be achieved not merely at one level but at various levels of expenditure. It is the size of a consumer's money income that determines how far a consumer would go on buying the commodities he wants. With a given income, a rupee has a certain utility for him and this utility is the marginal utility of money to him. As the law of diminishing marginal utility applies equally to money income, it follows that the greater the size of his money income, the smaller the marginal utility of money to him. The consumer would go on buying commodities till the marginal utility of expenditure on each commodity becomes equal to the marginal utility of money to him. The consumers' equilibrium is attained when the following equation holds good:

$$\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y} = MU_m$$

MU_m represents marginal utility of money to him.

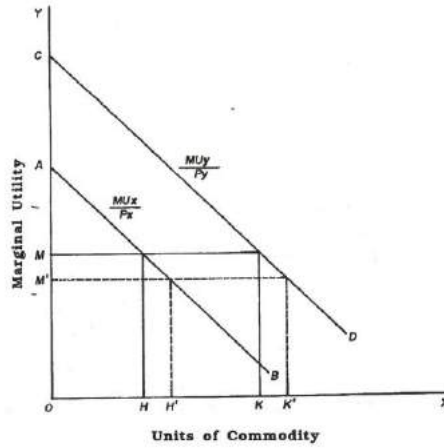


Fig. 8
Consumer's Equilibrium

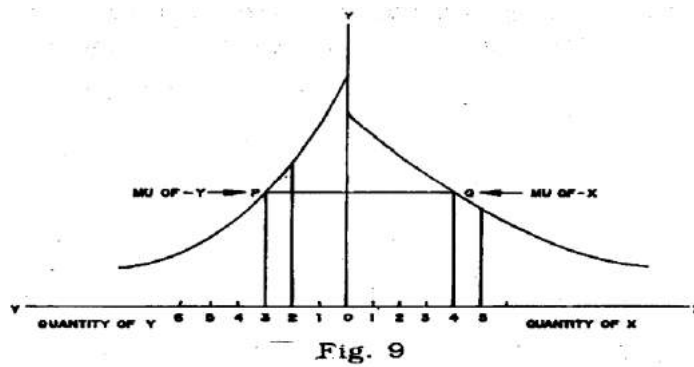
Extending this to several commodities, the proportionality rule should be:

$$\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y} = \frac{MU_Z}{P_{YZ}} = MU_m$$

Where X, Y and Z are three commodities. Consumer's equilibrium is diagrammatically depicted in Figure 8. Marginal utility curves of commodities slope negatively; hence curves showing

$\frac{MU_X}{P_X}$ and $\frac{MU_Y}{P_Y}$ would also slope downward. Taking the income of the consumer as given, let us assume that his marginal utility of money is constant at OM utils in Figure 8. $\frac{MU_X}{P_X}$ is equal to the marginal utility of money at OM when OH quantity of commodity is bought. $\frac{MU_Y}{P_Y}$ is equal to OM when OK quantity of commodity Y is bought. When the consumer is buying OH of X and OK of Y, the proportionality rule is satisfied. Therefore, the consumer is in equilibrium. If the money income of the consumer increases, his marginal utility of money will come down. If the new marginal utility of money is equal to OM', the consumer, to be in equilibrium, will increase the purchase of commodity X to OH and of commodity Y to OK.

The law of equi-marginal utility can be shown in another way also as in Figure 9.



In the figure, the marginal utilities of two commodities X and Y are shown on the right and left of the vertical axis respectively. The consumer buys 4 units of X and 3 units of Y which give him equal marginal utilities at points G and P. These two points are equidistant from the horizontal axis. The combination of two commodities (4 X + 3 Y) gives maximum utility to him. Any other combination will yield only less utility.

The consumer has to distribute his limited income on a number of commodities in such a way as to get maximum total utility or satisfaction. For every rupee spent on every commodity, he expects not less than a rupee's worth of utility. The consumer in the market is, so to say, weighing in his mind rather unconsciously, the marginal utility in each line of expenditure with price. He would so spend his limited income on several commodities that in each case when the marginal utility and price are equal. He equalises the marginal utility from each line of expenditure. He would first buy the most important commodity of his estimate and stop when its marginal utility is equal to its price; then move to the second, third commodities on the same lines. Let us illustrate the law of equi-marginal utility with the aid of a numerical example. The following example illustrates the point:

Tea:		Oil:		Salt:	
Price Rs.2. per Unit		Price Rs.3 per Unit		Price Rs.1 per unit	
Units	M.U.	Units	M.U.	Units	M.U.
1	- 6	1	- 3	1	- 8
2	- 4	2	- 2	2	- 5
3	- 2	3	- 1	3	- 3
4	- 1	4	- 0	4	- 2
5	- 0	5	- -1	5	- 1

In the example, marginal utility goes on declining with every additional unit purchased. The consumer has to equate the price of each commodity with its marginal utility (measured as money's worth). From the above, we find, that he will buy 3 units of tea at Rs.2/- per unit, as at that point, the marginal utility is also 2; one unit of oil and 5 units of salt. Let us now suppose that the price of tea falls to Re. 1/- per unit and the price of salt goes up to Rs.2/- per unit and the price of oil fall to Rs.2/- per unit. He would then redistribute his expenditure as follows: 4 units of tea, 2 units of oil and 4 units of salt. So in both the cases, the consumer distributes his income of Rs. 14/- in such a way as to get maximum utility.

This law of substitution has great practical importance:

1. The prudent consumer arranges his expenditure to get maximum satisfaction, by choosing an assortment of goods.
2. The producer, in his desire to get maximum profit, will so combine his factors of production that the price of each factor is equal to its marginal product.
3. The Finance Minister has to allocate the revenue of the state in such a way that each line of public expenditure yields the same marginal utility and maximum social welfare.
4. Substitution is nothing but exchange. Money is exchanged for commodities and vice versa. Here the marginal utility of money has to be compared with commodities. We weigh in our minds the marginal utility of parting with money and the marginal utility of securing a commodity.

2.2.7 DEFECTS OF UTILITY ANALYSIS OF DEMAND

1.Economic irrationality

The law is valid on the assumption of rational behaviour of the consumer. It may not be wholly realised in reality because of

- a. the vast array of goods faced by the consumer
- b. the difficulty of measuring, weighing and comparing marginal utilities of various goods
- c. the momentary impulses of certain consumers, etc.

2.Individuality of commodities

It is difficult to equalise marginal utilities, in the case of large, indivisible goods like refrigerator, automobile, car, etc.

3. Changes in the prices of goods

Fluctuations in the prices of goods frequently make comparison difficult since marginal utilities also change.

4. Basic assumptions of the law may be wrong

Certain assumptions of the law like constant marginal utility of money, accurate measurement of utility, etc. may not be obtained in practice. In spite of all these, the law is quite useful for demand analysis and in other fields also.

Self Assessment Questions

1. Distinguish between:
 - (a) Marginal utility and Total utility
 - (b) Cardinal utility and ordinal utility
2. Critically examine the law of diminishing marginal utility.
3. Explain how consumer's equilibrium is reached through marginal utility analysis.
4. Explain the law of equi-marginal utility with diagrams and examples.
5. State the limitations of the marginal utility analysis of demand.

LESSON 2.3

ELASTICITY OF DEMAND

Introduction, Concept -Price Elasticity of Elasticity of Demand - Income Elasticity of Demand – Cross Elasticity of Demand - Practical Application.

2.3.1 INTRODUCTION

The law of demand states that other things remaining same, a smaller quantity of a good would be demanded at a higher price and a larger quantity at a lower price. However it is not enough to know that whenever the price rises the quantity demanded falls, or whenever the price falls the quantity demanded rises. It is further important, to know, as to by how much the demand changes. Elasticity of demand measures, the change in demand due to change in factor affecting demand. Thus the concept of elasticity of demand is an important concept in economic analysis.

2.3.2 CONCEPT OF ELASTICITY OF DEMAND

The concept of elasticity of demand is a measure of sensitiveness of demand to a change in any of the causal factors. It shows how the amount of demand varies with respect to the variations in any of the factor affecting the demand, may be price, income or the price of a related product. In precise terms, demand elasticity is a percentage change in quantity demanded attributable to a percentage change in an independent variable (be any factor affecting demand).

As there are many independent variables, there is elasticity for each of the independent variables. Price of the product, income of the buyers and prices of the related products are important factors affecting the amount of demand. Corresponding to these, price elasticity of demand, income elasticity of demand and cross elasticity of demand are frequently figuring elasticities in economics.

2.3.4 PRICE ELASTICITY OF DEMAND

Alfred Marshall stated: "The elasticity (or responsiveness) of demand in a market is great or small as the amount demanded increases much or little for a given fall in price and diminishes much or little for a given rise in price". It is the rate at which quantity purchased changes as the price changes.

Price elasticity of demand is a measure of responsiveness of demand for a product to a change in its price. It is a ratio of proportionate change in quantity demanded to a given proportionate change in price. The simple formula for this is as follows:

Price elasticity of demand

$$\begin{aligned}
 &= \frac{\text{Proportionate change in quantity demanded}}{\text{Proportionate change in price}} \\
 &= \frac{\text{Change in quantity demanded/Original demanded}}{\text{Change in price/Original price}} \\
 P_E &= \frac{(Q_2 - Q_1)/Q_1}{(P_2 - P_1)/P_1} \\
 &= \frac{\Delta Q/Q_1}{\Delta P/P_1} \\
 &= \frac{\Delta Q}{Q_1} \times \frac{P_1}{\Delta P} \\
 &= \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}
 \end{aligned}$$

where

P_E = price elasticity of demand

Q_1 = quantity demanded before change

Q_2 = quantity demanded after change

P_1 = price before change

P_2 = price after change

ΔP = change in price and

ΔQ = change in quantity demanded

The formula may be written as

$$P_E = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

where P = original price, before a change and

Q = original quantity demanded, before change in price

In the above formula, either ΔP or ΔQ is negative. If price has declined, $(P_2 - P_1) = \Delta P$ will be negative. If price has risen, $(Q_2 - Q_1) = \Delta Q$ is negative. Price elasticity of demand will, therefore, be negative, reflecting inverse relationship between price and quantity demanded.

The negative sign before the formula is however omitted in discussions. Disregarding the sign, the ratio can vary from zero to an infinite value.

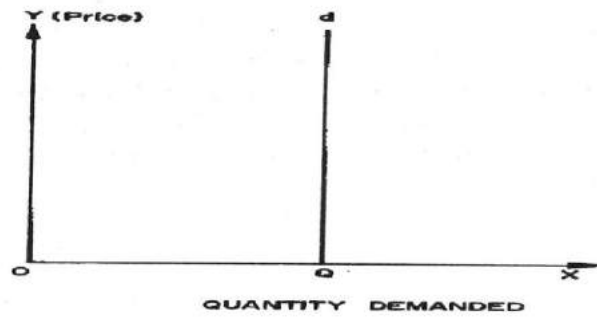


Fig. 10

Zero price elasticity shows that there is no response of demand to a price change, however great a change it may be. This situation is perfectly inelastic demand. A perfectly inelastic demand curve is shown in Figure 10. It is a vertical line parallel to the Y-axis on which price is represented. Another extreme is perfect by elastic demand which means that the firm can sell any quantity it wishes at the prevailing price, but none can be sold at all at a slightly higher price. A slight rise in price leads to a fall in quantity sold to Zero. Such a situation is exhibited by the horizontal straight line demand curve, which is parallel to vertical axis, as shown in Figure 11.

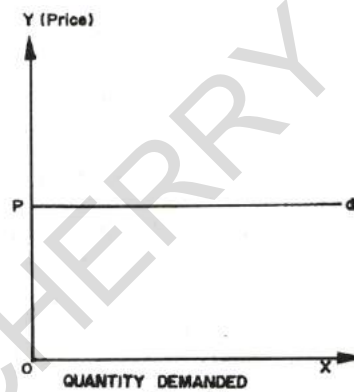


Fig. 11

Between these two extremes there are three different cases of price elasticity of demand:

1. An elastic or more elastic demand shows that a slight percentage change in price results in an appreciable percentage change in quantity demanded. An elastic demand curve is shown in Figure 12.



Fig. 12

2. The inelastic demand or less elastic demand indicates that an appreciable change in price does not lead to any appreciable changes in demand. Rather, a great change in price leads to a negligible change in quantity demanded. An inelastic demand curve is shown in Figure 13.

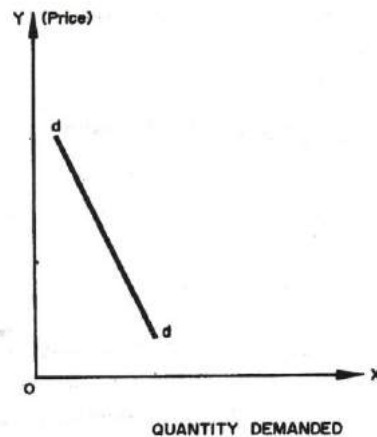


Fig. 13

3. A unitary elastic demand curve is shown in Figure 14. A unitary elasticity or an elasticity of one (unit) means that the percentage change in quantity equals a given percentage change in price.

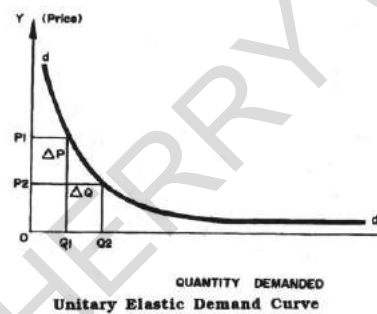


Fig. 14

As may be seen from Figures 12 and 13, more elastic demand curve is flatter than the less elastic curve. Alternatively, less elastic demand curve is steeper than the more elastic demand curve.

Although elasticity is indicated by the slope of the curve, it would be unwise to conclude anything definite about elasticity by looking at the slope of the demand curve, unless the two curves are drawn on the same scale. If scales differ, their slopes also will differ.

Measurement of elasticity of demand

The notions of elastic, inelastic and unitary elastic demand are indicators of percentage responsiveness of the demand to a given percentage change in price. Many however, will be interested in knowing how much such qualitative cases can be given exact numerical measurement. There are three methods employed for the measurement of elasticity of demand,

1. Coefficient of Price Elasticity or Formula Method,
2. Total Outlay Method and
3. Geometric Method

The elasticity of demand measured by using these methods is called point elasticity of demand, as elasticity is measured at a point on a demand curve.

1. Coefficient of price elasticity or Formula method: The formula for price elasticity of demand is as follows:

Price elasticity of demand

$$= \frac{\text{Proportionate change in quantity demanded}}{\text{Proportionate change in price}}$$

$$\text{i.e. PE} = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$$

P_E = price elasticity of demand

Q_1 = quantity demanded before change

P_1 = price before change

ΔP = change in price

ΔQ = change in quantity demanded

It can be explained with the following example:

TABLE SHOWING DIFFERENT ELASTICITIES OF DEMAND

Price per in price	Percentage change demanded	Quantity demanded in units	Percentage change in demand	Elasticity demand
1	2	3	4	5
Rs.10	-	100	-	-
I. Case Rs.11	10%	80	20%	20-10=2
II. Case Rs.11	10%	90	10%	10-10=1
III. Case Rs.11	10%	95	5%	5-10=0.5

Originally when price per unit is Rs.10, the demand is 100 units. In the first case when price rises from Rs.10 to Rs.11, the demand falls from 100 to 80 units and elasticity of demand works out by formula method to 2 which is more than unitary elasticity of demand. In the second case, when prices rises from Rs.10 to Rs.11, the demand falls

from 100 to 90 units and the elasticity of demand is one, showing unitary elasticity of demand. In the third case, when price rises from Rs.10 to Rs.11, the demand falls from 100 to 95 units and the elasticity of demand is 0.5, showing less than unitary elasticity of demand.

2. Total Outlay Method: Alfred Marshall suggested the measurement of elasticity of demand by the total outlay method, that is, whether the total consumer expenditure on the commodity rises or falls than before or remains constant.

Demand is elastic if, for a change in price, total outlay changes in the opposite direction:

TABLE SHOWING ELASTIC DEMAND

Price per unit	Total demand	Total outlay
Rs.5.00	1300 units	Rs.6500.00
Rs.4.00	1700 units	Rs.6800.00
Rs.6.00	1000 units	Rs.6000.00

Total outlay increases when the price falls to Rs.4/- and declines when the price rises to Rs.6.

Demand is inelastic when price changes and total consumer expenditure moves in the same direction:

TABLE SHOWING INELASTIC DEMAND

Price per unit	Total demand	Total outlay
Rs.5.00	1100 units	Rs.5500.00
Rs.4.00	1250 units	Rs.5000.00
Rs.6.00	1000 units	Rs.6000.00

For a fall in price, the quantity demanded does increase but the total expenditure is less than before, and for a rise in price, the quantity demanded too falls, but the total expenditure is more than before.

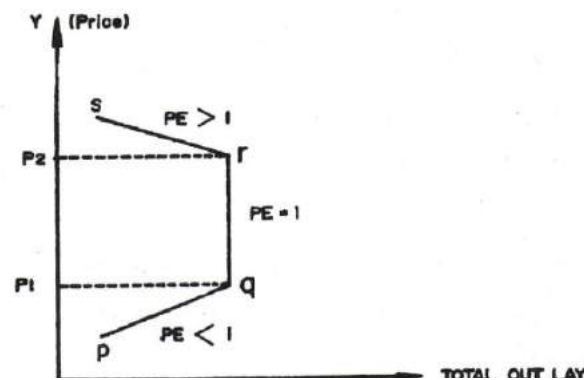
Demand is said to have unitary elasticity, when for a rise or fall in price, total expenditure remains the same as before:

TABLE SHOWING UNITARY DEMAND ELASTICITY

Price per unit	Total demand	Total outlay
Rs.5.00	1300 units	Rs.6500.00
Rs.4.00	1700 units	Rs.6800.00
Rs.6.00	1000 units	Rs.6000.00

The relation between variations in price and total outlay is shown in Figure 15. The total outlay curve is pqrs.

Relation between Variation in Price and Total Outlay



With a rise in the price in the range OPI, the total outlay increases and with a fall in price the total outlay decreases. Over this range of price, therefore, the elasticity of demand is less than one. In the price range of P1 P2, a rise or a decline in price keeps the total outlay constant. The elasticity of demand is therefore equal to unity. A rise in the price range above OP2 results in a fall in the total outlay. The elasticity of demand of this high range of price is more than one.

3. Geometrical Method: The geometrical method of measurement of elasticity of demand measures elasticity at a point on the demand curves by using same geometric relationship. Figure 16 illustrates the geometric method of measurement of elasticity of demand.

Measurement Elasticity of Demand

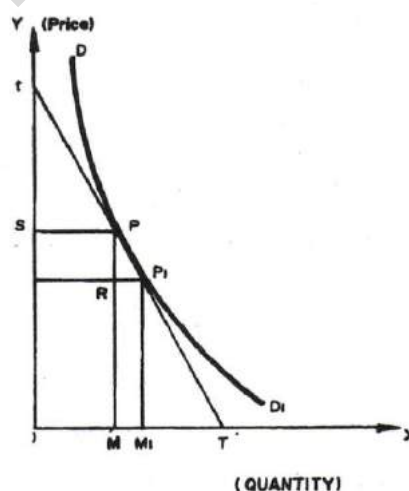


Fig. 16

Let DD1 be a demand curve. Assume that points P and P1 on the

demand curve are close to each other so that due to a small fall in the price from PM to PMI the demand rises from OM to OM1. In order to measure elasticity at the point P, let us draw a tangent to the point P on the demand curve. Further, let us extend the tangent drawn so that it meets Y- axis at point t and X-axis at point T.

The Elasticity of demand is defined as:

$$PE = \frac{\text{Change in the quantity demanded}}{\text{Original demand}} \div \frac{\text{Change in price}}{\text{Original price}}$$

$$= \frac{MM_1}{OM} \div \frac{PR}{PM}$$

This is by substituting the expression from geometrical Figure 16 into the price elasticity formula.

$$= \frac{MM_1}{OM} \times \frac{PM}{PR}$$

$$= \frac{MM_1}{PR} \times \frac{PM}{OM}$$

$$= \frac{RP_1}{PR} \times \frac{PM}{OM} \text{-----(1)}$$

Because $MM_1 = RP_1$, we have

$$\frac{MM_1}{PR} = \frac{RP_1}{PR}$$

Triangles PRP_1 and PMT are equiangular triangles. Therefore the ratios of their sides are equal. Thus we have

$$\frac{MT}{PM} = \frac{RP_1}{PR}$$

The expression $\frac{MT}{PM}$ can be substituted for

$\frac{RP_1}{PR}$ in equation (1) above and we get

$$PE = \frac{MT}{PM} \times \frac{PM}{OM}$$

$$= \frac{MT}{OM} \text{..... (2)}$$

From the Figure 16 we notice that

$$PE = \frac{MT}{OM} = \frac{MT}{SP}, \text{ because } OM = SP \text{ (3)}$$

The triangles tsp and PMT are also equiangular and hence similar. Once again the ratios of their sides are equal. Thus we have

$$\frac{MT}{SP} = \frac{PT}{Pt} \quad \dots \dots \dots (4)$$

Substitute equation(4) in the equation (3) above and we get

$$PE = \frac{MT}{SP} = \frac{PT}{Pt}$$

$$= \frac{\text{Segment of tangent line towards horizontal axis from point P}}{\text{Segment of tangent line towards vertical axis from point P}}$$

Factors Affecting Price Elasticity of Demand

Many factors influence the price elasticity of demand, as stated below:

1. Number of Close Substitutes: Larger the number of close substitutes available for a good, greater is its price elasticity of demand. If there are many close substitutes, the overall demand for commodities is shared by the substitutes. When the price of any one of the substitutes increases the buyers will switch over to other brands of the product and there will be a substantial fall in the demand for the goods in question. Consider, for instance, the price of meat. If it goes up, people would substitute it by chicken whose price remains relatively unchanged. Quite a few people who were earlier buying meat will now shift to chicken. Demand for meat will fall to a considerable extent. Thus, the price elasticity of demand for meat is quite high.

2. Nature of Commodity: The good may be either a necessary or comfort or luxury. The consumption of a necessary is inevitable whereas the consumption of a comfort or luxury can be postponed. The necessary is consumed either for subsistence or for maintaining minimum efficiency in working or as a matter of habit. They will have to be consumed in the same quantity even if their prices go up. Thus, the demand for such goods will be inelastic. The consumption of a comfort can be postponed whenever its price increases. This is particularly so in case of luxuries, whose consumption can even be avoided. Thus, when the price of the comfort or luxury rises, their consumption can be postponed. Therefore the demand for them will fall quite significantly when the price has a slight rise. The price elasticity of demand, therefore for comforts and luxury goods will be high, indeed.

3. Number of Uses of the Commodity: Many goods have several uses while some others have relatively less number of uses. Greater the number of uses a good has higher will be the price elasticity of demand. Electricity can be used for heating, cooking, lighting, ventilation, entertainment. A rise in the charge of electricity would make the consumers to stop using it for less important applications and use it only for more important ones. The demand for electricity would decline considerably when its price rises; it has more price elasticity demand.

4.Share of the Good in Consumer's Budget: The more costly the good and larger the share it takes in the consumption of total expenditure, the elasticity of the demand is more. On the contrary, a low-priced good which constitutes a small share of the total expenditure of the consumer 'will be having inelastic demand. Salt accounts for a very small proportion, of total expenditure made by an individual consumer. When its price goes up the consumer will not reduce its purchase significantly as he does not feel its pinch much. The demand therefore for such goods will be inelastic.

5. Durable Goods: Durable goods have higher price elasticity of demand than the non-durable ones. Durable goods mean that the goods have a long life and they wear out very slowly over a number of years. If the price of such good goes up, the people can postpone its purchases. Overall demand will, therefore fall. If its price falls, more people would replace the existing ones by the new goods. This is the case of durable goods like washing machines, refrigerators and furniture. In these cases, price elasticity of demand is high.

2.3.5 INCOME ELASTICITY OF DEMAND

Income elasticity of demand measures the responsiveness of the quantity demanded to a change in income.

$$\begin{aligned}
 IE_D &= \frac{\text{Proportionate change in quantity demanded}}{\text{Proportionate change in income}} \\
 &= \frac{\text{Change in quantity demanded}}{\text{Change in income} \div \text{Original income}} \\
 &= \frac{\Delta Q}{Q} \div \frac{\Delta I}{I}
 \end{aligned}$$

$$= \frac{\Delta Q}{Q} \times \frac{I}{\Delta I}$$

$$= \frac{\Delta Q}{\Delta I} \times \frac{I}{Q}$$

Where

IE_D = income elasticity of demand

I = original income

Q = original quantity demanded

ΔQ = change in quantity demanded

ΔI = change in income

If there is no change in demand as a result of change in income, the income elasticity of demand is zero.

If a change in income leads to a proportionate change in the quantity demanded, income elasticity of demand is equal to one (unity).

If, with a change in income, there is less than proportionate change in amount demanded, the income elasticity of demand is less than one.

If, with a change in income, there is more than proportionate change in the amount demanded, the income elasticity of demand is more than one.

The income elasticity of demand for most goods is positive, since larger amount is purchased at higher incomes. The income elasticity for a few goods is, however, negative and such goods are inferior goods. In case of inferior goods, over a given range of prices, less is demanded at higher incomes. The relationship between income and demand is inverse over such range of prices. Thus the income elasticity of demand is negative.

Knowledge of income elasticity is helpful in predicting the effects of changes in business activity on particular industry. If one has forecast the national income or disposable personal income, he can apply income elasticities in estimating the changes in demand for individual commodities in the market. There are two important limitations to this:

1. The demand is often influenced by other variables than income which elasticity measure is available.
2. The past relation as revealed by income elasticity of demand may not continue in the future.

2.3.6 CROSS ELASTICITY OF DEMAND

In the real world, most goods are related, either as substitutes or as complements. If any two goods are substitutes, a fall in the price of one not only leads

to larger demand for it but also to a fall in demand for another good, whose price has remained same. On the contrary, the goods may be complements or joint products. In such cases, when one becomes cheaper, not only its demand will rise, but also that of the complementary good. Thus a change in price of a good results in change in demand for another related good. The responsiveness of demand for a good to a change in price of a related good can be measured by cross elasticity of demand.

More precisely, the cross elasticity of demand between goods X and Y measures the proportionate change in quantity demanded of good X relative to a proportionate change in price of a related product Y, given that the price of X remains the same.

The formula is as follows:

$$\begin{aligned}
 E_{xy} &= \frac{\text{Proportionate change in demand for good X}}{\text{Proportionate change in price for good Y}} \\
 &= \frac{\text{Change in demand for X}}{\text{Change in price of Y}} \div \frac{\text{Original demand for X}}{\text{Original price of Y}} \\
 &= \frac{\Delta X/X}{\Delta P_Y/P_Y} \\
 &= \frac{\Delta X/X}{\Delta P_Y/P_Y} \\
 &= \frac{\Delta X}{X} \times \frac{P_Y}{\Delta P_Y} \\
 &= \frac{\Delta X}{\Delta P_Y} \times \frac{P_Y}{X}
 \end{aligned}$$

Where

E_{xy} = cross elasticity of demand between X and Y

ΔX = change in demand for X

X = original demand for X

ΔP_Y = change in price of Y

P_Y = original price of Y

The cross elasticity of demand indicates how closely two products are related. Cross elasticity can be positive or negative or zero; it will be positive, if products are substitutes. Reduction of price of one of the substitutes means reduction in demand for another. Similarly, rise in price of one of the substitutes means increase in demand for another. For example, if price of tea rises, the demand for coffee will also go up. The change, therefore, is in the same direction. The cross elasticity measure will have a plus sign.

A high positive cross elasticity signifies that the commodities are close substitutes. A cross elasticity of zero means that the two products are quite independent of each other in the market. A negative cross elasticity of demand means that the two goods are complementary in the market. For example, a rise in price of petrol will bring about a fall in demand for mopeds; again assuming that price of moped has remained unchanged.

2.3.7 PRACTICAL APPLICATION OF THE CONCEPT OF ELASTICITY OF DEMAND

The concept of elasticity of demand has considerable practical applications in economics, business, the fiscal policy of the government, international trade, etc.

For business firms the knowledge of price elasticity of demand for its product is of importance in manipulating price in order to affect the total revenue. The ignorance of demand elasticity for the good may be suicidal and total revenue of the firm may even fall. If the elasticity of demand is less than one, total revenue falls as price declines. Knowledge of this, therefore, makes the producer not to lower the price with the hope of getting more demand and revenue, if elasticity is less than one. If elasticity of demand is unity the total revenue is unaffected by a price change. Then the firm will not be induced to manipulate the price as the change in price is exactly offset by the change in demand. If elasticity of demand exceeds unity, the total revenue increases as price falls. It is only in this case that price cut will help the firm in increasing the demand and revenue. The relationship between changes in price and total revenue is given below:

TABLE SHOWING RELATION OF TOTAL REVENUE TO PRICE CHANGES

Elasticity of demand	Effect on Revenue of a rise in price	Effect on Revenue of a fall in price
$E < 1$	Revenue rises	Revenue falls
$E > 1$	Revenue falls	Revenue rises
$E = 1$	No change in revenue	No change in revenue
Where E = Elasticity of demand		

Knowledge of income elasticity of demand is important for the firms, as they are interested in forecasting their demand and plan in conformity with the forecasted demand. If the goods have high income elasticity of demand, during the period of prosperity and expansion of business activity, the demand for such goods will increase. The firms producing such goods should consider the expansion of their production capacity to meet the rising demand. The knowledge of future business can be obtained by having a forecast of disposable personal income. The income elasticity can be applied to the disposable income to get its influence on a particular industry or firm. If income elasticity of demand is less, the industry or firm has a cause to worry. When recession is expected, it has to plan to go into the lines which are less susceptible to the recession.

The cross elasticity of demand indicates to the firm how a change in price of a competitor's product affects the demand for his product. Once this is known, suitable corrective measures can be adopted.

The concept of elasticity of demand is also of great use to the Government in the area of fiscal policy. The Finance Minister takes into account the elasticity of demand before he decides upon goods to levy taxes. His objective is to impose taxes on various goods in such a way as to maximise the total revenues for the government. If a tax is imposed on a good, its selling price will go up and the demand will fall. Thus, the purpose of collecting a certain amount of revenue through a tax may be defeated. Therefore, he will choose those goods for which demand is inelastic. In such cases, even if price goes up when tax is imposed, demand will not fall drastically. That is why taxes are imposed on cigarettes, sugar, matches, etc. for which demand is inelastic. On the other hand, if demand for a good is elastic, total revenue would be falling, when tax is increased and the price goes up. Possibly, the total revenue would be increased by a reduction in the tax rate.

The monopolist before fixing the price of his product has to consider its demand elasticity. If the demand for his product is inelastic, he can fix a high price without affecting demand much.

Trade unions will succeed in raising the wages of workers if the demand for their services is inelastic.

Doctors agitating for better remuneration will get it as their services are indispensable.

Self Assessment Questions

1. What is meant by price elasticity of demand? How is it measured?
2. Define each of the following terms:
 1. Price elasticity of demand
 2. Cross elasticity of demand and
 3. Income elasticity of demand
3. On what conditions does the elasticity of demand depend?
4. Describe the practical uses of the price elasticity measurement.
5. Elasticity for 'necessaries' is less as compared to the 'luxuries'. Discuss this statement.

LESSON 2.4

CONSUMER'S SURPLUS

Meaning - Definition - Assumptions - Criticisms - Practical Significance

2.4.1 MEANING

Normally the amount of satisfaction that we derive from the use of commodities such as salt, newspaper, postcard or match box is greater than the subjective value of the money price we pay for them. Such an excess of satisfaction may be called consumer's surplus.

2.4.2 DEFINITION

Alfred Marshall defined it as follows:

"The excess of the price which a man 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. It may be called consumers surplus".

It is clear that one usually buys the goods one needs at a price which is low enough to leave some surplus satisfaction known as consumer's surplus. Explaining his views, Alfred Marshall stated:

"The price which a person pays for a thing can never exceed and seldom comes up to what he would be willing to pay rather than go without it so that the satisfaction which he gets from its purchase generally exceeds that which he gives up in paying away its price, and he thus derives from the purchase a surplus of satisfaction".

There is a gap between total welfare and total economic value. This gap is in the nature of a surplus which the consumer gets because he always receives more than what he pays for.

Thus, the consumer's surplus can be expressed as

C.S. = Total utility from the commodity - total utility of money lost, in paying its price.

This concept is defined by Prof. Taussig as "the difference between the potential price and actual price" The potential price refers to the price which the consumer is prepared to pay and the actual price is the price which he is paying for the good in the market. This concept **is** derived from the law of diminishing-marginal utility, especially the distinction between total utility and marginal utility. At any given time there is a market price at which the good is selling. A consumer will be buying at that price as much as will suit him. From utility analysis, it **is** clear that a consumer will not pay for a good a price which is not equivalent to the marginal utility from it. So when he purchases many units of a

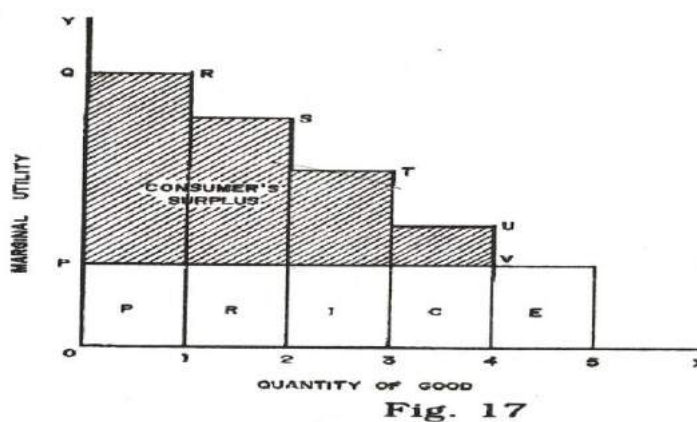
good at a fixed price per unit of that good, the last unit gives him just the utility for the money he paid for it. As the earlier units of the good have also been paid the same price as for the last unit, there ought to be some surplus satisfaction and this is the consumer's surplus or rent.

To illustrate, suppose apples are selling at a market price of **Rs.5/-** per apple. A consumer buys 5 apples at this price. The price he is prepared to pay is based upon the marginal utility of the good. For the first unit, he is prepared to pay Rs.9, for the second Rs.8, for the third Rs.7, for the fourth Rs.6 and the fifth Rs.5. The consumer stops buying with the fifth unit because the utility derived from the fifth unit is equal to the money he pays for it. Since all units are purchased at the uniform market price of Rs.5, the earlier units give him a consumer's surplus as shown below:

TABLE SHOWING CONSUMER'S SURPLUS

Unit of Apples (1)	Marginal utility (2)	Price per unit in Rs. (3)	Consumer's Surplus (4)
1 st	9	5	4
2 nd	8	5	3
3 rd	7	5	2
4 th	6	5	1
5 th	5	5	0
Total units purchased 5	Total Utility 35	Total money spent 25	Consumer's Surplus 10

Consumer's surplus is given by total utility – (marginal utility x number of units). In the above example, it is $35 - (5 \times 5) = 35 - 25 = 10$.



The consumer goes on buying the successive units of a commodity till the marginal utility of the commodity becomes equal to the marginal dis-utility of

money paid as its price. Therefore, all the intramarginal units of the commodity offer some surplus utility to the consumer, the sum total of which is called consumers surplus. The shaded area PQRSTUV, in Figure 17 shows the consumers surplus. The marginal unit, 5th apple, adds nothing to the consumers surplus, because it brings in a utility amount just enough to compensate the dis-utility of the price paid for it.

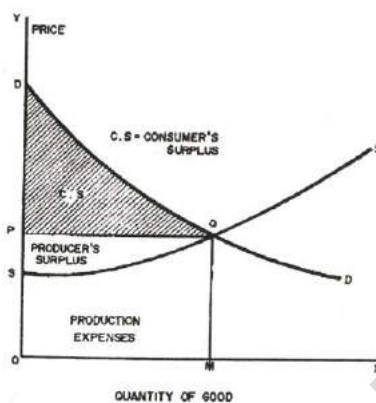


Fig. 18

Alfred Marshall diagrammatically represented the surplus as shown in Figure I S. The consumers marginal utility curve (the demand curve) is 'D' and the producers supply curve is S. Thus, the shaded area PQD exhibits the consumer's surplus.

Change in consumer's surplus

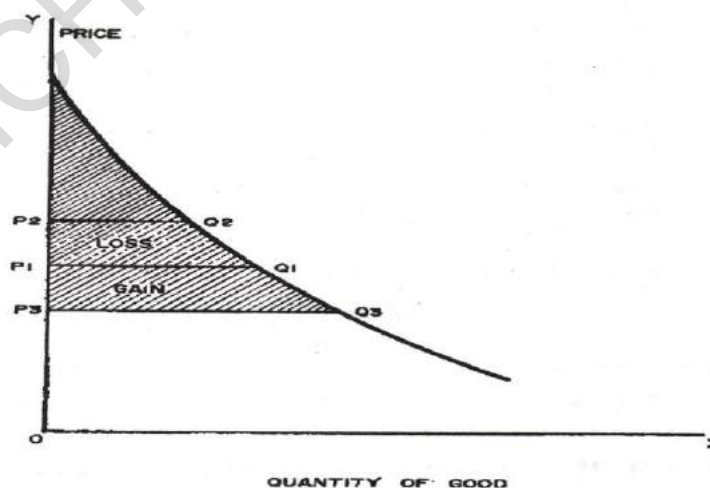


Fig. 19

A change in price brings about a change in the consumer's surplus. Obviously, a price rise causes the consumer to bear a loss of satisfaction while a fall in price adds to the existing surplus satisfaction. We have, in Figure 19 shown how the consumer's surplus changes following a change in price of the good. The price rise equal to P_1P_2 produces a

satisfaction loss $P_1P_2Q_2Q_1$ whereas the fall in price to P_2 increases his surplus by an amount, exhibited by the area $P_1P_3Q_3Q_1$.

2.4.3 ASSUMPTIONS

Let us now explicitly discuss the Marshallian assumptions of the concept of consumer surplus.

1. The marginal utility of money to the consumer remains constant. It is particularly so when the money spent on buying the commodity is only a small fraction of his total income.
2. The commodity in question has no close substitutes and if it does have any substitute, the same may be regarded as an identical commodity and thus only one demand schedule may be prepared.
3. The utility is capable of cardinal measurement through the measuring rod of money. Moreover, the utility obtainable from one good is absolutely independent of the utility from other goods. No good affects the utility that can be derived from the other good
4. All people have identical tastes, fashions and their incomes also are the same.
5. The expected and realised utility are the same.

2.4.4 CRITICISMS

The concept of consumer's surplus is criticised on many grounds. The well-known critics of the concept are Ulisse Gabbi, Prof. Nicholson and Prof. Robbins. The main criticisms are the following:

1) Marginal Utility of Money varies: It is considered dangerous to agree with Prof. Marshall that the marginal utility of money remains constant and does not alter with increase or decrease in the money stock with the consumer. In fact, the marginal utility of money diminishes. Today, no one dares to challenge this universal and axiomatic fact. Therefore, it is incorrect to believe the constancy of the marginal utility of money.

2) Marginal Utility of Money is Different for People of Different Income Groups: Different people have different marginal utilities of money. Nobody can question the fact that a rich man has generally lower marginal utility of money as compared with that of a poor man. There is really no justification for sharing the Marshallian view that the difference in

people's income can be safely ignored while measuring their consumer's surplus.

In this connection, Prof. Taussig remarked "A rich man will pay for house, fruits or vegetables a sum quite out of question for a person of modest means. The latter might secure at a season of greater plenty precisely, the same things for a price much lower. The rich man probably gets no greater enjoyment from his expensive purchases or if so by no means in proportion to the higher price he pays".

Alfred Marshall was not justified in neglecting the differences of income, fashion and tastes of different sections of society while measuring their _consumers surplus, which perhaps is impossible to be measured even after the due allowances for such differences have been made.

3) Assumption Regarding substitutes is not correct: It is hard to believe that the substitute of a commodity has no significant effect on the surplus satisfaction he derives from the good. Decidedly the consumer will feel more satisfied if two good substitutes as well as complements are made available to him than in case he gets only one of the two at a time. The consumer can appreciate the utility from a pen only when the same is accompanied by ink. One cannot regard the utility from one good as independent of the other for purposes of measuring consumer's surplus. Since the consumer has to buy a number of goods, it is only reasonable to contend that he will receive unequal surpluses of satisfaction from the same commodity under different sets of circumstances.

4) A complete list of demand and prices is not available: A complete and reliable list of demand and prices is never available to the consumer. The demand schedule, according to which he regulates and decides his purchases, is not necessary to be true in practice. "How much the consumer would be willing to pay rather than go without the thing" is something hard to answer correctly. It is perfectly hypothetical to measure the consumer's surplus in this manner.

5) Utility cannot be measured cardinally: It will be no exaggeration to say that the presupposition of the cardinal utility function is the biggest deficiency of the concept of consumer's surplus. Prof. Hicks and Allen

contended and proved that utility, being a subjective phenomenon, is indeterminate and immeasurable.

In view of the above objections to the validity of the concept, people consider it to be a hypothetical, illusory and imaginary concept with little practical significance.

In spite of the above deficiencies, it seems unreasonable to set aside the concept thinking it useless in every way. The reality is that there has never been any economic concept with wholly no merit. Prof. J.R.Hicks has rehabilitated the concept with the help of ordinal utility function. It is useful to have an assessment of the practical significance of the concept.

2.4.5 PRACTICAL SIGNIFICANCE OF THE CONCEPT

1. ***The concept facilitates a comparison between real incomes of two regions (conjunctural importance):*** This view of Prof. Nicholson that "of what avail, is it to say that the utility of 100 a year is worth say that of 1000 a year?" has been suitably replied by Alfred Marshall who contended that such a statement assumes a great significance due to the fact that it enables us to compare the real incomes of two regions and of same region at different periods.

2. ***Useful to the Monopolist:*** The basis of the Dupuit-Hotelling Theorem is the concept of consumer's surplus. The theorem states: "If the monopolist is not afraid of competition or retaliation from consumers, he may raise the price of the commodity he manufactures, so high as to squeeze out the entire consumers surplus. On the other hand, if the monopolists' product has a large number of substitutes, or if he fears to run into price war even with distant competitors, he will charge such a low price of his product as to allow some margin of surplus to the consumer".

3. ***The concept distinguishes between "Value-in-Use" and "Value in exchange":*** There is a gap between the value-in-use and the value-in-exchange or price. The concept states that there are many goods like salt, matches, postcard and newspaper from the use of which the consumer derives a comparatively larger amount of satisfaction. To measure such an excessive satisfaction, we make use of the concept.

4. ***International trade:*** In the theory of international trade too, the concept is of great importance as it enables either country to estimate

the differences between the value of imports and the prices paid for them.

5. Public Finance: In the field of Public Finance, the main consideration while imposing new taxation on or granting subsidies to industries operating under different laws of returns is to see what effect of the tax or the grant is likely to be on the consumers surplus. A high excise tax on the commodity being produced under the law of increasing returns will be more harmful than on one being manufactured under the law of constant returns. The simple reason for this is that the imposition of taxation will reduce demand for the product and thus lower output to be produced which results in higher costs of production. On the contrary, the Government should grant subsidy to such industry so as to expand its scale of production and enable it to reap economies of the large scale production which would add to the surplus satisfaction of consumers. Similarly, if the commodity in question is being produced under the law of diminishing returns, it will be useful to impose sales tax or excise tax on the commodity.

Obviously, since the tax would be included into supply price of the commodity, this would reduce market demand for it and thus the size of output would also be contracted. The contraction in the size of output causes the cost of production to be lower than before. The obvious result, therefore, would be an addition to the existing consumer's surplus. However the commodity obeying the law of constant returns should also not be taxed because it would cause a reduction in the total volume of consumer's surplus.

Self Assessment Questions

1. Critically examine the concept of Consumer's Surplus.
2. Examine the theoretical and practical significance of the concept of consumer's surplus.

UNIT-III

LESSON – 3.1 SUPPLY ANALYSIS

Introduction - Meaning of Supply - Law of Supply - Shift in Supply Curve - Elasticity of Supply - Backward Sloping Supply Curve.

3.1.1 INTRODUCTION

Supply and demand are the dual forces which determine the price of a good in the market. As Alfred Marshall argued, only when both an object's scarcity, namely supply and the intensity of wanting it, viz. demand are known, it will be possible to understand how its price is determined. The concept of supply which is one of the two "blades of the scissors" that determines price is similar in many ways to the other blade, viz. demand.

3.1.2 MEANING OF SUPPLY

The meaning of supply is symmetrical with that of demand. It can be defined as the quantity of a good or service that a seller wishes to sell on the market at a particular price at a particular time. Supply of a good is different from its stock. The quantity of a good that a seller can bring out to sell immediately on demand is his stock. But it should be noted that the seller is not always ready to sell the whole of his stock. As the market conditions change, he varies the quantity of the good he is prepared to sell from time to time. Therefore, generally a seller offers only a portion or part of his stock for sale as supply. In short, supply is that part of the stock which a seller offers for sale at a particular price at a particular time. While stock refers to potential supply, supply means the quantity which is actually brought in the market.

3.1.3 LAW OF SUPPLY

More of a commodity will be offered for sale when price rises and less will be offered for sale when price falls, ceteris paribus. The relationship between price and supply is direct and that between price and demand is inverse. To put it otherwise, "other things remaining the same, the supply of a good extends with a rise in its price and contracts with a fall in its price".

Factors determining supply

A variety of factors determine the supply of a commodity.

1. Price of the commodity is the most important. As the price rises, sellers like to sell more and vice versa.
2. A rise in the prices of factors of production raises its cost of production

which, in turn, lowers profits and thereby the supply. Thus a rise in the cost of production of a good lessens the supply of that good. Similarly a fall in cost of production of a good increases supply.

3. Any change in the prices of other products would influence the supply of a good by causing substitution of one product for another.
4. A change in technology as a result of innovations or inventions affects the supply by altering the cost of production. With an improvement in production technology used by the firm, the cost of production declines and as a result the firm would supply more than before at the given price. Thus supply would increase.
5. The objective of the production unit also determines the supply. If the firm aims at maximisation of revenue or sales rather than of profits, supply would be larger.
6. If the number of firms producing a good increases, the market supply would increase.
7. Sellers' expectations of future prices also determine supply. During inflation, sellers anticipate further rise in prices in future and would reduce supply.
8. The imposition of a sales tax or an excise duty causes a downward shift in supply and the grant of subsidy by the government increases supply.
9. Supply depends on many other factors like, changes in government policy, fear of war or depression, climatic conditions, inequalities of income, means of transport and communications, agreements among producers, etc.

The Supply Function

It is a short hand formula of the various factors determining supply of a good.

Symbolically, $S = (P_1, P_2, \dots, P_n, F_1, \dots, F_n, T, O, O_d)$

Where S stands for the supply of a good, P; for price of the good P₂ to P_n for prices of all other goods, F₁ to F_n for prices of all factors of production, T for technology, O for objective of the firm and O_d for other determinants.

The supply schedule and supply curve: Supply schedule shows the various quantities of the good offered for sale at different prices. Corresponding to the demand schedule, it is possible to construct an individual's supply schedule as follows:

Price of the good (inRs.)	Quantity of supply (in units)
3	40
4	50
5	60
6	70
7	80

If the data are drawn into a diagram graphically, it gives a supply curve.

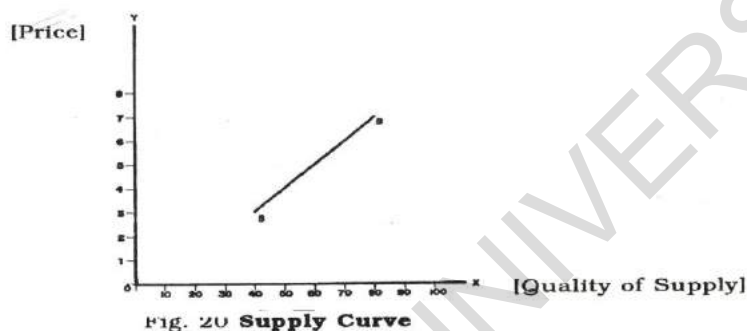


Figure 20 is the supply curve sloping upwards from left to right. Suppose the price of pen is Rs.3 per unit, 40 units are offered for sale by an individual at this price. Increase in price will bring out increase in supply, as shown in the Table and in the Curve. SS curve shows the direct relation between price and supply. If we add up horizontally through the lateral summation process the supply curves of all individual sellers of the good in a market, we derive a Market Supply Curve as shown in Figure 21.

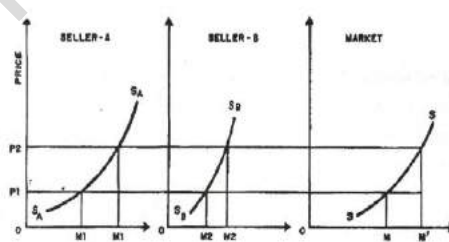


Fig. 21.
Derivation of Market Supply Curve from Individual Supply Curves

At price OP_1 , seller A is prepared to sell amount OM_1 while seller B offers for sale the amount OM_2 . If there are only two sellers, A and B at price OP_1 , market supply is the amount $OM(OM_1 + OM_2)$. At a higher price OP_2 both sellers offer more for sale and market supply is $OM_1' + OM_2'$. Similarly we find the amounts of market supply at different prices and draw the market supply curve SS. This market supply curve is a lateral summation of the individual supply curves, SA and SB.

As compared to the individual supply curves, the market supply curve is quite elastic for reasons, as follows:

- I. The sellers already present in the market sell more and more as price rises.
2. With a rise in price, more sellers are attracted to the market to sell. Since profit is the goal for sale, which depends upon the cost of production and price, ultimately the elasticity of supply curves of producers in a market rests on the way costs change with increased production.

3.1.4 SHIFTS IN SUPPLY CURVE

The most important factor bringing about changes in supply is the change in price. Sellers plan their production and supply taking into consideration the price of the product in the market. With a rise in price, the amount supplied extends and with a fall in price, the amount of supply contracts. Thus changes in price induce extension and contraction in supply.

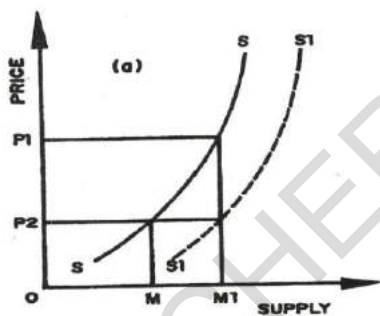


Fig. 22 (A) Increase in Supply

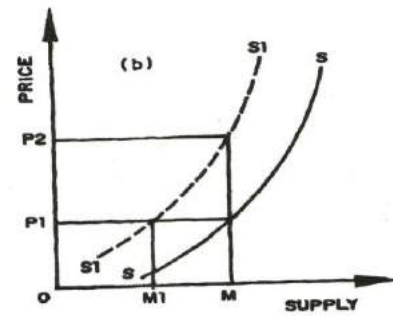


Fig. 22 (B) Decrease in Supply

If the amount offered for sale rises without any change in price, or when the same amount is supplied even at a lower price, it is called increase in supply. In Figure 22(A) market supply is the same (OM) even at a lower price OPI . Looked at another way, at the same price $OP2$, the amount supplied increases from OM to OMI as the supply curve shifts from its position SS to $S1S1$. This is the case of an increase in supply. Now we can take the opposite case, the case of a decrease in supply. If the same amount is supplied at a higher price or at the same price a lower amount is offered for sale, supply is said to have decreased.

In Figure 22(B) the same amount OM is supplied at higher price $OP2$ or lesser quantity (OMI) is being offered for sale at the same price $OP1$. Increase in supply means a shift of the supply curve to the right and a decrease in supply involves a shift of the supply

curve to the left.

3.1.5 ELASTICITY OF SUPPLY

The responsiveness of supply to changes in price is called elasticity of supply. Elasticity of supply is a measure of the rate at which supply changes as a result of change in price. It is the percentage change in amount supplied with a given percentage change in price.

$$\text{Elasticity of supply} = \frac{\text{Proportionate change in supply}}{\text{Proportionate change in price}}$$

Ordinarily when price increases amount supplied rises. Likewise, with a fall in price amount supplied falls. Price and amount supplied move in the same direction. Therefore, elasticity of supply will be always positive. In the limiting case of completely inelastic supply curve, when the supply curve is a vertical straight line the elasticity of supply is zero. It means that the amount supplied remains the same, however much price rises. In the other limiting case, when supply curve is a straight line parallel to the X axis elasticity of supply is infinite: a small rise in price evokes a large rise in the amount supplied.

We use the formula given above to find out the magnitude of elasticity of supply. If the proportionate increase in the amount supplied is double the proportionate rise in price, elasticity of supply is 2. If the proportionate change in amount supplied is only one-half of the proportionate change in price, elasticity of supply is 0.5. On the same line supply has unitary elasticity if the amount supplied changes in the same proportion as price has changed.

It is helpful to know whether one supply curve is more or less elastic than another over a range, or at a point. We should therefore know the geometrical estimation of elasticity at a particular point of a supply curve. Exact measurement of elasticity of supply is possible through the use of the formula given above.

Geometrically, we can say that

- a) if supply curve is a straight line passing through the origin, it has unitary elasticity throughout.

- b) If the supply curve is a straight line cutting the Y-axis, it has an elasticity more than unity.
- c) if supply curve is a straight line intersecting the X-axis it has an elasticity of less than unity.

Elasticity of supply is Unitary

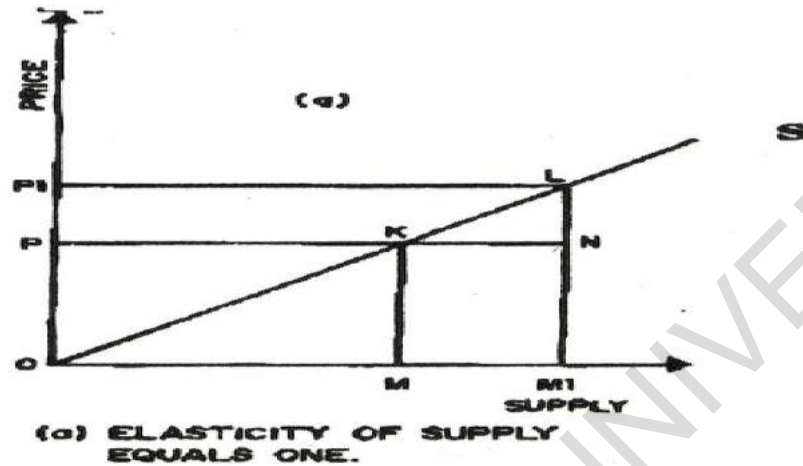


Fig. 23 (a)

In Figure 23(a) the straight line supply OS curve passes through the origin O. When price rises from OP to OP₁, amount supplied goes up from OM to OM₁.

$$\begin{aligned}
 &\text{Now, elasticity of supply} \\
 &= \frac{\text{Change in supply}}{\text{Amount supplied}} \div \frac{\text{Change in price}}{\text{Price}} \\
 &= \frac{KN}{OM} \div \frac{PP_1}{OP} \\
 &= \frac{KN}{OM} \times \frac{OP}{PP_1} \\
 &= \frac{KN}{OM} \times \frac{KM}{LN} \\
 &= \frac{KN}{LN} \times \frac{KM}{OM} \quad (\text{Since } OP = KM \text{ and } PP_1 = LN) \quad \dots \dots \dots (1)
 \end{aligned}$$

Triangles OKM and KLN are similar, therefore,

$$\frac{KN}{LN} = \frac{OM}{KM}$$

Putting this value in equation (1) derived above, we have.

Elasticity of Supply

$$= \frac{OM}{KM} \times \frac{KM}{OM} = \frac{KM}{KM} = 1$$

Thus a straight line supply curve passing through the origin has unitary elasticity.

Elasticity of Supply Greater than One

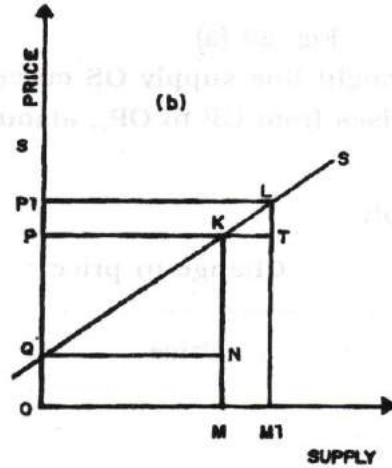


Fig. 23 (b)

$$ES = \frac{\text{Change in supply}}{\text{Amount supplied}} \div \frac{\text{Change in price}}{\text{Price}}$$

$$= \frac{MM1}{OM} \div \frac{PP1}{OP}$$

As $MM1 = KT$, $PP1 = LT$ and $OP = KM$;it can be rewritten as

$$ES = \frac{KT}{OM} \div \frac{LT}{KM}$$

$$= \frac{KT}{OM} \times \frac{KM}{LT}$$

$$= \frac{KT}{OM} \times \frac{KM}{LT}$$

$$= \frac{KT}{QN} \times \frac{KM}{LT} \text{ (since } OM = QN \text{)}$$

$$\text{or } = \frac{KT}{LT} \times \frac{KM}{QN} \dots \dots \dots (2)$$

Triangles KLT and QKN are similar, therefore,

$$\frac{KT}{LT} = \frac{QN}{KN}$$

Putting this in our equation (2) above we get

Elasticity of supply

$$= \frac{QN}{KN} \times \frac{KM}{QN} = \frac{KM}{KN}$$

which is obviously less than one. This shows that when a straight line supply curve (or its projection) cuts the X-axis it has an elasticity of less than unity.

Elasticity of Supply Less than One

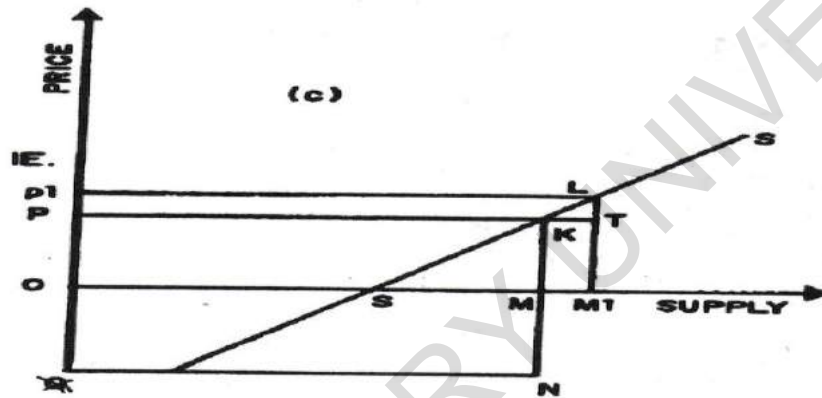


Fig. 23C

In the same way, we can find out the elasticity of supply. In figure 23(c) where the supply function SS cuts the X axis at Q. In the range Ks, elasticity of supply is

$$\frac{\text{Change in supply}}{\text{Amount supplied}} \div \frac{\text{Change in price}}{\text{Price}}$$

$$\frac{MM_1}{OM} \div \frac{LT}{KM} = \frac{KT}{OM} \div \frac{LT}{KM} = \frac{KT}{OM} \times \frac{KM}{LT} \quad (MM_1 = KT)$$

$$= \frac{KT}{LT} \times \frac{KM}{OM} = \frac{KT}{LT} \times \frac{KM}{QN} \quad (MM_1 = KT \text{ and } OM = QN) \quad \dots \dots \dots (3)$$

Since triangles KTL and QNK are similar

$$\frac{KT}{LT} = \frac{QN}{KN}$$

Putting this value in equation (3) derived above, we get

$$\text{Elasticity of supply} = \frac{QN}{KN} \times \frac{KM}{QN} = \frac{KM}{KN}$$

which is obviously less than one. This shows that when a straight line supply curve (or its projection) cuts the X-axis it has an elasticity of less than unity.

Elasticity of supply in a Supply Curve

When the supply function in question is a curve, we use the method of finding elasticity at a point by drawing a tangent to the supply curve at that point. If the tangent passes through the origin, elasticity of supply at the point of tangency is one; if the tangent intersects the Y-axis, it is more than unity, and if the tangent cuts the X-axis the elasticity of supply at the point is less than unity. This is shown in Figure 24.

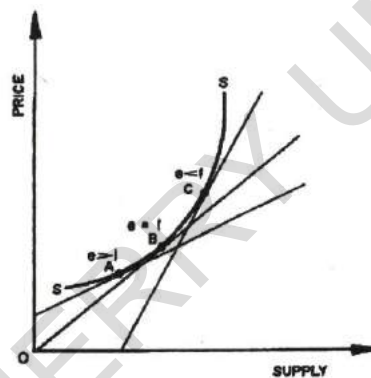


Fig. 24

Elasticity of supply varies with the period under consideration. Given a small change in price the quantity offered for sale in a given period will be smaller in the short run than in the long run. The longer the period to which supply curve is related, the greater will be the elasticity.

Supply may be inelastic in the short period and quite elastic in the long period. Thus, elasticity of supply has a time dimension while elasticity of demand has none.

Uses of the Concept of Elasticity of Supply

The concept of elasticity of supply has many uses:

1. It helps us in knowing the effect on the price of a commodity when its demand rises. It will depend, among other things, on the elasticity of supply. The more elastic is supply the smaller the rise in price needs to be in order to induce sellers to offer more of the commodity for sale.

2. The difference between short-run inelasticity of supply and long-run elasticity of supply of capital assets, technical and entrepreneurial talent helps us in an understanding of the _quasi-rent, they enjoy. The greater the elasticity of supply of a factor or production the higher is the share of rent in the total earning. If the supply of a factor is perfectly elastic (supply curve is a straight line parallel to the horizontal axis) then there is no rent element in the factor earning. On the extreme opposite, if the supply of a factor is altogether inelastic, as in the case of land for a country, then the whole of its earnings are rent. Thus the elasticity of supply of a factor determines what part of its earning is in the nature of rent.
3. The elasticity of supply concept is also useful in economic planning. In less developed countries knowledge of supply elasticities of at least the key industries is essential for the formulation of production programmes and for avoiding unnecessary shortage-induced inflationary pressures.

3.1.5 BACKWARD-BENDING OR SLOPING SUPPLY CURVES

Ordinarily, supply curves are positively-sloped; they rise from left up to the right. But under some circumstances and for particular things, the supply curve may become negatively-sloped, if not the whole only a part of it. In all these cases the division of the Price Effect into income effect and substitution effect, is of great use in explanation of these peculiar cases.

The supply curve of Labour

When labour incomes rise to a particular level, supply of labour hours tends to be less with further rise in wage. Within particular ranges of wage rises, the supply curve of labour becomes backward bending. This happens when workers consider additional labour a much superior thing to have than more wage income through work which is an inferior thing to have. In this case the substitution effect of a wage rise on demand for work (wage-income) is relatively poorer as compared to the (negative) income effect of the rise in wage income through wage rise on his demand for work. Leisure is more attractive than addition to wages income. Thus the supply curve of labour is backward bending.

The supply curve of Food grains in Less Developed Countries

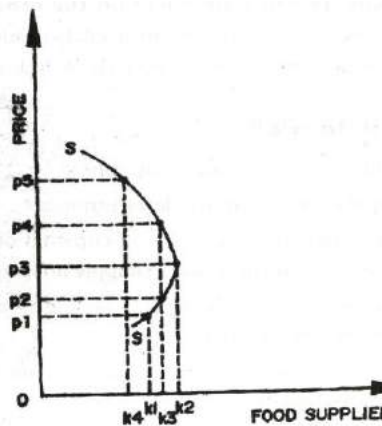


Fig. 25

Another well known case is the backward-bending supply curve of food grains in the grains markets in less developed countries. In under developed economies like India where subsistence agricultural farms are in majority, as prices of food grains rise, market arrivals of food grains fall rather than rise. In the initial stages of development backward sloping supply curves of many essential commodities are believed to be a common phenomenon. Food products have a negative elasticity of supply because the farmers, with existing methods of farming, cannot raise production. When prices of food grains rise, they can get the required fixed amount of cash by selling less and keeping more for their own consumption than before. This fact of withholding supply of food is quite contrary to the Law of Supply. Thus, when food grain prices rise in a traditional backward agricultural economy, the supply curve of food grains bends back as in Figure 25. Up to the level of price from p_1 to p_3 , the income and substitution effects of a rise in the price of food are both negative and act together to reduce his demand for food. In other words, the supply of food rises. But as food price rises beyond P_3 to P_4 and to P_5 substitution effect of the rise in price is of course negative but becomes weaker and weaker. The income effect on the other hand goes positive and much stronger, so that the combined (price) effect is positive for a rise in price. Hence less is supplied than before.

Self Assessment Questions

1. State and illustrate the Law of Supply.
2. What is supply? What are its determinants?
3. Distinguish between extension and contraction of supply on the one hand and increase and decrease of supply on the other with illustrations.
4. Explain elasticity of supply and its geometrical measurement. What are the uses of the concept?
5. Explain the cases of backward-sloping or backward-bending supply curve with illustrations.

LESSON – 3.2

THEORY OF PRODUCTION

Introduction - Meaning – Production Function-Factors of Production- Land – Labour Capital - Organisation.

3.2.1 INTRODUCTION

Production is a vital process in any economy. Consumption itself is not possible unless there is production. If consumption is the end or goal, production is the means to it. Investment also depends upon production. Hence production is most vital for an economy.

3.2.2 MEANING OF PRODUCTION

Production means the creation of different usable goods and services. In the productive process, inputs or factors of production (e.g. land, labour, capital and organisation) are transformed into output. The productive process includes not only the physical conversion of raw-materials into tangible or material goods but also intangible services like the services of lawyers, doctors, Musicians, teachers etc. The production of legal, medical and other services is also production. In a broad way production may be defined as the creation of utility.

3.2.3 PRODUCTION FUNCTION

The theory of production deals with laws of production or generalisations regarding relationship between inputs and outputs. The term 'inputs' refers to all that which goes into the production of goods or services. The main inputs are the primary inputs like land and labour and the secondary inputs like capital and organisation and they are known as factors of production. There may be other inputs like intermediate inputs. The tool of analysis used to state the input output relationships implied in the theory of production is known as the Production Function. It signifies a functional relationship between quantities of inputs and outputs. It may take the form of a table (schedule), a graph (line or curve), or an algebraic equation.

To illustrate,

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

Where Q is the quantity produced of a good.

L is the land and natural resources.

N is the number of employed (Labour).

K is the capital used, and

T is the technology employed.

Two things should be noted in respect of the production function. First it must be considered with reference to a particular period of time. It expresses a flow of inputs which result in a flow of output during a specific period of time. Secondly, it is determined by the state of technology. When technology improves or advances, the production function also changes leading to larger output.

3.2.4 FACTORS OR AGENTS OF PRODUCTION

Production is a cooperative effort. It needs the co-operation of the agents of production. All those that assist the production of goods and services are called the agents of production. Broadly, these agents of production are grouped into four factors - land, labour capital and organisation. They are combined in several proportions to produce several goods and services. The combination of the factors of production is called input, and the goods they help to produce is output. For instance a farmer requires some land, some labour, some capital in the form of seeds, plough, cattle, manure, etc. and some organisation namely planning the crop, supervising the cultivation, etc.

Land and Labour are called the primary or original factors of production, while capital and organisation are known as the secondary or man-made factors of production. The earlier economists spoke of only three factors - land, labour and capital. It was Alfred Marshall who added the fourth factor - organisation. Strictly speaking, there are only two factors, land and labour, because capital is only labour stored-up, while organisation is one kind of specialised labour.

Modern economists criticise the classification of factors. Because, first of all, the factors of production are not homogeneous or identical. They differ in degree and in kind. There are different varieties of land, labour, capital and organisation. So, they cannot be grouped under the same heading. Secondly, it is possible to substitute between factors. Labour can be substituted by capital (i.e. by machine), land by capital (by better methods) and all the factors by organisation (by better superior, efficient and economical management). So the modern writers do not consider the classical division of factors as clear-cut.

They divide the factors into specific and non-specific. A specific factor is one which could be put to only one use. A hosiery machine cannot be used for making shoes. So it is a specific capital. There are lands which are fit for the cultivation of only some specific crop. A non-specific factor is one that could be put to many uses. Capital in the form of money is highly non-specific. Land can be used for housing or farming. A non-specific factor could be easily shifted from one use to another use. Thus non-specific factors are also mobile.

Mobility of Factors and Its significance

The volume of production in an economy is decided by the volume of demand, as reflected by the consumer's preferences for certain goods and services. When their preferences alter, factors also have to be shifted from the production of one set to another set of commodities. Sometimes, the same factors of production with lower rewards in certain lines of production would like to move to that line where the rewards are higher. These factor movements from one line of employment to another is called "mobility". Production could be adjusted to changes in demand only if factors could be shifted.

Forms of Mobility

1. Geographical Mobility: It means that factors can be shifted physically between places. Absence of such geographical mobility is immobility. Mobility not only ensures better rewards for factors, but also maximum production. Immobility would mean that factors are rotting in one place for want of use, while in another place production is handicapped for want of them. Land is geographically immobile, but its uses can be change. Labour and capital are capable of geographical mobility, given certain conditions such as for want of use, while in another place production is handicapped for want of them. Land is geographically immobile, but its uses can be changed. Labour and capital are capable of geographical mobility, given certain conditions.

2. Horizontal Mobility: It refers to the mobility of factors between similar occupations. When a lecturer leaves one college to join another for one reason or another, it is a case of horizontal mobility. It depends

on skill and training. There are a number of occupations having similar jobs like typists, accountants, etc.

a. Vertical Mobility: It means that a factor moves up from an inferior to a superior occupation. When a lecturer moves up to the position of a professor in the same college or another, it is an instance of vertical mobility. That too requires experience, training and skill.

Land as we have said above is geographically immobile, though it has occupational mobility. A piece of land can be shifted from one use to another. Land is also physically immobile and at times specific. What is important is not the area but its productivity.

Labour is said to be the most difficult luggage because it depends on its ability and willingness to move. Differences in language, custom, climate, immigration laws, caste rigidity, joint family system, attachment to home and family hinder mobility. The spread of education, feelings of nationalism, a spirit of adventure, weakening of caste rigidities and family ties promote geographical mobility. Young people are generally more inclined to be more mobile than old people. Vertical mobility of labour depends upon better qualifications. An engineer has to be more qualified than an overseer. Vertical mobility is facilitated by division of labour as simplification of jobs makes people move easily to next higher jobs.

Capital in the form of funds is highly fluid and hence mobile. In the form of raw materials and fuel, it could be transported. But the movement of heavy machines would involve high transport costs. Buildings have a greater horizontal mobility than machines. For instance, a college can be converted into a hospital or go down.

3.2.5 LAND AS AN AGENT OF PRODUCTION

Land in economics refers not merely to land surface or soil, but to a wide variety of natural resources. It includes the climate, water, forest, mountain, resources, the mineral wealth underground and the fish wealth underwater. Thus it is a comprehensive term.

Land is an important factor of production, because ultimately all production emanates from it. That is why it is generally known as a primary factor. It supplies food (grains, fruits, vegetables etc.) raw materials for industries (coal, iron ore, tobacco, etc.) electricity (from water resources) fuel and building-material (forest wealth) etc.

Peculiarities of Land

1. It is a free gift of nature: Nature distributes her bounties unevenly among the countries of the world. It is for man to explore and exploit them efficiently. We have to accept the natural resources such as climate, soil fertility as given.

2. It is permanent: The unique feature of land is its permanency. Unlike other factors it cannot be destroyed. Earth-quakes, floods, tornadoes, etc, change the face of the land for good or bad, but they do not destroy land altogether.

3. It is limited: For any country or the world as a whole, the supply of land is limited or inelastic. It is limited in relation to the demands of the people from it. The supply of land at any time is given to a country and that has its repercussions. It is because of the limited land area that Germany asked for 'living space' which led to world wars; it is because of the abundance and variety of land that the U.S.A and Canada are rich; it is because of the limited land in relation to her population that India is relatively poor.

4. It is immobile: Land cannot be shifted between places. Its ownership can be changed or we can shift it from one use to another. So when we talk of land mobility, we mean it in that sense and not in the sense of physically transferring it from one place to another.

3.2.6 LABOUR AS AN AGENT OF PRODUCTION

Generally people think that labour means the work done by factory workers, servants, porters and other manual workers. This is a misconception. By labour, we mean, any work done by brawn or brain, undertaken for payment in money or kind. It includes the manual work done by blacksmith, wood-cutter, mason, plumber (in short work done by skilled and unskilled workers) and mental work done by accountants, teachers, business executives, lawyers, doctors, etc. Marshall has defined labour as "any exertion of mind or body undergone partly or wholly with a view to earning some good other than pleasure derived directly from the work".

Productive labour may be said to be any work which produces goods and services for payment. It is only such labour that are added in national income accounting. Work undertaken for love or pleasure, is not productive as no payment is made. A physical director doing morning exercise at home for his pleasure, a teacher coaching his own children at home, a mother cooking food at home are categories of labour not generally included under productive. It is not because that their labour is unimportant but because they receive only love and gratitude and not payment in cash or kind.

Unproductive labour refers to wasted or misdirected labour. Such labour may receive payment but the fruits of their labour are not useful to society. Suppose a house is built without proper foundation and is ordered by the municipality to be demolished, then it is a case of wasted labour. Production of atom bomb is misdirected labour, as the same resources could have been used for building facilities for the people. A pickpocket at bus-stop or railway station is busy making his living. But he is not giving anything in return and so has to be regarded as anti-social labour.

Peculiarities of Labour

Among the factors of production, labour is something peculiar. Here we are dealing with a human factor and we have to look at labour not as a commodity to be bought and sold, but as something for which work and its reward are a matter of life and death.

1. Labour and Labourer are inseparable: The labourer is the owner of his own labour. A land-owner can transfer his land and a capitalist can sell away his machines and buildings. But a labourer can sell only his services.

2. Labour is perishable: Labour wasted for a day is a day's labour lost forever. It is not like other perishables which can be kept in a cold storage for use at a future date. That is why; a country's production suffers when workers go on strike. Their labour cannot be called back

3. Labour is human: Unlike other factors - land, capital and organisation, the labour is human and personal. A labourer has feelings and emotions unlike other factors. Other factors are impersonal. But in the matter of labour relationship it is personal and human and so has to be treated differently.

The labourer personally delivers his labour.

4. *Labour has poor bargaining capacity:* Despite the fact that labourers are in a majority and are organised into trade unions their bargaining capacity is relatively weak. This is often because of their ignorance and poverty, or their loyalty to their employers or because they are such a heterogeneous group that they cannot easily combine.

5. *Labour is less mobile:* Adam Smith has said that labour is the most difficult luggage to move. In the case of labour, mobility is not so easy because of lack of training or skill to move to a better job, or because of attachment for home and family to move to a better place or because of differences in food, climate, habits, etc.

6. *The supply of labour is independent of demand:* The adjustment of demand for and supply of labour cannot be brought about easily. An increase in the demand for labour can be immediately met by immigration, but it takes time for the population to increase to the required demand. If there is surplus labour it can be equated to demand only through emigration or through the painful forces of starvation and death.

3.2.7 CAPITAL AS AN AGENT OF PRODUCTION

Modern economy is based on the use of capital. Economic development requires the use of capital which helps to produce a wide range of goods on a mass scale. Without capital, land will remain barren, labour will be idle, and organisation will be hampered in its productive enterprise. Capital denotes capital goods or the means of production used along with labour in the process of production. The classical writers understood the nature of capital as intermediary in the production of final goods and one that is set to work with labour. The definitions of capital are many. Capital is a man-made or secondary agent of production. Often money is confused with capital, though it is necessary and can be used directly in making goods and services. It is from money that capital takes its shape. Money is known as liquid capital which could be converted into fixed or durable capital or circulating or working capital. Capital is not an end in itself. It is only wealth set aside for further production of wealth. But capital and wealth should not be confused. Wealth is a

stock of goods at a given time, that yield utility, having scarcity, transferability and price. Marshall says that capital consists of things that assist production, while wealth refers to things resulting from previous production.

All capital is wealth, but all wealth is not capital. For instance, machine is both capital and wealth, but privately owned car is wealth, but not capital. There is considerable difference of opinion as to which goods are capitals and which are not. The distinction between capital goods (those that help production) and consumer goods (those final) goods that give direct satisfaction) is one of degree. It is not made on the basis of any physical difference between two classes of goods, but the uses to which they are put. The same commodity may be capital and consumer goods. A sewing machine at home is a consumer good, but at tailor's shop, it is a capital good.

Forms of Capital - Capital can be in different forms like fixed capital, working capital, circulating capital, floating capital or sunk capital.

- i) Fixed capital refers to durable producers goods which provide service over a long period (e.g factory building, plant, machinery, etc).
- ii) Working Capital is the amount of cash which a business-man uses in running his enterprise.
- iii) Circulating Capital is not of a lasting nature and will be used up in a single process (e.g. raw materials. fuel, wages).
- iv) Floating capital is that which could be put to several uses (e.g., cash, electricity, coal, etc.).
- v) Sunk Capital is one that has only a specific use. An ice factory machine is capable of only one use.

CAPITAL FORMATION

In modern society, capital plays an important part in production. It includes all man-made aids to production, permanent improvements to land. Expenditure on health, education and training, labour-saving machines, land-saving machines (i.e. tractors dispense with bullocks and the land used for their fodder, cultivation or grazing, etc.) Thus, capital can be used to make up for the qualitative and quantitative deficiencies of labour. Capital not only aids production but it raises output . So to increase the national income rapidly, capital is very vital.

The volume of capital in a country decides the methods of production and the stage of its economic advancement. In modern industry and trade, the ratio of capital to labour is high. Where less capital is used, it means inferior techniques and low stage of development. When the population of a country increases, to maintain the existing living standards and to increase it, more capital has to be accumulated. For capital to be accumulated it is necessary that a country does not consume its entire production, but saves a part of it. It would mean lower consumption immediately, but would increase the productive capacity of the nation. So, capital accumulation involves waiting or postponing consumption. Income is saved, so long as it is not consumed or spent. So capital formation depends upon the savings of a community. The rate of capital formation depends upon a) security of life and property and b) stability of currency. Given these two conditions, savings will depend upon the following factors:

1. Power to save: The source of savings is income. A person's capacity to save depends on his income. as also the size of his family and the standard of living to which he is accustomed. The low level of savings in India is due to miserably low income levels. If income of a society is unevenly distributed that would promote greater savings from the high income ranges.

2. Desire to save: Savings are possible only if there is some inducement. People save to provide against old age, to leave a handsome legacy to their children. to raise themselves in social status. etc. People who are miserly by nature cannot but save. Institutions save to build up a reserve, to provide against loss, to strengthen their competitive power or to exercise political pressure.

3. Institutional factors: The existence of banking institutions promotes savings. They mobilise the savings of the people. Employment in certain institutions carries with it compulsory contribution to the provident fund, which is a kind of compulsory saving. Insurance companies convince the people of the need for saving. The system of dowry payment in a society compels people to save and makes them reconciled to social circumstances.

4. **Interest rates:** The rate of interest is both the cause and effect of savings. It is the cause as high rates encourage and low rates discourage savings. It is the effect, because when there are many people eager to save, the rate would be low. Savings when sometimes hoarded, they do not multiply. When they are sunk in ornaments and jewellery they are wasteful consumption. Thus, capital formation is a function of income, spending habits, social institutions, family attachment, people's outlook, 'existence of peace and confidence. If the economic development of a country is slow and arrested due to low rate of capital formation, the Government has to provide necessary incentives.

3.2.8 ORGANISATION AS AN AGENT OF PRODUCTION

Organisation is the function of an entrepreneur or organiser. Functions of an Organiser or Entrepreneur can be as follows:-

1. Supervision and Management

An organiser has primarily to perform the function of a manager of a firm. He has to supervise and control production. For this purpose, he has to unite land, labour and capital. About land, he has to decide the quantity needed by him and the price that he should pay for it. If he is constructing a building, then he has to undergo several other problems like deciding about plan of the building, the cost of the building, the time required, etc. He has also to decide about the situation of land. Not only that, he has also to utilise labour. He has, first of all to decide about the quantity of labour. Then he has to decide their quality or in other words, he has to decide whether the workers should be skilled or unskilled. He has also to decide about their wages, working conditions, service conditions and living conditions. Then, he has to think of capital. Further he has to decide about the amount of capital required. He has also to think about the time when capital should be delivered to him and the price that he has to pay for capital. Not only has that he had also to decide about the working capital or the liquid capital. For instance, he has to decide how much cash he will need for making payment for material, Labourers and for carrying on other daily work. He may also appoint supervisors or a board of directors. These persons can be given

a fixed salary and they will help him in his work. Of course, sometimes it is found that the size of a business unit does not permit the employment of an assistant manager or a supervisor or a director. In such a case, the organiser himself looks after the management and supervision of land, labour and capital.

After land, labour and capital have been put together; the organiser has to decide about production. He has to decide about the quantity and the quality of the goods to be produced. Further, he has to choose at what time this commodity should be available to him and what price he will charge for this. He has to make a plan and execute this plan. Once the commodity is ready for sale, he has to decide about the selling operations. He has to make a choice about the cost, quality and quantity of advertisement, the type of commission to be given by him to the retailers and to decide about various other methods to be employed in order to push sales.

2. Risk-Bearing

After a commodity has been sold, it is natural that the organiser will make a profit or a loss. If he makes a profit, it is a gain to him and he shall like to keep it. However, it is quite possible that there may be a loss. This loss cannot be transferred by him to some other party. He shall have to bear this. He therefore bears risk.

3. Risk Taking

The organiser not only supervises and manages production, and bears risks, but also takes risks. Risk-taking involves an ex-ante bearing of risk. In other words, it implies that at the beginning of the production, the organiser is willing to take up risk. He knows that his estimate about future demand and future price may turn wrong. He also knows that in that case he shall have to bear losses. Future is dark and uncertain. Demand is constantly fluctuating and there is a strong competition either from the producer of the same commodity or producer of substitutes. It is on account of this that it is quite possible that expected demand and expected price may not hold good. If he makes a mistake, he is

bound to suffer a loss. At the beginning of production he can avoid by not undertaking production at all. In other words, he may decide to do something else. The very fact that he chooses to carry out production and makes a guess of future demand and price shows that he is willing to undergo risks for undertaking this production. This is an important function.

4. Uncertainty Bearing

If the producer is able to decide correctly about the future and makes a good guess he earns profits. This means that after paying the other factors of production at the contracted price. The total sale-proceeds will leave him a surplus called pure profits. But if he is not able to judge the future correctly, the total sale-proceeds would not even suffice to cover the payments to the other factors of production and he will have to meet the difference from his own pocket and will thereby suffer a loss. It might be mentioned here that the risk which the entrepreneur takes is not an insurable risk. A future risk which can be provided for by insurance is no risk at all. By risk we mean unknown **risk** against which the producer cannot protect himself in advance by insurance, hedging, etc. It is for this reason that this risk is better called uncertainty' bearing.

Those economists who do not distinguish between organization and enterprise say that the entrepreneur does the work of co-ordination as well as uncertainty-bearing and consequently gets both 'normal' and 'pure' profits. Those, on the other hand, who keep these two functions separate say that the organiser does the work of co-ordination and gets 'normal' profits while the entrepreneur, who provides uncertainty-bearing gets what Marshall called 'pure profits'.

Self Assessment Questions

1. What is land in economics? What are its characteristics?
2. Define labour. What are its peculiarities?
3. What is capital? What factors influence capital formation in a country?
4. Discuss the role and functions of an entrepreneur?
5. Define:
 - a) Production Function.
 - b) Primary inputs
 - c) Production of tangibles and intangibles.
 - d) Geographical Mobility
 - e) Vertical mobility
 - f) Horizontal Mobility

LESSON – 3.3

PRODUCTION FUNCTION

Introduction - Production Function - Short-term and Long-term Production Functions - Law of Returns to Factors - Returns to scale.

3.3.1 INTRODUCTION

In production, the various factors of production are combined to create new utilities in the shape of different goods. The farmer brings together the fertility of the soil, seed, manure and water, a pair of bullocks and his own services to produce wheat. Similarly, an entrepreneur combines different factors of production viz. land, labour, capital and enterprise for the production of commodities such as sugar and paper. No production is possible with the help of a single factor of production. When a man goes and plucks a flower or a fruit, he is using his own labour and the tree, which is either land or capital. In order to produce something, all the factors of production have to be combined. But, theoretically speaking at least two factors of production are necessary for the act of production.

An important fact in this connection is that the different factors may either be combined in a fixed proportion or in variable proportion. The example of fixed proportion is a driver driving a taxi. If it is intended to do more work, two drivers cannot together drive one taxi. These have always to be combined in the fixed proportion of 1:1. This is the case of fixed technical co-efficient of production.

In the case of variable proportions, it is possible to combine the factors of production in different proportions so as to secure the same result. It is possible to produce, let us say, 50 units of a commodity with the help of 10 labourers and 2 machines or 4 labourers and 3 machines. Here labour and machinery are combined in different proportions to produce the same result. A farmer may either take more labourers to work with his old-fashioned plough and machinery to produce grain or he might use a modern plough and a tractor with less number of labourers. This is the case of variable technical co-efficient of production.

We may consider the problem in two different ways. In order to increase production:

- a) we may increase only one factor of production by one small unit, keeping all the other factors of production constant. In this case production would be subject to the ordinary laws of returns or decreasing returns.

- b) we may simultaneously increase all the factors of production in the same proportion. In this case production would be subject to the laws of returns-to-scale, and there could be either increasing returns-to-scale, diminishing return-to-scale or constant returns.

3.3.2 PRODUCTION FUNCTION:

It is a catalogue of output possibilities with given inputs. Algebraically, it is expressed as follows:

$$Q = f(a, b, c, d, e \dots n),$$

where Q stands for the rate of output of a given commodity, a,b,c,d,e.....n are different inputs used per unit of time. In the words of G.J.Stigler, "The production function is the name given to the relationship between the rates of input of productive services and the rate of output of product. It is the economist's summary of technological knowledge". It is based on certain assumptions as follows:

- a) It relates to a particular unit of time.
- b) The firm is using the best technique available.
- c) The factors of production are divisible into most viable units.
- d) Technical knowledge during that period of time remains unchanged

Fixed and Variable Inputs

To analyse the productive process, we can classify inputs into fixed and variable inputs. A fixed input is one whose quantity cannot readily be varied when an immediate change in output is needed. Buildings, machinery and management are examples of fixed inputs. A variable input is one whose quantity can be varied simultaneously in response to desired changes in quantity of output needed. Raw-materials, semi-skilled and unskilled labour are instances of variable inputs.

3.3.3 THE SHORT-RUN AND LONG-RUN PERIOD

The short-run is that period of time in which the input of one or more factors of production is fixed. So changes in output in the short-run are a result of variations in the use of variable inputs. The long-run is that period of time in which all inputs can be varied to obtain the desired output. This distinction is vital in the theory of production, as it gives us the short-run production function and the long-run production function respectively.

3.3.4 LAW OF VARIABLE PROPORTION

Production in the short-run is subject to the law of Variable Proportions because some inputs are fixed in the short period and production can be varied only by changing the proportion of those inputs that are variable. This expresses the relationship between the changes made in the input-mix and their impact on output. As we go on increasing the amount of one factor, keeping amounts of the other factors of production constant, the return to the successive units of the variable factor are non-proportional; the return rises at first, is constant for a while but eventually diminishes. Therefore, this law is also identified as the Law of Returns or the Law of Diminishing Productivity or the Law of Non-proportional Returns.

Law of Diminishing Returns

The Law of Variable Proportions was treated in the history of economic thought as the Law of Returns. It was believed even up to Marshall's time that different laws of production applied to different industries. Agriculture was deemed to be an activity subject to the Law of Diminishing Returns. In manufacturing, it was said there prevails constant and increasing returns. Therefore three laws of returns were mentioned: increasing, constant and diminishing. Marshall wrote, "An increase in the capital and labour applied in the cultivation of land causes in general a less than proportionate increase in the amount of produce raised unless it happens to coincide with an improvement in the art of agriculture". In the classical tradition, Prof. Marshall emphasised the supply susceptibility of agriculture to diminishing returns.

Generalised Law of Returns

For a long time energy was wasted on the discussion whether it is the average or the marginal returns that diminish, because the marginal return diminishes first and then the average return starts falling. Later the mathematical relationship between total, average and marginal product was made clear; it was realised that there are not three but only one law of returns that has three phases mistaken as three separate 'laws'. This general law was called the Law of Variable Returns, the law of diminishing returns being just the last phase of this Law. Mrs. John Robinson pointed out the main reason behind the operation of this law. The Law of Diminishing Returns really states that there is a limit to the extent to which one factor of production can be substituted for another or in other words the elasticity of substitution between factors is not infinite.

Modern Statement

Modern economists explain the occurrence of non-proportional returns through the fact that factors of production are imperfect substitutes for each other. There is some set proportion in which they must be mixed to get the optimum return subject to given amounts of various factors. If the proportions are other than this, some amount of some factors will be wasted in the sense that production would remain the same by the withdrawal of some units of these factors. The fixed proportions in which factors must be combined are due to the imperfect substitutability of the various factors of production.

Professor Kenneth Boulding refers to the law as one of eventually diminishing marginal physical productivity. He defines "As we increase the quantity of any one input which is combined with a fixed quantity of the other inputs, the marginal physical productivity of the variable input must eventually decline"

The law can be illustrated with the aid of numerical example. Suppose a tiller with 10 acres of land plans to cultivate it. The production function with one variable input is given in the table below.

Table showing Production Function with one variable Input

Number of men	Total Product (quintals)	Average Product (quintals)	Marginal Product (quintals)
1	50	50.00	50
2	110	55.00	60
3	135	45.00	25
4	150	37.50	15
5	160	32.00	10
6	165	27.50	5
7	165	23.57	0
8	160	20.00	-5
9	144	16.00	-16
10	126	12.60	-18

The land has some finite investment (capital) on it: a tube well, a farm house, fencing and farming equipment. The amount of land and capital with it is fixed. The tiller can vary the number of men employed on its cultivation. When, he changes the number of men on the farm, output changes. Suppose the total product, average product, and marginal product behave as shown in table. At first when the number of men is increased from 1 to 2, marginal as well as average product increases. If more men are employed the average product falls and the marginal product falls more speedily. Fall of the average and the marginal product continues when more men are put on the farm. Hiring

of the seventh man is fruitless since he adds nothing to production on the farm. Henceforth if more men are added they will prove a nuisance to the already working men and will decrease production rather than increasing it; marginal product will become negative. The behaviour of the marginal product shows three stages clearly: 1. it increases 2. it falls and 3. it becomes negative. The law can also be diagrammatically represented the operation of the law is shown in Figure 26.

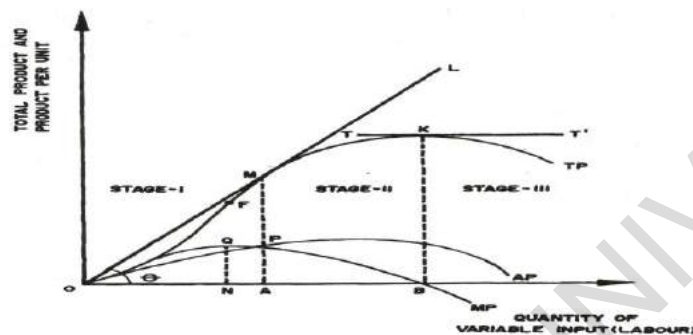


Fig. 26.

As the quantity of the variable factor is increased relative to the fixed factors, total product rises. We can find out from this total product curve as to what is the position of the average and the marginal product curves. Average product of the variable factor with OA units employed is total product (AM) divided by the total units of the factor being used (OA). Here the average product is the maximum and is equal to the marginal product. The increments to total product made by employment of additional units of the variable factor continue to increase till the last unit on A. Marginal product continues to increase. After point of inflexion F total product increases but the rate of increase becomes less and less, that is the marginal product becomes less than the average product, and average product, after attaining a maximum at the point P, starts declining. The marginal curve always falls faster than the average curve. Total product is the maximum (BK) when OB units of the variable factor are employed. Henceforth if more units are employed total product declines and marginal product becomes negative.

Three phases of Law of Variable Proportions:

Three stages of production determine the Law of Variable Proportions. The three stages of the law of variable proportions are easily identified in the given Figure 26.

- Phase I Marginal product increases as we employ more units of the variable factor till ON units are employed. This is the first phase of the law of Variable Proportions - popularly called the stage of increasing returns. If we add

more units marginal product starts falling but average product rises so long as marginal product is above it. They are equal when OA units of the variable input are employed. Here the first phase of the law of variable proportions, that is the stage of increasing returns, is over. Point A corresponds to the maximum average product of the use of the input (labour)

on extensive margin.

Phase II It begins with the employment of more units after OA. Average product, as also the marginal product, starts falling. The OBth unit of the variable factor has a marginal product which is zero. The second stage of the law is called the Law of Diminishing Returns. The phase attracted particular attention of the classical economists because it was a main characteristic of the primary production of their times. They believed that agriculture is specially carried on under diminishing returns.

Phase III It starts after the employment of OB units. If more units of the variable input are added, they have marginal productivity, less than zero. The additional units of the variable factor are redundant and harmful since they hinder rather than help production. Point B corresponds to the intensive margin beyond which production will not take place. Producers rational decisions B in phase II only. In phase I, the average product increases as more units of the variable factor are employed. The producers profit out of the employment of the factor continues to increase till the employment of OA units. There is incentive for the producer to expand production by increasing the proportion of the variable factor up to the point, because the marginal return to the factor is increasing up to this point. A profit-motivated producer will not produce such quantities of production so as to employ an amount of the factor less than OA. As the second stage starts, marginal product starts falling. With the employment of more units of the factor the marginal product of the variable factor continues to fall. At the point B, the marginal product falls to zero. After the Both unit, if the proportion of the variable factor is increased further. The marginal product is negative and diminishing. This is the phase III of the law. The producer finds that his total product is falling as he employs further units of the variable factor.

In which stage of production shall the producer be in equilibrium?

Obviously in stage II, though this is the stage of the falling but still it has positive marginal product of the variable factor. The diminishing marginal product does not worry the producer unless the marginal product becomes less than the marginal cost of procuring the additional unit of the factor. The producer can decide the employment of the factor within stage II only.

According to the Law of Non-proportional Returns the returns to a variable factor, as we employ more and more of it with some fixed factor, increase at first, and then start diminishing and may eventually become negative. What about the productivity of the fixed factor? In our table given to illustrate this law we have assumed land and the farming labours scarce relative to land. The marginal (average) product of labour rises and that of land is negative. When the average product, as also the marginal product, of labour is constant (at point P), that of land is zero. When the average product (and the marginal product) is declining as in stage II, marginal product of land is positive and rising. In phase II land is too much and in phase III labour. It is only in stage II that the marginal productivity of both is positive. Hence the choice of this stage on the part of the producer for equilibrium employment of the factor, i.e. the second stage or phase.

There is inter-factoral symmetry (or reversibility) in phases I and III. "The most important thing to observe, Cassel said, about this law is that it is symmetrical and consequently the third phase is simply the converse of the first". In phase I, where the ratio of the variable factor to the fixed factor is relatively low, the marginal physical product for the variable factor is positive and greater than the average physical product. In phase III, however where the ratio of the variable factor to fixed factor is relatively high MPP of the variable factor is negative and below the APP of this factor.

Explanation of the causes of increasing returns (I phase)

1. The fixed factor is more intensively and effectively utilised with the addition of the units of variable factors and fuller utilisation of the units of the fixed factors becomes possible; thereby increasing returns are obtained. Why is the fixed factor not taken initially in a quantity which suits the available quantity of the variable factor? It is because fixed factors are usually indivisible. Indivisibility of a factor signifies that due to technological reasons, a minimum amount of that ought to be used whatever the level of output. Thus, as more units of the variable factor are put to work with an indivisible fixed factor, output increases due to fuller utilisation of

the fixed factor. It is the indivisibility of certain factors which leads to increasing returns in the first phase of the operation of the law of variable proportions.

2. When more units of the variable factor are employed, initially the efficiency of the variable factor itself improves. For with a sufficiently larger quantity of the variable factor, it is possible to effect division of labour and specialisation resulting in higher productivity.

Explanation of the causes of Decreasing or Diminishing Returns (II phase)

The occurrence of diminishing returns also rests upon the indivisibility of the fixed factor. Once the fixed factor has been put to maximum use by being used in the best or optimum proportion with the variable factor, further increases in the variable factor will yield only diminishing returns. The fixed factor is being used to fully, i.e. in non-optimal proportion with one variable which is worked too hard. It is because the fixed factor is not finely divisible, so as to enable its use in right proportions. As Prof.M.M.Bober remarked, "Let divisibility enter through the door, law of variable proportions rushes out through the window".

Mrs. Joan Robinson went into the cause of diminishing returns with great insight. She held that the diminishing returns occur because the factors of production are imperfect substitutes for one another. In fact, it is her main contention that the elasticity of substitution between factors is not infinite. Let us quote Prof. Joan Robinson's remarkable statement; "there is a limit to the extent to which one factor of production can be substituted for another. If this were not true, it would be possible when one factor of production is fixed in amount and the rest are in perfectly elastic supply, to produce part of the output with the aid of the fixed factor, and then, when the optimum proportion between this and other factors was attained, to substitute some other factor for it and to increase output at constant cost".

Explanation of the causes - of Negative Returns (III phase)

The occurrence of negative returns is due to the fact that the number of units of the variable factor becomes so excessive in relation to the fixed factor that they get in each other's way and the consequence is negative returns. Too many units of the variable factor damage the efficiency of the fixed factor in line with proverbial sayings that 'too many cooks spoil the food' and 'too many hands spoil the work'.

Assumptions of the Law

The assumptions of the law are` as below:

1. The variable resource is applied unit by unit, each unit being identical in amount and quality.
2. All the resources apart from this one variable are held unchanged in quantity and quality.
3. The technique of production does, not improve. The law specifically operates in the short run because here some factors are fixed and the proportion of others has to be varied In the long run the change of scale and not the factor proportion is uppermost in the mind of the producer.

Uses of the Law of Variable Proportion

1.It shows the limitations of factor substitution: The law of variable proportions is essentially a principle governing short period production where only changes in factor proportions are possible. We have concluded that a producer will employ a variable factor in such quantity as that gives him a positive but diminishing marginal productivity. It demonstrates the limitation of physical substitutability of the various factors of production in the production process and reminds us that the factors should be available in the proportion in which they can be combined for production; if some one of them is short in supply, it will make the other factors redundant.

2.It is helpful in the analysis of population and unemployment problems: The principle is not only important for a firm in deciding with respect to the methods of production and volume of output. It is helpful in the analysis of many other problems, both in developed and less developed economies. Since production is basic to every type of economic activity, the law has profound implications for the population problem and the low standard of living, the relative prices paid to the factors of production, the nature of good produced and the methods of production used in developed and less developed areas and the nature of commodities traded between them.

3. It explains under employment: The law can be used to analyse the economic problems of the present day undeveloped world. An important feature of overpopulated under-developed areas like India, China and Pakistan is the large-scale disguised unemployment or under-employment of labour that

results in a poor standard of living of major part of the population. Economists ascribe this to the inappropriate factor endowments, limited opportunities for technical substitution of factors and market imperfections, prevalent in the countries. On account of fast increasing population, supply of labour here is much more in proportion to the available capital. The relative abundance of manpower and deficiency of equipment, manifests itself in the low productivity of labour, particularly in agriculture. It is believed by some that marginal productivity of labour in some backward economies is negative in agriculture that is, even with the withdrawal of a substantial portion of the labour force, production will not be diminished. There is so much of the employment of the abundant factor labour in combination with scarce factor, capital that the marginal product of labour has gone over to the third stage (of negative returns) of the Law of Variable Proportions, in agriculture in these countries. With abundance of cheap labour and deficiency of capital less developed economies are well-advised to evolve and follow labour-intensive production processes rather than adopting the capital-intensive eastern technology. A fundamental problem of development of these economies is to search out methods of production that suit their factor endowments. If this cannot be done, then the Productivity of labour can be raised only through rapid capital formation that can outstrip the rate of increase in work-force.

4. It explains the concept of secular stagnation: The problem facing the developed economies like U.S.A is capital formation which is so fast relative to the growth of population that even with increasing capital-intensive technology, these countries face the potential threat of so low average and marginal product of capital relative to labour as to discourage capital investment thereby exposing these countries to the danger of secular stagnation.

In conclusion, we may say that the law is of paramount economic importance. The principle applies to all the economies. It is helpful for production planning at the level of an individual firm. It is also a basic technical fact to consider in the choice of production technique for a less developed or a developed economy. It underlines the need for technological progress and its application to production in industry and agriculture to keep diminishing returns in abundant.

3.3.5 RETURNS TO SCALE

Unlike the law of variable proportions which relates to a short run production function, the long-run production function leads to returns to scale. An increase in the

scale means that all inputs or factors are increased in the same proportion. In variable proportions, the cooperating factors may be increased or decreased and one factor, say land in farming or machinery in industry is kept constant, so that alternations in proportion among the factors result in changes in output. On the other hand, in considering returns to scale, all the required factors of production are increased or decreased to the same extent such that whatever the scale of production, the proportion among the factors remains constant. The long run production function explains how a simultaneous and proportionate increase in all the factors of production affects the total output at its various levels in the form of laws of returns to scale.

Statement of the Laws of Returns to Scale

When a unit of production increases all its inputs (factors of production) simultaneously and proportionately, there are three ways technically in which the output may behave. These may be called the three stages (phases) or three laws of returns to scale. The total output may increase more than proportionately (Stage I) when it is known as increasing returns to scale, or may increase only proportionately (State II) when it is called constant returns to scale, or may increase less than proportionately when it will be known as diminishing or decreasing returns to scale (stage III). The three laws of returns to scale may be stated as follows:

1. Increasing Returns to Scale: If a production unit increases its inputs say by 10% and the total output increases by more than 10% then it signifies the operation of law of increasing returns to scale. If all inputs are doubled but total output is more than doubled, the law operates. To put it simply, if increase in the total output is greater than the proportional increase in the inputs, it points to the existence of increasing returns to scale.

2. Constant Returns to Scale: If a production unit increases all its inputs (factors of productions) in a given quantity say 10% and the total output also increases in the same proportion say 10%, it shows the existence of constant returns to scale. If all inputs are doubled and the total output is also doubled, the law of constant returns to scale operates. In short, to increase in the total output is proportional to the increase return inputs in a situation of constant returns to scale.

3. Decreasing or Diminishing Returns to scale: If a unit of production increases its inputs say by 10% and the total output increases by less than 10%, it signifies a situation of diminishing returns to scale. Suppose all inputs are doubled, then if total output is less than doubled, it would

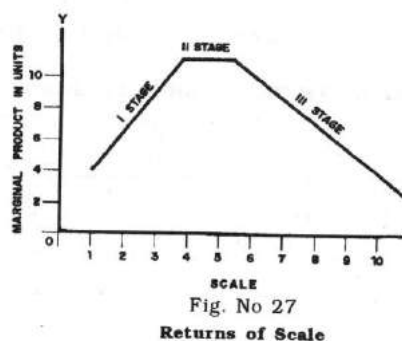
be the case of decreasing returns to scale. The law of diminishing returns to scale operates, if increase in output is less than proportionate to the increase in inputs.

Let us illustrate with a numerical example in the form of a table:

TABLE SHOWING RETURNS TO SCALE

Sl. No.	Scale	Total product in units	Marginal product in units
1	1 Labour + 2 hectares of land	4	4
2	2 “ + 4 “	10	6 stage I
3	3 “ + 6 “	18	8 increasing returns
4	4 “ + 8 “	28	10 Stage II
5	5 “ + 10 “	30	10 constant
6	6 “ + 12 “	48	10 returns
7	7 “ + 14 “	56	8 Stage III
8	8 “ + 16 “	62	6 Decreasing
9	9 “ + 18 “	66	4 returns
10	10 “ + 20 “	68	2

In the above table when 1 labourer and 2 hectares of land are employed; the total product is 4 units of corn. The inputs are doubled, i.e. 2 labourers and 4 hectares are employed. The output of corn is more than double as the marginal output goes up from 4 units to 6 units. When the scale is trebled, the total output is more than triple and the marginal output goes up from 6 units to 8 units. When the output is at 4 labourers and 8 hectares of land the total output reaches 28 units and the marginal output has reached 10 units increasing from 8 units. Up to this stage, we have increasing returns. Later on till SI.No. 6 stage, there is constant marginal output, showing constant returns stage. Afterwards the marginal output declines to 8, 6 and 2 units. This is the third stage of the Decreasing returns. The data can be represented as in the Figure 27.



CAUSES OF INCREASING RETURNS TO SCALE:

It is not far to seek the causes of the existence of increasing returns to scale and of the eventual setting in of diminishing returns to scale. It is the existence of economies of scale which are responsible for the emergence of increasing returns to scale. When the economies of scale disappear or wear out and the diseconomies of scale appear or set in, the law of diminishing returns to scale begins to operate or comes into force.

Economies of scale are the advantages enjoyed by a production unit when it expands the size of plant and the scale of operation. Optimally, the average cost of production can be reduced by enlarging the size of plant. These economies are referred to as internal economies. They are peculiar to a particular production unit and accrue to it by expansion of its own scale of operation. There are external economies also enjoyed by an expanding firm and these advantages accrue to the firm on account of the growth of the industry itself. As the industry grows, a number of advantages flow or economies accrue to all the firms and they are called external economies. The availability of both internal and external economies constitutes an important reason for the operation of increasing returns to scale. Increasing returns to scale imply decreasing cost per unit of output. Let us now analyse these external and internal economies which are at the root of increasing return to scale.

External and Internal Economies

Large scale production often results in certain advantages to a firm and to the industry which are known as economies of scale. These are associated with external and internal economies. All such economies are gain to the firm and to the industry and are therefore cost-reducing. As external and internal economies are cost-reducing these give rise to the law of increasing returns. Another important point in this context is that it is very difficult to draw a line of demarcation between external and internal economies. What may be external economy at a given time may be internal economy at another time. It is all a matter of convenience and circumstances to call a particular economy external or internal. Still we divide them and analyse external and internal economies as follows:

External Economies

External economies are those economies which accrue to a firm because of the advantages from the establishment or expansion of an industry. These are advantages which arise not because a particular firm has expanded its output, but because of expansion in the size of the industry. External economies are of three kinds - economy of concentration, economy of information and economy of disintegration.

1. Economies of Concentration:

Economies of concentration emanate when in a particular area a large number of firms which produce the same commodity are established. This is an advantage which arises from what is called localisation of industry. Localisation of industry makes it possible for firms to have better and more skilled labourers. In the course of time labourers get skilled and it is easier for a firm to have skilled workmen at a given wage rate (without giving them any training). This saves cost such as cost of training of the labourers.

Localisation of industry makes it possible for a particular firm to have more financial facilities. In areas where a large number of firms are established it is natural that financial help is available on a large scale. Commercial banks establish their branches and provide financial and other services. On account of this it is found that a particular firm can obtain financial facilities at a cheaper cost. Localisation of industry in a particular area will be possible for different firm B to have transport facilities. These transport facilities include both the location of railway services and of motor transport. Localisation of industry also helps in providing better marketing facilities to every firm.

Thus on account of concentration of large number of firms at a particular place, a single firm is always in a position to have advantage of employing better and skilled labourers, easy and cheap credit facilities, better transport and better marketing conditions.

2. Economics of Information

The next type of external economies is economies of information. These are the economies which arise to a firm, because of establishment of large number of firms in a

particular region. Ordinarily it is difficult for a firm to know the market condition when it is an isolated place. On the other hand when a large number of firms are established at a place, it enables a single firm to have information about the market more easily than it would be otherwise. Quite often it is found that a large number of firms at one place start a bulletin or information-paper which furnishes information about the activities of all the firms, their total production, employment and capital used, etc. Such information is useful to a firm, but can only be availed of when there is localisation of industry. When there are a large number of firms at one place they need not carry out research work separately. Separate research work is bound to be very costly and at the same time it will be organised on a small scale, It is better to have a large number of firms contributing to a single research department and thereby organizing it on a vast scale. It is easier for that research department to help all the firms in bringing about certain improvements which are helpful to the industry. It is possible for a large number of firms to have more direct contact with one another. The manager of a firm remains constantly in touch with those of the others both on the business level as well as on the social plane and consequently, it is possible for him to have more information about the other firms. It will be possible for different managers to have close social contact and thereby tackle several of the problems together. Thus localisation of industrial research is an external economy which brings down the cost of production to a great extent.

3. *Economics of Disintegration*

A large number of firms established at one place give birth to the economies of disintegration. One single firm may not produce enough wastage or by-product to enable some specialised firm to make use of this wastage or by product. Take the case of a single sugar mill in a place. In such a case molasses go waste. On the contrary, if a large number of firms are established at one place, it will be possible to have a specialised firm to make use of this by-product. Because of disintegration, there is a reduction in the cost of production, which is called economy of disintegration.

Internal Economies

An external economy and an internal economy only differ to the extent whether the advantages accrue from the industry to the firm or on account of the activities of the firm. It is possible that in one place, because of the expansion in the size of the firm, there, may be an economy in the

cost of production which is called internal economy. At another place the same type of economy may be affected because a large number of firms have been established and there is localisation of industry. This is a case of external economy. Internal economies are of five types: technical, managerial, commercial, financial and risk-spreading.

1. *Technical Economics*

Technical economies accrue to a single firm because of the large size of firm. In production we have small scale production as well as large scale production. Advantages of large scale cannot be reaped in small scale production. For example compare a small car producing company with a big motor car producing establishment. It is producing that the big Motor Car Company can manufacture one car in less than 60 seconds. This is unthinkable for a small Motor Car Company. Thus there are certain economies which arise purely because of technical reasons when size of the firms is large one. These are called economies of technique' or technical economies. These may be further sub-divided into three categories.

a) *Economies of Superior Technique:* By the term "Economies of Superior Technique" we mean the technique of production is better in one particular firm than it is in another. This is because size of one firm is larger than the size of another. It is often found that a bigger firm employs better type of machinery and thereby enjoys the benefits of superior technique. Better machinery is more cost-reducing. A smaller firm employs a small size of machinery which does not give him scope for specialised production. The bigger the size of machinery is the more specialised and complex it is. It is possible for one big machinery to have different processes of production while for small firms it is not possible to utilize that machinery. One big complex machinery which can complete different types of processes is bound to be more cost reducing than another type which can only complete one process. Thus when the size of firm grows, it becomes possible to have a bigger and better type of machinery to improve the technique of production which reduces the cost.

b) *Economies of Increased Dimensions:* A firm enjoys reduction in cost when it increases its dimensions. Large scale firm will always have less wastage in time and cost, because a particular process need not have to be passed on to another firm. Suppose there is a small scale firm carrying on printing of books. This firm will have to await the supply of paper from mills before it starts the process of printing. It may not have artists and therefore it will have to await the drawings to be made by the artist. After the book is printed it will

have to be sent out for binding purpose. All this is necessary as the size of the firm is small. It is quite possible that as dimensions grow it becomes necessary for a particular firm to have all these processes conducted within the firm. Paper is already available in the firm, printing will be quickly done; the artist will be ready to do the job, and the binders are within the firm. Thus an increase in the dimensions of the firm will always bring down the cost of producing a commodity. Such advantages are not only available in the ease of printing, but in every big industry. This is called the economies of integration. A very big firm manufactures spare parts for itself. When it does so, the cost of production is reduced. Hence an increase in dimensions of a firm will reduce cost of production.

C) Economies of Linked Processes: A firm may not be of such a big size as to reap the benefits from increased dimensions. It may not be possible for a firm to have various processes of production within the firm and under a singular control. In the example given above, it may not be possible for a printing firm to have supplies of paper, printing job, artist work and the binding of books in one premise and under one control. This difficulty may be avoided by what is called "linked processes". Different firms may agree to function as one single firm so far as production is concerned. In such a case, a paper mill shall be tagged to a printing firm and these two shall further get the benefit of cooperation from artists' and binders. Though control and ownership remain separate, yet all these firms will pull together and thereby carry on production as if they were ne single firm. Such a case is not a rarity. For example, it is found that there are firms which, by agreement, make benefit of linked processes. Take, for example, the ease of Milk Scheme in Pondicherry. The Pondicherry Co-operative Milk Scheme does not have a dairy. It purchases milk from different sellers. Then, it is brought over to the plant where it is pasteurised and filled in the plastic packets. From here the vans once again go to several depots all over the city and milk is sold to the public. We, thus, find that though there are different processes of production which are not directly under the control of a single authority, yet the Milk Scheme gets the benefits of linked processes and thereby reduces the cost of production.

2. Managerial Economies

Managerial economies are those which are got by a single firm by joining hands with other firms, but retaining the same management. There is a possibility of different firms joining hands together and working under a very expert manager who, otherwise, has an idle capacity. Such cooperation among different firms' results in large scale production and therefore such economies are called "economies of scale". These are

obtained by employing a large number of firms under the same management. Such economies may be of two types:

(a) Delegation of Detail: A manager has to look after several petty jobs. If there is no assistant to help him in his official routine, he has not only to look after land, labour, capital and organisation but also to look after the sale of these goods. He has to look after so many details in order to procure these at the given time. It is quite possible that particular machinery has been despatched but owing to certain delays the railways have not been able to supply them at the proper time. Or, it may be that a particular type of raw material has been ordered but not despatched by the suppliers. For all this, he will have to remind the suppliers and the railway companies which will involve writing several letters. It is quite possible that he may have to look after several other petty jobs in order to procure land, labour, capital and organisation. Then there is the problem of looking after actual production and to see that every worker is working at his best. After this, there may be the problem of marketing, of advertisement, of commissions to be given to retailers, of payment to be received, of maintenance of accounts and so many other jobs which are really petty but which keep the manager tied to such problems. If he is not allowed time to look after better problems, it shall not be possible for him to do the job of expansion and of bringing about economies in the firms. The manager's energies are frittered away by concentration on very petty things. If he can delegate his authorities and other details to assistants and some managers, then he shall be left with the task of bringing about improvements in production process and in bringing down the cost of production. By delegation of details, a manager can bring down the cost of production. However, delegation of details requires employment of more men and this is only permissible when a firm expands its size to such an extent that it is in a position to justify the employment of more men. Internal economies arising from delegation of detail can only take place if there is an expansion in the size of firms.

b) Functional Specialisation: It is possible to secure economies of large scale production by dividing the work of a manager into several separate departments. The manager is left with the task of coordinating the activities of several departments and laying down the principles on which these departments are to work. Every department is looked after by a specialist who further secures economies of large scale production by delegation of detail. Thus a particular manager may divide his entire job into several departments and leave it into the hands of specialists to work out and follow details to secure economies of large scale production. For example, a manager may establish a purchase department to

look after the procurement of land and capital. There may be another department under a specialist called the sales department and a third department under a works manager. The recruitment of labour is left in the hands of another. If the business permits, then he can further split these into sub-heads so that the manufacture, purchase and sales of various departments are not carried on by these three specialists, but by a large number of specialists who look after separate jobs. If possible, he may even appoint a board of directors composed of him and all the specialists in order to carry out production on a more efficient scale. Thus he will be in a position to bring down the cost of production and secure economies of scale.

3. Marketing Economies

Marketing economies are reaped when reduction in the cost of production is secured by the purchase of raw material at a lower price and the sale of goods at the highest possible. The manufacturer of a commodity can certainly earn more profits if there are economies in purchase and economies in sale. Economies of marketing can always be procured by increasing the size of the firm. The business expands and therefore the firm purchases raw material and other factors of production on a large scale. Large scale buying has its own advantages, the chief being that commodities are always “cheaper by dozen”. This is because the bargaining power of a large-scale buyer can bring about reduction in price of the raw material purchased while it is not possible for a small-scale producer to do so. Thus economies may be secured in the purchases of raw material or purchase of factors of production. A large-scale buyer can make the fullest use of the transport facilities to carry goods and personally meet sellers. It may also be possible because he may employ more and better experienced staff to deal with the purchase of raw material. In addition to this, he may also bring about a reduction in the cost of selling. This may be done either because he receives a preferential treatment and is therefore in a position to give the commodity to retailers at a comparatively highly specialist staff, well-versed in the art of pushing up sales. This may also be because a plant manager may find it possible to expand advertisement because the scale of business operations has increased and thereby increase the sales.

4. Financial Economies

Financial economies are the advantages secured by a firm in matter of finance. A large firm has great benefit to a firm. There is the possibility of getting loans from private sources, because they are sure about the stability of the firm. It is also possible to have

large overdrafts from the banks because the size of the firm is large and its credit-worthiness is high.

5. Risk – bearing Economies

Economies of large scale may be secured in the matter of risk. A large firm is in a position to bear the risk much better than a small firm can. Such a risk is avoided primarily by increasing the size of the firm and thereby increasing credit-worthiness and credit resources of the firm. Thus we find that the risk-bearing economies are obtained by a large firm. This may be done in several ways.

a) *Diversification of Output:* A firm can obtain economies of large scale production by diversifying output. This may be done by a firm when it is afraid that the demand of its product may fall in future. In order to eliminate the risk, the firm may produce other brands of the commodity so that when the demand for one type of brand falls, the demand for other types of brand sustains the firm. It is very commonplace to say that such diversification of output can only be carried by large firms. Unless this is done, the firm shall always be exposed to great losses because of sudden changes in the demand for a particular brand or for the demand for the particular commodity. Thus we find that diversification of output, which is possible only by a large firm is also helpful in bringing down the cost of production and in reducing the risk involved.

b) *Diversification of Marketing:* A particular firm finds it possible to diversify market and thereby avoid unnecessary risk. This may be done by supplying the output to different markets in such a way that a fall in the demand of commodities in one market is compensated by its supply in other markets. For this purpose, a firm not only sells commodities in the internal market but also in the foreign markets so that if demand in foreign markets falls, it is sustained by the sale in the internal market. Further, within the country it may sell commodities for different purposes. Take for example, the case of electricity. It may be supplied for lighting purposes, for factories and for the use of several other consumers' goods like refrigerators, radios, cookers and cooking ranges. All these will make it possible for the Electricity Company to depend on one market, while

the demand falls in the other market. For example, it is possible that there may be a sudden fall in the demand coming from a market which utilises electricity for cookers, radios and refrigerators, either because the season has changed or because a substitute has been found. But it can always sustain itself by selling electricity for lighting purposes. Thus, with the diversification of market, a firm can bring about economies.

c) Diversification of sources of supplies: A large firm sells given output by diversifying the sources of supply or by diversifying processes of manufacture. Suppose a particular firm is obtaining supplies. If the supply is cut off for some reason or other the firm shall be forced to curtail its output or it may have to stop production. In order to save such losses, it shall be forced to purchase the materials at a higher price from whatever other sources it is possible to have it. If it had already diversified the sources of supply, so that it has been purchasing materials not from one source, but from several sources it shall not have shortage of supply so that the problem will not be as acute as it would be otherwise. However, this is only possible if the firm is operating on a large scale. A small firm requires small quantity of raw material and therefore it cannot have diversification of sources of supply. Such diversification is only possible if production is carried on a big scale.

d) Diversification of processes of big manufacturer: The processes of manufacture should not be the same, but as far as possible diversified. It is quite possible that the process of manufacturer may be divided into small autonomous units in such a way that if one fails the other may help the firm to continue the production. From a technical standpoint the establishment of small autonomous units of production, having diversified processes of manufacture, is superior to a process of manufacture that is not diversified, but the risk involved in the latter is too great and therefore it is necessary for a firm to continue with slightly less technically efficient units than let the entire ship sink at one time.

6. Dimensional Economies

Dimensional economies arise when the size of a capital good is enlarged to increase production. The output from an enlarged capital good increases

in a greater proportion than the increase in cost. For example, if the diameter of an oil pipe is doubled, the flow of oil through the pipe is more than doubled. In other words, the output capacity increases more than in proportion to the increase of investment in a capital asset. Likewise, if a 1-foot cube wooden box is converted into a 3-foot cube wooden box the capacity would increase by 27 times, though the wood required would only be 9 times larger than that needed for the 1-foot cube wooden box. Similarly, if labour and materials in a motor are trebled, the horse power is more than trebled. This leads to the general principle that as the size of a capital good is increased its total output capacity increases at a rate greater than the cost involved in increasing its size. The dimensional economies so secured bring down the cost per unit of the commodity.

7. Economies flowing from Indivisibility

Another cause of increasing returns to scale is the indivisibility of capital goods. In general, indivisibility means that capital equipment is available only in minimum sizes or in definite ranges of sizes. For example, a shoe-making machine available in the minimum size can produce; let us suppose 10,000 pairs of shoes per month. If this machine is used for producing say, 5,000 pairs of shoes in a month, then the cost of producing a pair of shoes would be higher because the fixed cost of the machine will be spread over 5,000 pairs. If the same machine is used to its full capacity and produces 10,000 pairs of shoes in a month then the fixed cost of the machine will be spread over 10,000 pairs and the cost per unit will be lower than before. This leads to the general principle that as the output is increased, the machinery comes to be utilised more intensively, and consequently the cost of production per unit declines. The advantage of machinery and plant to produce larger quantities at lower costs is referred to as technical economies of production.

Indivisibilities are associated not only with plant and machinery, but also with labour, management, marketing, finance, and even with research and advertisement. For example, labour is not completely divisible. One operator may be required for each machine, whether the machine is large or small. A taxi carrying four passengers requires one driver, while a bus carrying forty passengers also needs one driver. In the former case, the salary of the driver will be spread over four passengers while in the latter case it will be spread over forty passengers.

For a particular firm, there is nothing better than the law of increasing returns and this is possible if internal and external economies are secured. These internal and external economies play a very important role in the size of firm and determining the nature of

competition in the market.

CAUSES OF DECREASE IN RETURNS TO SCALE

The increasing returns to scale cannot continue indefinitely. Diminishing returns may eventually set in when there is a continuous expansion in the size of the plant or the scale of production beyond a particular level. This phenomenon is due to diseconomies of large scale. The diseconomies arise through the fall in efficiency in the inputs or factors as scale expands excessively. The main sources of diseconomies of scale are given below:

Internal diseconomies

1. *Limited use of natural resources:* Doubling of coal mining of plants may not double coal output because of either limited availability of coal deposits or difficulty of access to underground coal deposits.

2. *Limitation to efficient, large-scale management or Managerial Inefficiency:* As the scale of production increases, excessive strains will be placed on management. The management will become relatively inefficient in handling the issues and taking decisions. The difficulties in coordinating different divisions and their activities and communications tend to increase faster than the growth in scale of operation.

3. *Worsening labour conditions:* As the size of the firm increases the labour relations deteriorate. The labourers feel that the managers or owners of the firm are having impersonal relations with them. Further, repetitive nature of the jobs that the workers handle and long production run often bore the workers. They are bound to be dissatisfied with routine, and non-challenging jobs, with resultant decline in efficiency.

Thus, due to the operation of diseconomies of scale associated with excessive growth of the firm, the phase of decreasing returns to scale sets in.

External Diseconomies

To these, we may add external diseconomies which strengthen the trend towards diminishing returns to scale. When an industry gets concentrated at a place beyond limit, there arise many external diseconomies of production which apply to all the firms engaged in that industry. The most important type of these diseconomies is those related with

transport. When many firms get located at a particular place, the transport system gets subjected to serious strain. The firms have to face considerable delays in getting raw materials and sending finished products to the marketing centres. Besides delays, the firms have to pay higher freight charges on the movements of goods to the consumption centres. Further, the prices of raw materials, power, finance, etc may rise in big industrial areas. The concentration of an industry at a particular place may result in higher land values and rents.

As a result of the internal and external diseconomies which a firm experiences when it expands beyond a certain point, diminishing returns to scale, set in. The cost of production per unit starts mounting up.

CAUSES OF CONSTANT RETURNS TO SCALE

As the business firm continues to expand, it gradually exhausts the economies, internal and external, which cause the operation of increasing returns to scale. Beyond this point, further increases in the scale of operations of the firm are accompanied by constant returns to scale over a substantial range of output. In other words, increases in all the inputs cause proportionate increases in output. For example, if all the inputs are doubled, the outputs will be exactly doubled. The main reason for the operation of constant returns to scale is that, beyond a certain point, internal and external economies are neutralized by the growing Internal and External diseconomies of production. When internal and external economies are more powerful than the internal and external diseconomies, the result is increasing returns to scale. When internal and external economies are exactly balanced, with the internal and external diseconomies, the result is constant returns to scale. And when the internal and external economies are weaker than the internal and external diseconomies, the result is diminishing returns to scale.

QUESTIONS

1. What are economies of scale and what are diseconomies of scale?
2. Distinguish between a short-period and a long-period production function.
3. Explain the basis of Increasing Returns to scale. Distinguish between Law of returns to Factors and Law of Returns to scale.
4. Explain the Law of Diminishing Marginal Returns
5. What is land in economics? What are its characteristics?
6. Define labour. What are its peculiarities?
7. What is capital? What factors influence capital formation in a country?
8. Discuss the role and function of an enterprise?

UNIT – IV

LESSON – 4. COST AND OUTPUT ANALYSIS

Introduction - Cost and Output Analysis - Different Cost Concepts -Marginal and Average Cost Relationship - Short run and long run cost curves

4.1.1 INTRODUCTION

Cost considerations enter into nearly every business decision. It is very important, therefore, to use the right kind of cost. Cost concepts differ because of disparity in view-points. While financial records aim at describing what was (expenditure in the past), decision-making concepts of cost aim at the projection of what will happen (in the future) under alternate courses of action. As Joel Dean points out, "Different combinations of cost ingredients are appropriate for various kinds of management problem. Disparities occur from deletions, from additions, from recombination of elements, from price-level adjustments and from the introduction of measurements which do not appear anywhere in the accounting records."

4.1.2 COST AND OUTPUT ANALYSIS

Economists have been speculating for quite a long time about the shape of the relationship of cost to output, as it is playing a key role in determining the theoretically optimum level of production. The most acceptable economic doctrine has been that marginal costs rise continuously as output rate increases above a given level and the resulting average cost curve is U-shaped in relation to output. In contrast with this economists' view, business people hold that marginal cost is constant at least over the output range of normal experience.

The study of cost-output relation has two sides: a) short-run cost- output relationship and b) long-run cost-output relationship. The short run is defined as a period which does not permit alterations in the fixed equipment (buildings, fixed machinery and the like) as well as in the size of the organisation. As such, in the short run any increase in output is possible within the range permitted by the existing fixed factors of production. In economic analysis, the short-run cost-output relationship is studied in terms of average fixed cost, average variable cost and average total cost vis-a-vis output.

On the other hand, the long-run is a period in which there is sufficient time to alter the equipment (land, fixed machinery, buildings, etc.) as well as the size of the organisation. As such in the long run it is possible to increase the output without any limits being placed by the fixed factors of production, since they themselves are capable

of being altered. In the long run, all costs are variable and, therefore the long run costs would refer to the costs of producing different levels of output by either changes in the size of the plant or scale of production. The long-run average cost curve is U-shaped or like a dish.

4.1.3 DIFFERENT COST CONCEPTS

To produce a thing, a firm must employ various factors of production. These factors have to be paid for the services or sacrifices they make to produce a certain quantity of goods. As the firm engaged the factor in the production and sale of goods and services, therefore, the payment for the use of inputs is the cost of output. Alternatively, the cost of production is equal to the sum of sacrifices made by the factors in the process of production for which the firm pays. A few cost concepts relevant for business analysis are discussed below:

1. Money Costs and Real Costs

Let us distinguish between money costs and real costs. The money costs are payments in terms of money to the factors of production for the services they render to the producer. These include money payments to the workers, land owners, lenders of finance, raw material suppliers and similar other payments made by the firm.

The real costs, on the other hand, represent the actual costs in physical terms. For example, printing of a book has certain amount of real costs of paper used for a book, the time spent by the author, publishers and the workers and the wear and tear of the printing, binding and cutting machineries. The real costs are therefore total sacrifices made in terms of land, labour, raw material, etc. in order to produce goods and services.

2. Absolute Cost and Opportunity Cost

Absolute costs are expenses incurred in terms of money. Such costs get recorded in the books of account of the firm. The absolute costs are also known as outlay costs as they imply monetary outlay. For example salaries, cost items like interest paid, wages and salaries paid, payments for raw materials purchased and rent paid fall under the category of absolute costs.

An accountant will easily recognise and record the absolute cost items. But an economist goes beyond that. He realises that there are costs of doing one thing in terms of the foregone opportunities. Robinson Crusoe pays no money to anyone, but realises that the cost of picking

raspberries can be thought of as the sacrificed amount of strawberries he might otherwise have picked with the same time and effort. This sacrifice of doing something else is called opportunity cost. The opportunity cost of doing one thing is, therefore, the next best alternative foregone in doing this one thing.

For example, the opportunity cost of using one's own capital in the business is the interest it could earn in the next best use of equal risk. If the capital supplied by a producer himself can earn 5 percent in its most productive employment, then that is the opportunity cost of employing his capital fund in his firm. Thus, the opportunity costs represent only sacrificed alternative. For this reason, they are not recorded in the books of account.

The concept of opportunity cost is used when the resources are limited, but have alternative uses. Therefore the question arises as to which of the alternatives should be chosen. The opportunity cost concept is important in economic analysis from the theoretical point of view, because it highlights the basic problem of adjusting the limited resources to unlimited but competing ends. The opportunity cost of producing a given good is the sacrifice of an alternative good that could have been produced, had the resources not been utilised for producing the given good. This concept, however, cannot be applied to resources which are specific in use or available in unlimited quantity.

3.Implicit (Imputed) and Explicit Cost

A sub-category of Opportunity Cost is imputed or implicit cost. The implicit costs are costs of resources which were already at the disposal of the firm and hence are not recorded in the books of account of the firm. For instance, the entrepreneur performs certain managerial functions, the capital owned by the entrepreneur may be supplied to the firm or land owned by him may be used by the firm. They do not involve any contractual money payments to their owners. Nevertheless, they constitute an element of cost in that they could have been supplied by any one against the contractual payments. The payment to a factor of production is economically important regardless of how it happens to be owned and supplied. Further, the fact that such resources have been put into use in the firm by foregoing the next best earning alternative, it is fitting to be called an opportunity cost.

As against the implicit costs, we have the concept of explicit cost,

which are incurred on hired factors of production. They therefore figure in the books of account. They are truly the money payments made out to the factor resources.

4.Short Run Costs and Long Run Costs

In production and cost analysis a distinction is made between the short run and long run. The short run refers to a period during which output can be changed by varying the amount, of some factors while some other factors, mainly the plant capacity, are held constant. The long run, on the other hand, is reasonably a long period within which the output can be varied by varying the size of plant. The hitherto fixed factors of the short run become variable factors in the long run.

We have short run and long run costs corresponding to this distinction. Short run costs are the costs occurring when some factors, mainly the size of the plant, are fixed. In the plant which is already built, the cost of labour and raw material are short run costs, because they alone can be changed in the short run not the plant size itself. Thus the short run costs vary with respect to output not with respect to plant capacity. The long run costs are costs variations, when enough time is allowed to effect variation in the size of plant itself. Thus, in the long run, the distinction between fixed and variable factors disappears. Therefore the long run costs include the cost of buying new machinery, construction of new plant or expansion of existing plant.

5. Fixed Costs and Variable Costs

The distinction between fixed costs and variable costs is relevant for the short period. During the short period the output can be varied by changing the amount of some factors like labour and raw materials. The amount of some factors like machinery and equipment and plant capacity cannot be changed in the short run to change the output level. Such factors are called fixed factors. The expenses incurred on fixed factors in the short period are called fixed costs. The expenses incurred on the variable factors in the short period are called variable costs or prime costs. More precisely, the fixed costs are expenses which do not vary with the output. In other words, they are independent of variation in the output, and are fixed outlay in each short period, such as rent, property taxes, interests on bonds, salary payable to the minimum personnel

like watchmen and administrative staff. The variable costs, unlike fixed costs, vary with the level of output. Thus fixed costs are usually taken as wholly incurred before any production takes place. Even if output is zero, there are fixed costs of a certain size. Variable costs are costs incurred only with changing output. Raw material costs, wages of workers, transport charges and fuel and power charges are examples of variable costs which change with the variations in output. The variable costs may vary in direct proportion with the output over certain ranges of output, or they may vary more or less than proportionately with output.

The term supplementary costs` is used instead of fixed 'cost. Yet another term often used as synonymous to fixed cost is the "overhead costs". The `Overheads` in accounting literature usually consist of some fixed costs and some variable costs. This distinction is unfortunate and can lead to misinterpretation in technical discussion on economies unless adequate care is taken to define the term.

The distinction between fixed costs and variable costs vanishes in the long run, as the output changes in the long run call for changes in the size of plant, machinery and equipment. Thus in the long run all factors are variable factors; hence all costs are variable costs. Nevertheless, the short-run distinction between fixed costs and variable costs is important for an entrepreneur. He uses the distinction to decide whether or not to continue producing when revenue does not cover the total costs incurred in long run; all costs are to be covered fully. But in the short run, he would decide to `continue to be in the business as long as his variable costs are at least recovered. The fixed costs are anyway there, even if nothing is produced. In such a case, as a prudent decision-maker, he would like to play safe and minimise losses by producing as long as he recovers his full variable costs.

6. Total Cost, Average Cost and Marginal Cost

Total Cost (TC) represented the overall rupee expenses needed to produce each level of output. Total cost (TC) rises as output rises. The total of all costs incurred by a manufacturer to produce a given level of output are composed of total fixed costs and total variable costs. Thus the Total costs=Total fixed cost + Total variable costs. In symbols, $TC=TFC+TVC$.

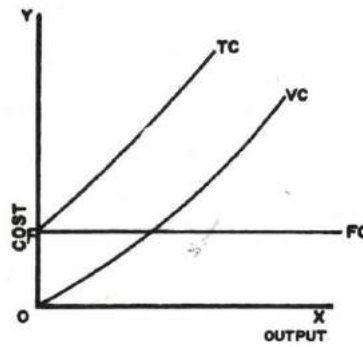


Fig. 28.
Cost Curves in Short Run

The total cost curves of the short run are shown in Figure 28. Since fixed costs are constant, whatever be the level of output they are represented by a horizontal straight line, parallel to the output axis OX. The variable costs, on the other hand, are varying with the levels of output. At zero level of output, however, the variable costs are zero. Therefore, the total variable cost curve starts from origin (showing that at zero output, the variable costs are zero) and rises upwards to the right (indicating that with increasing output the variable costs are also increasing). The total cost curve is obtained by summation of total fixed cost and total variable cost at each level of output. It commences at point F. At this point, no output is produced and the total cost is equal to fixed cost, measured by OF. Average cost is the cost per unit of output. It is obtained as follows:

$$\text{Average(Total)Cost} = \frac{\text{Total Cost}}{\text{Total output}}$$

$$\text{Using Symbols, } AC = \frac{TC}{TO}$$

Where AC = Average Cost

And TO – Total output

Since $TC = TFC + TVC$

$$\text{We have } AC = \frac{TC}{TO}$$

$$\begin{aligned} AC &= \frac{TFC + TVC}{TO} \\ &= \frac{TFC}{TO} + \frac{TVC}{TO} \\ &= AFC + AVC \end{aligned}$$

Where AFC = Average fixed cost and AVC = Average variable cost

Thus, the average cost (AC) is equal to average fixed cost (AFC) and average variable cost (AVC). The AFC is fixed cost per unit of output. The AVC is similarly the variable cost per unit of output.

Marginal cost (MC) is defined as the rate of change in total cost as output changes. In the context of an increase in output, the marginal cost is the addition to the total cost due to an increase in the output by a unit. If n units of output cost TC_n and the $n+1$ units cost TC_{n+1} then $TC_{n+1} - TC_n$ is the marginal cost. Alternatively, if n units cost TC_n and $n-1$ units cost TC_{n-1} , then $TC_n - TC_{n-1}$ is the marginal cost. In the language of calculus if $C=f(x)$, where dc =Total Cost and X =output, then

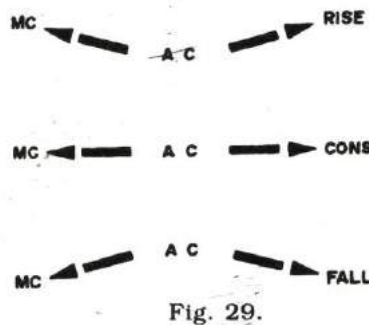
$$MC = \frac{dc}{dx}$$

It can be shown that MC is independent of fixed costs in the short run. Let C be the total fixed cost at a lower level of output and TC be the total cost at a higher level of output.

$$\begin{aligned} \text{Thus } MC &= TC_2 - TC_1 \\ &= (TFC_2 + TVC_2) - (TFC_1 + TVC_1) \\ &= TFC_2 - TFC_1 + TVC_2 - TVC_1 \\ &= TVC_2 - TVC_1 \quad (\text{Because } TFC_2 = TFC_1, \text{ by definition in short run}) \\ &= \text{rate of change in variable costs.} \end{aligned}$$

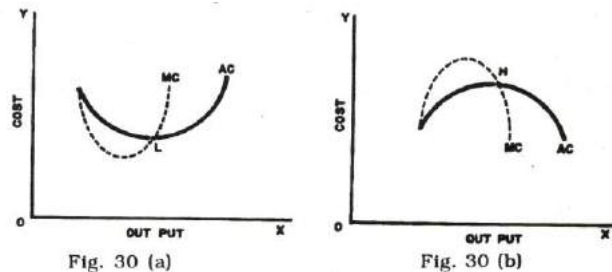
In the short run, therefore, the marginal cost is the marginal variable cost and it is independent of the fixed cost.

4.1.4 RELATION BETWEEN THE AVERAGE AND THE MARGINAL COST



When marginal cost rises above average costs, there is an increase in average cost as a

result thereof. Similarly when marginal cost falls below average cost, there will be a resultant fall in average cost. But if marginal cost is equal to average cost and remains constant there will be no change in average cost. The relation between MC and AC can be demonstrated as in Figure 29.



It will be seen in Figure 30(a) and 30(b) that so long as AC curve is falling, MC curve falls more rapidly than AC and similarly when AC curve is rising, MC curve rises more speedily.

Another thing to be noticed about the relationship between AC and MC curves is that MC curve passes through the lowest point CL of AC curve which is U shaped and if AC curve is of the shape of inverted U [Figure 30(b) MC curve passes through its highest point H. This is so because so long as AC curve is falling, MC curve falls at a faster rate and the moment AC curve begins to rise MC curve in order to exceed its rise passes through its lowest point.

N.B. A change in AC cannot indicate the direction in which MC changes. It is possible that when AC rises or falls MC may fall or rise and vice versa. Nothing can be predicted about MC on the basis of changes in AC. The following example would illustrate the point. Suppose the average of runs scored by a batsman in 4 innings is 50. If in the next innings he scores only 40 runs his average score will fall to

$$43 = \frac{50 \times 4 + 40}{5} \text{ because marginal score of the 5th innings is less}$$

than the average score. We cannot now say that the marginal score of the 5th innings is less than that of the 4th innings, (though its possibility cannot be ruled out) yet it is also possible that in the 4th innings or in innings previous to, that he had a 'duck' and as such marginal score of the 5th innings may be considerably higher.

Exceptions to the Usual Relation between AC and MC

i) **When AC falls but MC rises:** The following table and Figure 31 shows that MC is raising and AC is falling simultaneously.

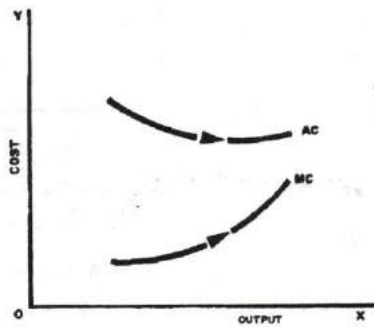


Fig. 31.

Exception to the Usual Relationship between AC and MC

(i) when AC falls but MC rises

TABLE 1

No. of units	TC	AC	MC
4	120	30	-
5	125	25	5
6	126	21	1
7	126.5	18.1	0.5
8	128	16	1.5
9	135	15	7

ii) **When AC rises but MC falls:** The following table and Figure 5 shows that AC rises when MC falls after 7th unit of the product being produced.



Fig. 32

Exception to the Usual Relation between AC and MC

(ii) When AC Rises but MC falls

TABLE 2

No. of units	TC	AC	MC
4	60	15	-
5	100	20	40
6	144	24	44
7	189	27	45
8	232	29	43
9	270	30	38

iii) When AC falls but MC remains constant: When full costs are composed of fixed costs and variable costs in such a way that in the short run total fixed costs do not undergo any change and only a given variable input is required to produce more as shown in the following Table 3 and Figure 33. **AC curve is asymptotic to NC curve.**

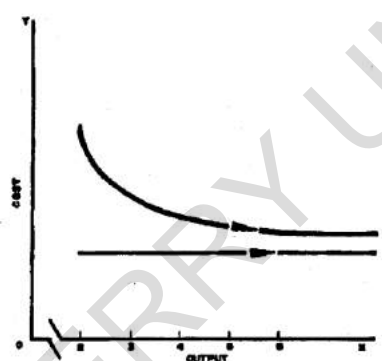


Fig. 33.

The above exception to the usual relationship between AC and MC, as discussed earlier, are of little significance. In price theory we shall ignore these exceptions and continue to hold that both AC and MC increase and decrease simultaneously. Constant AC means constant MC curve.

Some Peculiar Cases of AC and MC

Now we must show the AC and MC curves in certain peculiar cases which are to be used in the subsequent analysis of the price determination theory. These are important for two reasons. First, they contribute to an understanding of the general relationship and secondly our subsequent analysis would require us to have knowledge of them. For example, if average cost remains constant up to a certain point and then begins to rise gradually the marginal curve will diverge from it gradually (Figure 34).

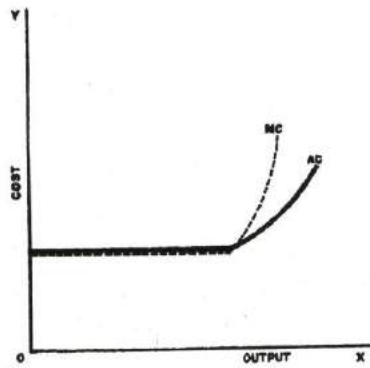


Fig. 34.

Divergence of MC from AC when AC remains constant up to certain point and then begins to rise gradually

If average cost curve rises suddenly it will be said to contain a kink which means discontinuity in the slope of the curve and consequently marginal cost will rise or fall very steeply. The kinked average cost curve occurs when costs undergo rapid change over a small range of output. See Figure 35(a) 35(b) and 35(c).

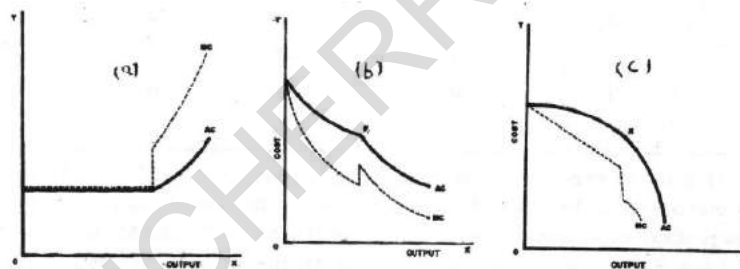


Fig. 35. (a,b,c.)

4.1.5 SHORT-RUN AVERAGE COST CURVE

The firm's average cost curve is rather more difficult to discuss than its average revenue curve. There are two reasons for this difficulty. First, time has a more significant effect to exercise on the cost of the firm than on its average revenue. Secondly, the cost curves are U-shaped which means that the costs can both decrease as well as increase according to the scale of production. In the case of average revenue curve, there is no U-shape because average revenue never increases. We shall define the short run more accurately later on but for the present purpose it may be taken to mean a period in which the fixed equipment and machines cannot be altered. More production can be obtained only by employing

factors such as labour and raw material only. Now the question that comes up for discussion is as to why the short run average cost curves are U-shaped. We shall offer two explanations to the question - one simple and the other a bit complicated both to be taken in turn.

Why is short-run Average Cost Curves U-shaped?

One explanation is based on the division of total or full costs into fixed costs and variable costs. As discussed already, fixed costs or overhead costs or supplementary costs are those which do not increase in the short run following increase in the volume of output or, even if they increase, they increase in such small proportions that we can ignore them in our analysis. Fixed costs include rent, interest, insurance premiums and certain taxes which are to be paid whether or not the firm is at-work or the wheels of machine are rotating. The average fixed costs or the per unit fixed costs go on diminishing as the output increases in the short run. There is a sharp fall in average fixed costs as a result of increase in the scale of output. For example, if the total fixed costs are Rs.20000/- per day only 500 units of a particular product are being manufactured the average fixed cost will be Rs.40/-. And if 1000 or 2000 units of the product are manufactured, the average fixed costs will come down to Rs.20/- and Rs.10/- only respectively. This indicates how sharply the average fixed costs fall with the increase in output and explains for the downward sloping part of the U-shaped cost curves.

But with this explanation our task is not over. We need to go in further details to find an answer to explain the upward sloping part of the cost curves. For this we shall make use of the concept of variable costs. As discussed earlier, "variable cost" or "prime costs", as they are normally called, are those which vary according to the scale of production. These costs include payment of wages, costs of raw material and other running expenses. In the short run, when the plant is just set in action, the average variable costs begins to diminish very slightly till the normal capacity of the plant stands exhausted. But once the output to the normal capacity is achieved, variable costs begin to rise continuously. Since short-run is a period short enough not to allow for changes in the fixed equipment or machines, more output can either be obtained by employment of more labour which leads to overcrowding or bad organisation by aiming harder work from the existing labour which contributes

to rising costs by way of over-fatigue and the resultant loss in labour efficiency. Thus, it is clear that more output is obtainable at a higher cost in the short run. Even though we assume that no overtime is paid by the firm when it needs more work, it is likely that costs will rise. We have depicted the behaviour of the average total, fixed and variable costs in Figure 36. An average total cost means average costs. The term is used to emphasise the fact that AC is composed of AVG and AFC.

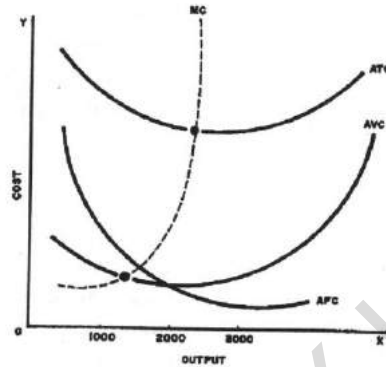


Fig. 36.

We have explained the U-shape of the short run average cost curve by the simple fact the AFC falls sharply when output rises at its low levels and AVG rises very quickly at high levels of output.

Once when the normal capacity of the plant is under operation, a small decrease in AFC fails to offset a great increase in AVG with the result that ATC begins to slope upward to form a U-shape. In the short run the U-shape of the ATC curve will be more pronounced if fixed costs of the firm fall more rapidly before the achievement of its normal capacity and its variable cost rises more rapidly for output beyond the normal capacity.

Let us now provide a more detailed and adequate explanation which is based on what Marshall has called "Internal Economies" of the firm. The internal economies are those reductions in the production costs which are created by the firm itself when its scale of production increases. We explain the fall in production costs by means of internal economies which are as given below:

A) Labour Economies: Adam Smith was the first economist who pointed out the uses of division of labour in his book, 'Wealth of Nations' (1776).

He rightly asserted that more efficiency can be obtained if a worker concentrates on a small operation, in the manufacture of an article rather than undertaking its entire construction. He attributed the increase of efficiency to the three facts:

- a) Division of labour or specialisation increases dexterity in a workman.
- b) It saves time which is commonly lost in passing from one task to another.
- c) Continuous working on a particular part of the whole construction process increases the possibility of some invention or 'innovation' which may facilitate labour to save time.

The economies to be reaped from the division of labour are restricted by the extent of the market. Small market may even make division of labour unprofitable. But in the short run we assume that output rises largely to meet the increased demand and this allows division of labour to pay by enhancing efficiency and reducing costs. These reductions in costs are normally known as "Labour Economies".

B) Technical Economies: Another internal economy which too helps explaining the falling costs is called "Technical Economies". A large machine to electroplate iron bars may require a big amount of money to keep it in operation for long. Therefore, average cost of electroplating will fall when more iron bars are electroplated. Moreover tooling up of large machines also costs a lot. Once a machine is tooled up, the average or per unit cost of tooling up will diminish as more and more output is obtained. In the example of electroplating machine cited above let us assume that it costs Rs. 1000/- for keeping it ready to work. Now, if we get 250 iron bars electro-plated by it, the average tooling up cost will be Rs.4/- which will come down to Rs.2/- per unit if 500 bars are electroplated. Thus it is clear that average costs fall with the rise in output.

C). Marketing Economies: It is a recognised fact that some sort of economies in the sphere of marketing are also availed by a firm, if it enlarges the scale of output. The firm does not need to spend on advertisement and publicity which expenses are called marketing costs, 10 times as great as before to sell 10 times larger output. It can easily sell more output at the same or perhaps slightly more marketing costs. A firm enlarges its output scale amazingly which is automatically advertised and its advertisement costs are reduced.

D) Managerial Economies: With a rise in scale of production, we can reap managerial economies as well. A good manager controls a large output as efficiently as a small one. More output leads to a fall in per unit management cost because the manager has to work for the same

salary even now. Moreover, we can employ a first rate manager at high pay if we are sure that the scale of production is large enough not to cover his pay only but increased profits also. Thus managerial economies account for the falling costs of the firm.

E)Financial Economies: These economies refer to the cuts in the rate of interest, etc. which are availed of by the firm when it borrows money in very huge amounts. It is certain that one whose credit standing is sound in the market can borrow more money within certain limits at a cheap rate of interest. It is perfectly reasonable to assume that the increased scale of output requires more money which is supplied at relatively low rates of interest. Thus, financial economies too add to the reasons responsible for falling costs or downward slope of the U-shape of cost curves.

In economic parlance, short-run curves (**AC**) fall sharply owing to certain indivisible factors of production or indivisibilities such as a manager or a big machine. A manager cannot be chopped into half in order to produce half of as much as the current output. But the economies, as discussed above, can be enjoyed to a limited extent only i.e., till the normal capacity of the plant is achieved. But once the output exceeds the normal capacity of the plant, all these economies turn into diseconomies.

Diseconomies exercise pressure on costs and cause them to rise. More labour leads to overcrowding, bad organisation quarrels among workers themselves and wastages of time in gossiping. This results in less than proportionate increase in productivity. Similarly, a manager howsoever good and competent he may be cannot manage the production of 5 lakh units of a product as efficiently as 5 thousand units. The fall in efficiency means rise in costs. In short, it may be said that the law of increasing returns which operates at low levels of output is replaced by law of diminishing returns subsequently when the output rises-beyond a certain point. This is one aspect of the law of variable proportions or the law of proportionality. The essence of the law is that when more units of a variable factor are added to one or more fixed factors of production, the increase in production is less than proportionate. In other words, the

production costs begin to rise. In the short run, two factors of production i.e. fixed capital and entrepreneur remain fixed and if more units of variable factors (such as labour or raw material) are added to them, the law of diminishing returns will set-in. Thus, having justified the U-shape of the short run average cost curve, we can easily find the shape of short run marginal cost curve.

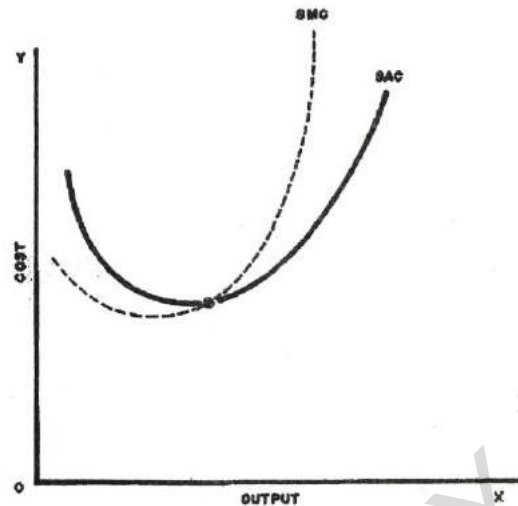


Fig. 37.

Short-run Average and Marginal Cost Curves

In Figure 37, SAC and SMC are short run average and marginal cost curve respectively.

4.1.6 LONG RUN AVERAGE COST CURVE

Having made generalisations about the shape of the short run average cost curves, we must now turn to see what shape a long run average cost curve is likely to take. First, we must show what long run means. By long run we mean a period during which all factors of production can be altered suitably to meet the changing needs of the firm. Long run refers to the period in which both fixed as well as variable factors can be adjusted according to the requirements of their changed situation.

In the long run, there is time to build new machines and factories, and to close down or allow the old machines to fall to pieces. There is nothing fixed in the long run, all is variable. During this period the firm can sell its unwanted machinery, buildings and reduce the size of large

insurance policies so as to suit to the dynamic conditions. Alternatively we can say that in the long run the firm is more in a position to obtain more output at a relatively small cost. The law of diminishing returns can be postponed to a farther extent because now almost all factors of production are available in the required way. The scale of operation can now be completely adjusted to any new output as cheaply as possible. We have in Figure 38 shown how a long run average cost curve can be derived.

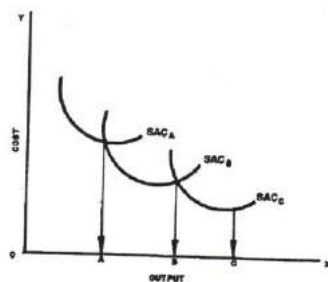


Fig. 38
Long Run Average Cost Curves

In Figure 38, X-axis represents output whereas Y-axis represents production costs of the firm. Let us think that there are 3 plants, A, B and C. The first plant, if used follows the cost behaviour shown by SAC_A . Similarly plant B and plant C show their cost behaviour through the cost curves SAC_B and SAC_C respectively. If the firm expects to produce output up to OA, it shall build and use plant A because this operates at the cheapest cost. Plant B is larger and operates at lower costs during the output range AB. It is clear that the firm will use plant B, so long as the output required lies between AB ranges. Plant C is still bigger and operates at much lower costs for the output range BC and hence for that range of output plant C will be used.

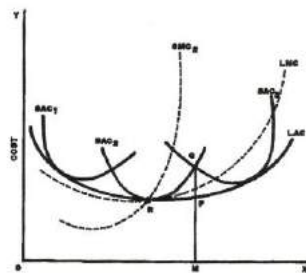


Fig. 39.
Envelop Curve or Long Run Average Cost Curve
Enveloping all short Run Cost curves

From this, we can generalise that increasing returns are being earned with the rise in output and therefore the long run average cost curve will be one touching all the short run average cost curves, and enveloping them as depicted in Figure 39. LAC curve is the long run average cost curve which is also U-shaped but its U-shape is not so pronounced as that of the SAC curve. It is flatter than short run average cost curve. This implies that the costs fall gradually with the increase in production up to a certain point CR, at which the costs are minimum. Beyond this point costs begin to rise but less rapidly. Figure 39 clearly shows that the average cost of production in the long run is PM, as in the short run it is QM for the same output, which is obviously greater. It must, however, be noted that the LAC curve does not touch all SAC curves, at their lowest points. LAC curve, while declining, touches SAC curves to the left of their lowest point and when rising it touches SAC curves to the right of their lowest point as shown in Fig 39. The LAC curve is tangential to all possible short run average cost curves; hence called Envelope curve.

The long run average cost curve is sometimes called Planning Curve, because in theory the firm can use it for planning the economical scale of operation. In the long run, the firm can select a size of plant that will minimise the average cost for the output that it has forecast for the future. In the short run, the firm must operate along the short run curve it has selected, although some other short run cost curves would permit lower costs.

The long run marginal cost curve LMC passes through the lowest point (R) of LAC curve. SMC₂, which is marginal cost curves to SAC₂ curve also passes through its lowest point (R). Short run marginal costs, when falling, fall more rapidly and when rising, rise more rapidly than LMC.

Some economists throw doubt on the U-shape of the long run average cost curves and contend that because in long run, all adjustments are possible and can be made at the cheapest possible costs, increasing returns can be obtained to a larger extent. They feel that LAC must be L shaped as depicted in Figure 40.

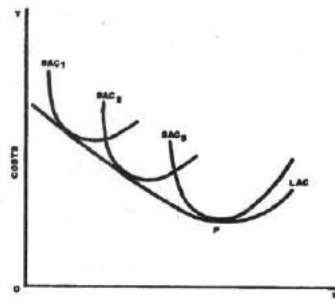


Fig. 40
L-Shaped Long run Average Cost Cur

L-Shaped Long run Average Cost Curve

Normally the long run average costs fall gradually in the beginning when output rises but after a short time the costs become constant over a long range of output. If still more output is needed the average costs begin to rise slowly and the LAC and LMC curves will take shapes like those in Figure 41.

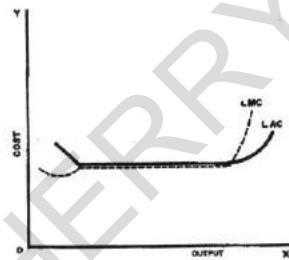


Fig. 41
Long Run Average Cost and Marginal Cost Cur

Learning costs curve is a psychological concept developed by economists to answer to the question, "Why are costs reduced over a long period by learning more and more about the production of a new product?". When a firm begins to produce a new product it has to incur usually a higher average cost but after gaining some experience say 2 or 3 years, it succeeds to bring down the production costs considerably (say by 20% or even more) as a result of improved coordination, modified procedure and other economical services. Such a learning cost curve (LCC) is shown in Figure 42. The output OM is now produced at an average cost QM which is much less than the initial average cost PM.

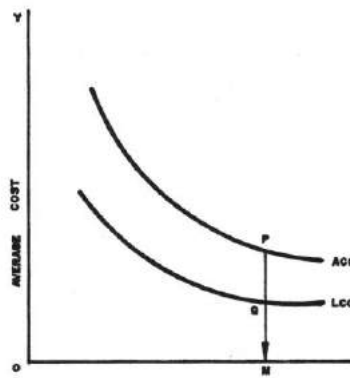


Fig. 42
Learning Cost Curve

The above cost curves are extremely useful tools for analysis of economic theory.

QUESTIONS

1. Distinguish between **i)** Implicit costs and Explicit costs **ii)** Short run and Long run costs **iii)** Fixed and Variable costs.
2. a) Why short run average cost curve is U-shaped?
b) What is meant by marginal cost?
3. The U-shape of long period average cost curve is less pronounced than that of short period. Why?
4. Why long run average cost curve is called envelope curve ? Describe clearly the relation between short run and long run average cost curves.
5. Write notes on
 - a) Planning curve
 - b) Opportunity cost concept
 - c) Envelope curve.

LESSON – 4.2

REVENUE CURVES OF FIRMS

Introduction - Revenue Curves of the firm - Average and Marginal Revenue - Type of Market Structure and Relevant Revenue Curves.

4.2.1 INTRODUCTION

In modern days, every producing unit, big or small, produces goods with the purpose of selling them in the market in the least possible time and making the utmost profit in the process. The amount of money which the producing unit receives by sale of its production in the market is called its revenue. The concepts of revenue along with the cost concepts, are useful tools to analyse the equilibrium of the firm. The revenue concepts commonly used in economics are those of the total, average and marginal revenue.

4.2.2 REVENUE OR DEMAND CURVES OF THE FIRM

The phrase, "The demand curve of the firm" means the curve of demand for product of the firm, and not the demand curve of a consumer. The demand curve of the firm indicates the various amounts of its product that are sold at various prices in a market during a given period of time. The shape of the firm's demand curve is like the demand curve of an individual buyer. It slopes downward from left to right signifying that a fall in the price charged by the firm will enable it to sell more amount of the product and a rise in the price can lead to nothing but a contraction in the demand for the product of the firm. It is convenient to name the demand curve for the product of the firm as Average Revenue Curve. An average revenue curve is exactly like demand curve of the consumers.

4.2.3 AVERAGE AND MARGINAL REVENUE

Marginal Revenue

The modern economic theory rests on marginalism. The concept of marginal revenue has assumed special significance in making the firm to earn the largest profits. The equality of marginal revenue with marginal cost means that the firm is earning the maximum possible revenue. We find it necessary first to define 'marginal

revenue' and then explain its significance at the suitable stage. It will suffice here to define marginal revenue as the revenue that the firm obtains from selling the marginal or last unit. In simple words the addition to the total revenue by selling one more unit of the output is known as marginal revenue. Alternatively, it is defined as the difference between the total revenue of (N+1) units minus the total revenue of N units.

Average Revenue

This is the per unit revenue earned by the firm. This is calculated by dividing the total revenue by the number of units sold. For example, if the firm obtains Rs. 100/- by selling 20 units of a product, the average revenue (the per unit revenue) = $100/20 = \text{Rs.}5/-$ only. Alternatively we say that it is the price at which the consumers buy the product. The average revenue curve indicates the demand curve of the consumers for the product of the firm. In the analysis of value under various conditions of market, we draw the average revenue curve to determine the price of the product. We give below a hypothetical schedule showing the total average and marginal revenue which will facilitate us to illustrate their meanings:

No. of Units sold (inRs.)	Total revenue (inRs.)	Average revenue (inRs.)	Marginal revenue (inRs.)
1	20	20	20
2	38	19	18
3	54	18	16
4	68	17	14
5	80	16	12
6	90	15	10

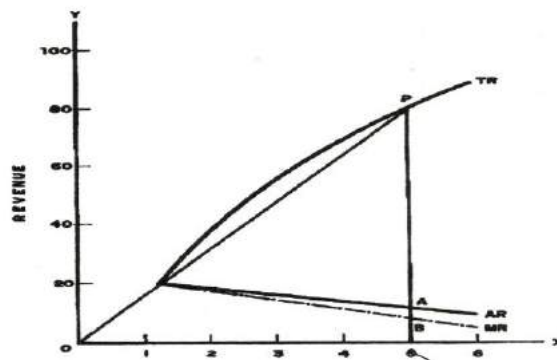


Fig. 43
Average, Marginal and Total Revenue Curves

From the above table we see that so long as average revenue falls, marginal revenue is less than average revenue. Columns III and IV are derived from Columns I and II. The above information has been translated into Figure 43, which shows three curves marked as TR, AR and MR which denote total, average and marginal revenue curves respectively. Suppose we want to know the average revenue curve when the level of output is 5 units. We can do it in two ways, either by finding out the slope of the line

$$OP = \frac{PQ}{OQ} = \frac{\text{Total}}{\text{Output}} \text{ Or by drawing a perpendicular on X-axis}$$

at the point g (5 units). Ag represents average revenue when the units sold are 5. The marginal revenue at the point (i.e., revenue earned from selling the units of the produce) is BQ.

Relation between AR and MR

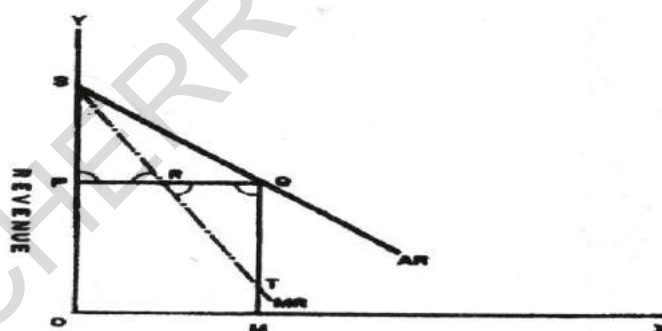


Fig. 44
Relationship between AR and MR.

In the analysis of value we shun use frequently concepts of the marginal and average revenues at various levels of output. The important geometrical relationship between average and marginal revenue can be stated as follows:

When average and marginal revenue curves are straight lines, the marginal revenue curve, will cut any line perpendicular to the Y-axis half-way to the average revenue curve. This can be seen in Figure 44. where AR and MR show the average and marginal revenue curves respectively. Suppose OM units are being sold by the firm, the total revenue of the firm can be shown in two ways:

1. Either by multiplying average revenue by the number of units, or
2. By adding marginal revenues of AR units. In Figure 44, therefore, the areas OPRM and OSTM are equal (both of them indicate total revenue).

But the area OPRM is common in both.

As, the area of the PRS = the area of the RQT, and

$$RPS = RQT = 90^\circ$$

SRP = QRT (vertically opposite)

Therefore, ΔPRS and ΔRQT are equal in all respects, and $RP = RQ$ or R is the middle point of PQ. This is the simplest case in which average and marginal revenue curves are straight lines. There can be two more cases:

One when AR curve is convex to the origin and the other when AR curve is concave to the origin. In the first case, the MR curve crosses any line perpendicular to the Y axis on a point less than half way from the AR curve and in the second case it crosses more than half way from the AR curve as depicted in Figure 45(a) and 45(b) respectively. Figure 45(a) and 45(b) show convex and the concave AR curves respectively.

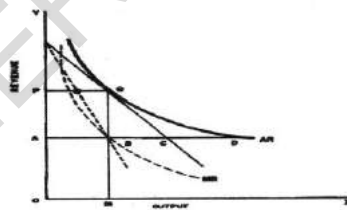


Fig. 45 (a)
Relationship between AR and MR when AR curve is Curved to Origin

Relationship between AR and MR when AR curve is covered to origin

Figure 45(a) shows that marginal revenue curve passes through B and average revenue curve passes through O & C is a tangent to the AR. AB is equal to BC. (Both are straight line revenue curves). Since AR is convex to the origin therefore O must lie outside AC.

Therefore, $BO < BC > AB > \frac{1}{2}AC$

Because (AC = BC)

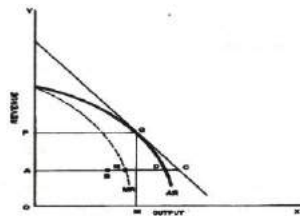


Fig 45 (b)
Relationship between AR and MR when Ar curve is concave to origin

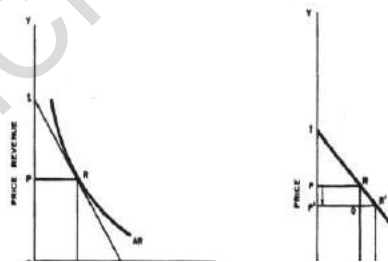
Relationship between AR and MR when AR curve is concave to origin

Similarly it is seen from fig. 45(b) that the MR curve being concave to the origin cuts AC at N which is beyond B which is the middle point of AC. We have so far established geometrical relations between the average and marginal revenue. Now we must demonstrate their relationship in terms of elasticity of demand which is very important and useful in the analysis of monopoly.

Let us recall the definition of the point elasticity of demand. We have already discussed that elasticity of demand at a point on the demand curve is

$$e = \frac{\text{Proportionate change in the amount demanded}}{\text{Proportionate change in price}}$$

$$\frac{\text{Change in the amount demanded}}{\text{Original amount demanded}} \div \frac{\text{Change in price}}{\text{Original price}}$$



In Figure 46(a) AR is the demand curve. The horizontal axis measures output while the vertical axis the price or revenue. R is a point on the demand curve. We have to show that elasticity of demand at R = RT/Rt where tT is tangent to the AR curve at point R. Figure 46(b), in addition to the information provided in Figure 46(a), shows that there has been a fall in the price equal to PP' and as a result thereof, there is a rise equal to MM' in the amount demanded.

By definition, elasticity of demand at R

$$e = \frac{\text{Change in the amount demanded } MM'}{\text{Original amount demanded } PP'}$$

$$\frac{\text{Change in price}}{\text{Original price}}$$

$$= \frac{MM'}{PP'} \times \frac{OP}{OM} = \frac{QR'}{QR} \times \frac{RM}{OM'}$$

Since $MM' = QR$, $PP' = QR$, $QP = RM$

Since $\Delta RQR'$ and ΔRMT are similar,

$$\text{Therefore } \frac{QR'}{QR} = \frac{MT}{RM}$$

$$\text{Therefore } e = \frac{MT}{RM} \times \frac{RM}{PR} \text{ since } OM = PR$$

$$= \frac{MT}{PR} = \frac{RT}{Rt} \text{ since } \Delta tPR \text{ and } \Delta RMT \text{ are similar}$$

$$\text{therefore } \frac{MT}{PR} = \frac{RT}{Rt}$$

Thus it is clear that elasticity of demand at a point R on the curve Tt is the ratio between the parts in which R divides it. 'Tt' is equal to the lower part divided by the upper part. If R happens to be the middle point of Tt, elasticity of demand will be equal to one and in that case any point on Tt above R will indicate elasticity being more than one. A point on Tt below R shows a less than unit elasticity of demand.

Now let us explain the relationship between AR and MR in terms of elasticity of demand. The above analysis is of great help to us in our following argument. In Figure 47, AR and MR are the average and marginal revenue curves respectively.

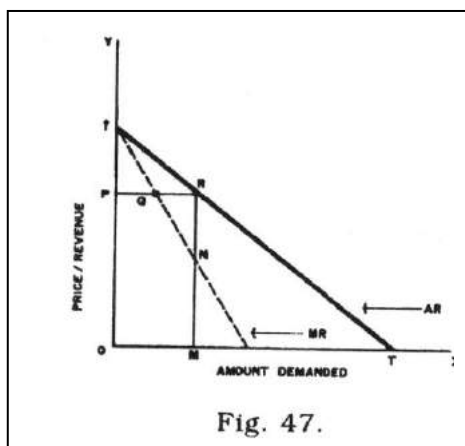


Fig. 47.

Relationship between MR and AR at different Elasticity of Demand

Elasticity of demand at R.

$$e = \frac{RT}{Rt}$$

$$= \frac{RM}{Pt} \text{ since } \Delta PRt \text{ and } \Delta RMT \text{ are similar}$$

$$= \frac{RM}{Pt} \text{ (as } \Delta PQt \equiv \Delta QRN) \text{ Therefore } Pt = RN$$

$$= \frac{RM}{RM - NM} = \frac{\text{Average Revenue}}{\text{Average revenue} - \text{Marginal revenue}}$$

Since at output level of OM

Average revenue = RM

Marginal revenue = NM

$$e = \frac{A}{A - M} \quad \text{Where } A = \text{Average Revenue}$$

M = Marginal revenue

$$A = eA - eM$$

$$A(e-1) = eM \text{ or } A = \frac{e}{e-1} M$$

$$\text{Similarly, } M = A \frac{e-1}{e}$$

Thus, we can conclude that average revenue of a firm at any level of output = marginal revenue $\times \frac{e}{e-1}$ and marginal revenue = average revenue $\times \frac{e-1}{e}$

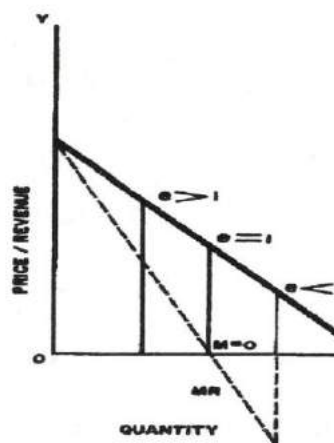


Fig. 48.

Relationship between MR and AR at different Elasticity of Demand

Let us say that point elasticity of demand at a particular level of output is 1. The marginal revenue will therefore be equal to average revenue $\times 0 = 0$ as evident from Figure 48. Alternatively we say that when marginal revenue is zero, the point elasticity of demand equals one. If the elasticity of demand is equal to 2,

$$A = \frac{M(2)}{2-1} = 2M$$

or $M = 1/2 A$. That is marginal revenue is half of the average revenue. So long as marginal revenue is positive average revenue is also positive, but when it becomes negative, it pulls average revenue down. Moreover so long as elasticity of demand is more than one, marginal revenue is positive but when elasticity of demand is less than one, marginal revenue becomes negative.

4.2.4 TYPES OF MARKET STRUCTURE AND RELEVANT REVENUE CURVES:

So far we analysed some revenue concepts and their inter-relationship. These are meant to be applied for finding out the equilibrium of the firm and industry under different types of market situations. Just as costs of a firm are determined, among other things, by the technology of the firm, revenue is determined by market structure where its product is sold. The shape and nature of revenue functions is different under different market conditions. In practice there exist innumerable varieties of marketing conditions facing different firms for sale of their products. However, in theory, market structures have been classified. Accordingly, our analysis of price determination shall consist of the exploration of equilibrium of the firm and where possible, equilibrium of the industry under different varieties of market structure.

A market structure means the whole set of conditions under which a commodity is marketed: the extent and nature of competition in selling, the number and nature of buyers, the nature of the commodity that different sellers offer, etc. Taking these elements of market into consideration, there can be as many models as the number of combinations of sellers and buyers and the nature of product. However, only a few of such models are discussed in price theory. We now proceed to describe them

briefly and then derive the nature of revenue curve faced by a firm in each one of them.

Three broad sets of market conditions are commonly recognised: perfect competition, monopoly and imperfect competition. This broad classification of markets is based mainly on the number of sellers of the product in the market. These broad classes are further divided into sub-classes combining other elements of the market with the number of sellers.

Perfect Competition

The model of a market that was conceived by the classical and the neo-classical was perfect competition. Such a market is an imaginary, ideal one. A perfectly competitive market has in it certain ideal conditions all of which may not be found in any product's market in practice. They are:

- a) The number of sellers is so large and the amount of sales done by each so small in relation to the market that none of the sellers, taken by himself, is able to influence the price, by his own individual action of expanding or withholding his produce. There is to be no agreement or collusion among the sellers.
- b) Here the number of buyers is large enough to prevent any one buyer from affecting price in the market by his own individual action of purchasing more or less. The purchases made by any one of the buyers are small as compared with the purchases of all the buyers in the market. Further, buyers are also completely unorganised.
- c) All the sellers in the market have a perfectly similar product to offer. The product offered by each of the producers is in every way the same from the view point of the buyers. The sellers' products are similar in colour, shape, design and service so that no one of the buyers has reason to be attached to any one of the sellers. There is no effect of any kind whatever to prejudice buyers' minds in favour of their product. The products of different sellers in the market are identical or perfect substitutes for one another. Their cross elasticity of demand is infinite; the product is homogeneous.
- d) Any firm from outside the industry must be able to enter the industry without artificial hindrances being erected against it, and any firm is free to go out of the industry, as and when the firm likes. There is free entry and exit.

The four conditions in the market ensure that an individual seller is a price-taker; a seller can neither raise his price above that of the market nor can afford to lower. If a seller raises his price above that prevailing in the market, he loses all of his customers, for they go over to the other sellers selling at the market price. On the other hand, he has no incentive to lower his price since he can sell the whole of his production at the going price. What a seller does is to take the market price as given and adjust his

output to his price and maximise his profit. Similar is the case with the buyers. They also adjust their purchases to the current market price.

If no one seller or buyer can influence the price, then how is the price determined? It is not determined by individuals. It is the result of market (or industry) demand and supply. Market supply and demand interact and determine price, and individuals have to take it as given.

If the market for any commodity exhibits the four features, it is said to be one with 'Zero' competition and the term 'pure competition' is used. The outstanding feature of pure competition is the fact that the individual firm has no "price policy". To the individual firm the sales schedule looks like a horizontal line parallel to its X (output) axis. Average revenue is equal to horizontal marginal revenue for every output; the firm has a perfectly elastic demand curve of its product. The sales curve of the firm under pure competition is shown in Figure. 49.

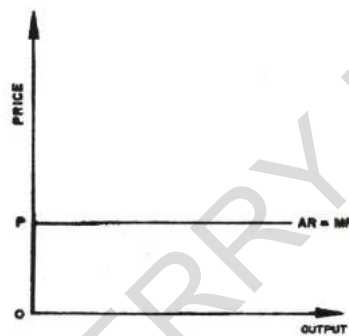


Fig. 49.

How average revenue is equal to marginal revenue under perfect competition at all outputs is proved with the formula given by Mrs. Joan Robinson. The elasticity of demand (e) for the product of the firm is infinite ($e-1$). Putting this value in the Robinson's formula,

$$\begin{aligned} MR &= AR \frac{e}{e-1} = AR \frac{1}{1-1/e} = AR \frac{1}{1-1/\infty} \\ &= AR \frac{1}{1-0} = AR \end{aligned}$$

Many economists have used perfect competition for their analysis. This type of market is assumed to have all the perfections. The three conditions of pure competition refer to only one perfection i.e. complete absence of monopoly power in forming the price. Perfect competition improves pure competition and other perfections. It assumes perfect mobility of resources, labour and capital, in any economic adjustment; there is no cost of transport or restraining habits, preferences and inertia. It presupposes perfect knowledge on the part of buyers and sellers. The

assumption of perfect knowledge on the part of buyers and sellers means they know absolutely the consequences of their acts when they are performed, and to perform them in the light of the consequences. The conditions of pure competition are hard to find in the real world. Perfect competition is an ideal that is assumed to simplify analysis. Once an analysis of perfect competition has been done, the imperfections can be introduced and the analysis modified accordingly for the theory of imperfect competition.

Pure Monopoly

Monopoly is the antithesis of competition. Pure monopoly is the opposite of pure competition. In such a market, there is only one seller of the product who is the sole controller of supply of the product in the market. The seller produces a commodity for which no substitute exists. The firm constitutes the industry. The demand for output of this one firm is at once the demand for the total industry; while under pure competition, the product of one seller is a perfect substitute for the product of another seller, the product of the monopoly firm has no close substitute at all; cross elasticity of demand between the monopolised good and its nearest substitute is zero; the quality of rival product may be considered by the buyer as highly unsatisfactory; hence the monopolist has a wide latitude of choice in his price policy. He is a price-maker because he is not obliged to mind the policies and reactions of any rival

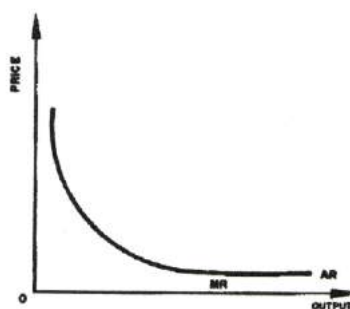


Fig. 50.

A pure monopolist is one who charges any price he likes by restricting his output. Whatever the price he decides to charge, total expenditure on his product by the purchasers remains the same. The elasticity of demand for the product of the firm is unitary. The sales curve of his

firm traces a rectangular hyperbola, as shown in Figure 50. We can find out the fact that its marginal revenue will be zero and therefore, the marginal revenue curve is the X axis itself.

Imperfect Competition

Pure competition and monopoly are two extreme conditions of the market, the first involving a large number of sellers and the second only one seller. But markets for products are neither purely competitive nor pure monopolies. There are many intermediate sets of market organisations. These market structures are called Imperfect Competition by Mrs. Joan Robinson while Professor Chamblin named these market situations as Monopolistic Competition. Imperfect competition consists of market categories ranging from two sellers to a large number of buyers and sellers. In it, many sub-categories of market have been identified. We start with pure competition and go towards monopoly in describing these sub-categories of imperfect competition.

Monopolistic competition is the nearest to pure competition, involving many sellers and buyers- both of these small and unorganised. The fundamental departure from pure competition is that the product is differentiated. There is a difference, although not very material, between the product of one and another seller. The products are close but not exact substitutes and there is a high cross-elasticity of demand between the products of two sellers. The differences which separate one brand of the product from another in a given family of similar products are many. There may be differences in quality, style, colour, size, packing, container, trade names, brand, type of service, location of the store, credit terms and many other considerations that give rise to a spirit of attachment of buyers to particular sellers. All the firms producing the closely related, competing goods make one industry. Examples are toilet articles, articles of clothing, tea, baby foods and many other goods sold in retail stores.

Under this type of market organisation, the seller has a position which can be monopolistic. He is a competitor in so far as he has rivals having products very similar to and substitutable for his own. While fixing his own price he has to consider the reactions of his rivals. But he is, to some extent, monopolistic also, in so far as some buyers have

a preference for his variety of the good as against other varieties. The seller has some discretion in fixing the price for his product. He can charge a little more and sell less or charge less and sell more. To the extent the seller can charge his price without attracting his rivals' notice, he is a monopolist. But his power is limited. If he raises his price above a certain level, a shift to the substitutes is induced; if he lowers it below a particular level, his competitors will be affected and so may take up the challenge. In so far as monopolistic competition has a large number of sellers and quite close substitutes, the outcome of the individual behaviour of firms for the market price level or range of prices is a fact facing individual firm, almost as in pure competition. But to the extent the differing varieties are not perfect substitutes; individual firms constitute pockets of the monopoly control with prices varying from one another. The difference in prices between firms depends upon the similarity of their products.

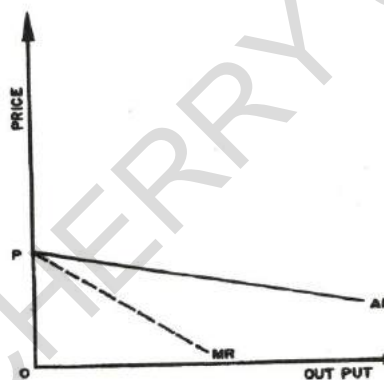


Fig. 51

Average and Marginal Revenue under Pure Monopoly

The average revenue curve faced by any individual firm is quite, though not perfectly elastic. It is gently sloping and so is the marginal revenue curve. Both the average and marginal revenue curves are shown in Figure 51.

Oligopoly is that market situation in which the market for a commodity is dominated by a few firms each of which is producing and selling a sizable proportion of the total output sold in the market. When the firms are only two, the market structure is duopoly. It is just a special case of oligopoly. Each firm is large enough relative to the size of the market that by its own individual action, it can affect the market price. Changes by it in its output sold or price charged do not go unnoticed by its rivals. Therefore, in shaping its price policy each firm must take into

consideration the reactions of the few others and then his possible reaction to their reactions. No one producer can initiate a move without provoking retaliation. There is, as a result, a unique inter-relationship among the few sellers with respect to their price or output policies. This interrelationship is the outstanding characteristic of oligopolistic market structure. Oligopoly is pure or differentiated, according to whether sellers use labels, trademarks etc. or not. In these two different cases, analysis of market pricing has to be different. Oligopoly can be collusive or non-collusive; the former is the case for there is agreement among various firms and the latter if there is none. Oligopoly market may be dominated by a leader firm and others may follow it. The inter-dependence of various firms under oligopoly makes the formulation of a systematic analysis of oligopoly price and output behaviour difficult. Under the circumstances, a very wide variety of behaviour patterns is possible. There may be independent pricing by each large firm, tacit or agreed collusion, price leadership by a dominant firm or price wars a variety of such models are built up. In some cases, price may be determinate while in others it may be indeterminate having no unique price and output for firms.

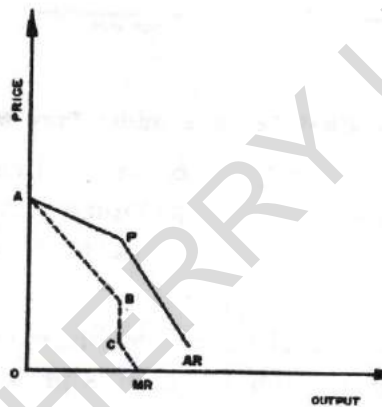


Fig. 52

A form of sales curve of the firm in oligopoly is a kinked demand curve as shown in Figure 52. The average revenue curve has a kink at the point P where the demand for the product of the firm becomes quite inelastic if it lowers its price and elastic if it raises the price. Corresponding to such a kinked demand curve is a broken marginal revenue curve (**MR**) which has a gap (BC).

QUESTIONS

1. Distinguish between Total Revenue, Average Revenue and Marginal Revenue.
2. What is the relationship between Average Revenue and Marginal Revenue?
3. Draw Average Revenue and Marginal Revenue curves in the case of
 - (a) Perfect competition
 - (b) Monopoly
 - (c) Monopolistic competition
 - (d) Oligopoly

UNIT - V

LESSON 5.1 PERFECT COMPETITION

Introduction - Characteristics of Perfect competition - Equilibrium under perfect competition - Importance of time element in price determination

5.1.1 INTRODUCTION

In the words of Joan Robinson, perfect competition prevails when the demand for output of each producer is perfectly elastic. This entails first that the number of sellers is large so that the output of any one seller is negligible, small proportion of the total output of the commodity so that the market is perfect." Perfect Competition is a market condition in which large number of buyers and sellers are engaged in buying and selling the homogeneous products.

5.1.2 THE CHARACTERISTICS OF PERFECT COMPETITION

1.Large number of buyers and sellers

The number of buyers and sellers in a perfectly competitive market are so large that no one buyer or seller can influence the price or output. An individual seller's supply and buyers' demand constitutes small portion of the total supply and demand of the industry. Therefore it has negligible effects in the industry.

2.Homogeneous Product

The product produced by the producer is homogeneous. They produce the same product if the cross elasticity of the product is infinite. Hence no single producer can influence the price. If he changes the price the buyers would leave him and demand the product of the seller will go down.

3.Freedom to enter and exit the industry

There are no barriers for the entry and exit of the industry. When the firms enjoy profits, new firms will enter the industry. Similarly when the firms get loss, the existing firms will leave the industry. Hence there is complete freedom for the firms to enter and exit the industry.

4.Perfect knowledge of the market

The buyers and sellers have complete knowledge about the prices and supply in the market. This perfect knowledge forces the seller to sell at the prevailing market price. The buyers are fully aware of the market prices

5. Absence of transport cost

There is no transport cost to transfer the products from one place to another. If the transport costs are included the prices may differ in the market.

5.1.3 EQUILIBRIUM UNDER PERFECT COMPETITION

Short Run Equilibrium of the firm

The firm under perfect competition has to accept the price prevailing in the market. No individual firm can influence the price by its Individual action. Therefore the demand curve or average revenue curve of the firm is a horizontal line (i.e. parallel to X axis). It is perfectly elastic demand curve. The firm sells the additional units at the same price. The MR curve coincides with the AR curve. The MC (Marginal Cost) curve is U shaped. The firm will be in equilibrium at the level of output where the marginal cost equals the marginal revenue. The MC curve cuts the MR curve from below. At this output the firm will maximise the profit. As the marginal revenue $MR = \text{price}$, the firm will equal the marginal cost to its price to get the equilibrium output. There are two conditions for the firms' equilibrium,

1. $MC = MR = \text{Price}$
2. MC curve rises at the point of equilibrium.

The short run equilibrium is explained in the following figure

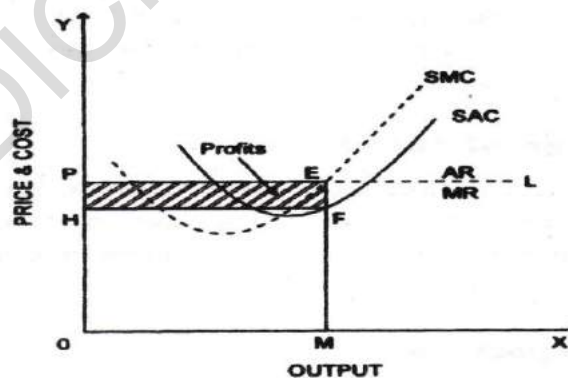


Fig. 53

In the above figure, OP price prevails in the market. SAC and SMC curves are short period average cost curve and marginal cost curve respectively. Profit is equal to the differences between the average revenue and average cost. OM is the equilibrium output and $AR = MR$. Profit per

unit = EF. The total profit = PHEF. This area represents the super normal profit. The new firms will enter into the industry attracted by the profits. The firm may also incur losses in the short run. There is a tendency for the firms to leave the industry because of the loss. This is given in the following diagram.

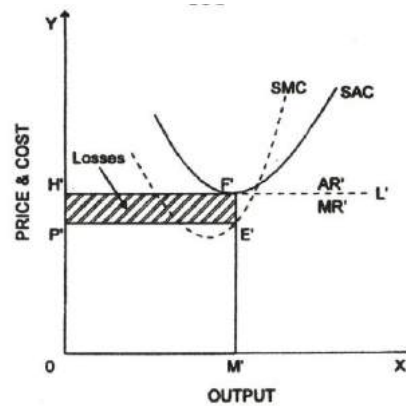


Fig. 54

The price is OP and it is below the average cost curve. The firm is in equilibrium at point E where the marginal cost is equal to price and marginal revenue. The firm makes losses by producing OM output. The total loss is equivalent to the area $P.E.F.H$. Thus the firm in the short-run either make super normal profits or losses depending upon the price in the market.

Long Run Equilibrium of the Firm

The firms in the long run can increase the supply of the product by changing the variable factors. Similarly they can produce the supply of products. The following are the two conditions necessary for long run equilibrium.

1. Price is equivalent to marginal cost.
2. Price is equivalent to the average cost

The MC is equal to average cost only at the minimum point of the average cost. Therefore the conditions can be written as Price = Marginal cost = Minimum average cost.

The long run equilibrium of the firm is given below

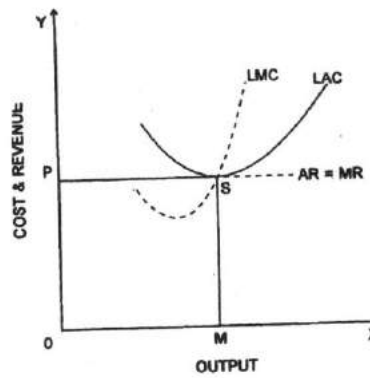


Fig. 55

The firm is in equilibrium at OP price and at OM level of output. Long Run Marginal Cost (LMC) = AR and MR at point S . Thus the firm's $LMC = LAC = AR = MR$. The LMC cuts the LAC curve at its minimum point. As the price equals average cost the firms make only normal profits in the long run. When the firm is in equilibrium at the minimum point of average cost curve, the firm is of optimum size and he produces the output at the lowest cost. When the firm produces optimum output, it is useful for the society as the products are available at the lowest price.

5.1.4 IMPORTANCE OF TIME ELEMENT IN PRICE DETERMINATION

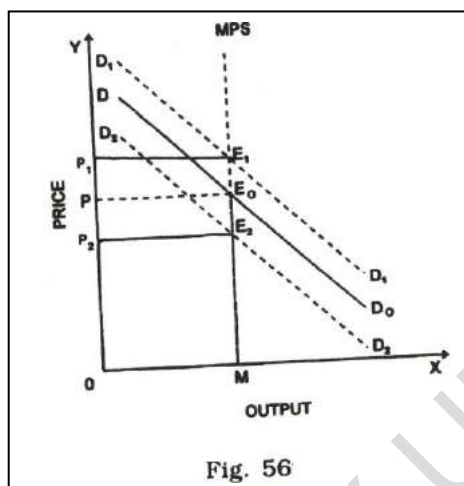
Marshall was the first economist to introduce the importance of time element in price theory. The time period is involved to make changes in the size and scale of the product. Also time is involved in the pricing of perishable goods and durable goods. Therefore Marshall classified the pricing of products into four time periods. They are

1. Market period or very short period
2. Short period
3. Long period
4. Secular period

1. Market Period price

It is a very short period price. It refers to one day or a few days or weeks in which the supply of a commodity cannot be increased. Supply is fixed in market period. The market price is determined by the forces

of demand and supply in the market at a given time. The perishable goods such as fish, milk cannot be stored for a long time. The whole product has to be supplied to the market. The supply curve is perfectly elastic or a vertical straight line.



Determination of Market Period Price

In the above figure, MPS refers to the market period supply curve of a perishable commodity. The curve is perfectly elastic. DD is the demand curve. DD intersects the MPS at E and OP is the market price. Any change in DD to DD' or D_2D_3 will change the price. If demand increases, the new demand curve $D'D'$ intersects the MPS and the price rises to OP_1 . Similarly when demand falls, the new demand curve intersects MPS and the market price falls to OP_2 . Thus change in demand produces changes in price as the supply is fixed in the market period.

2. Short Period Price

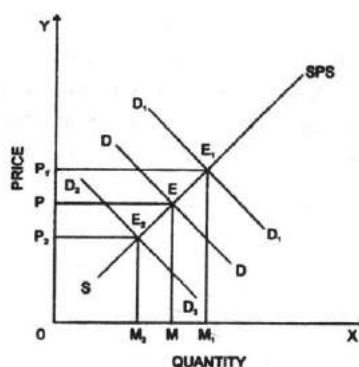


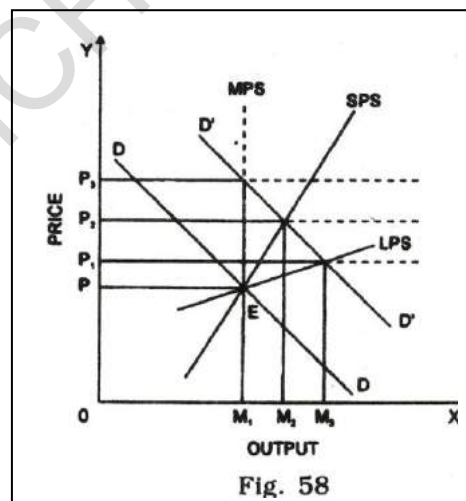
Fig. 57

Determination of Short Period Price

The short period price is determined by both demand and supply factors. Short period refers to a few months in which supply can be changed according to demand. The variable factors are utilised more in order to increase the supply during the short period. The SPS (Short Period Supply Curve) slopes upward from left to right. Short run price is determined at the intersection of SPS curve with the DD curve at E. The short period price is fixed at OP and at OM output. Suppose the demand rises to $D'D'$ the output also rise to OM' and price increases to OP' . When the demand falls to D_zD_z the supply also falls to OM_z and the price falls to OP_z . Thus supply is more important in the short period and supply can be increased or decreased by changing the variable factors.

3. Long Period or Normal Price

Long period is of many years and supply can be fully changed according to demand. The fixed factors are changed. New firms will enter the industry. The scale of production also can be changed. Long period price is also known as normal price. Long period price is determined by the equilibrium of demand and supply.



Determination of Long Period Price

In the above figure, market price, Short-period price, and long-period prices are shown. MPS is the market period supply curve. SPS short period supply curve and LPS is the long period supply curve. The DD

curve intersects the MPS curve at E and OP price is determined. When the demand rises to D.D' the market price rises to OP3. In the short run supply increases and the increased supply will bring down the price to OP2. In the long run further the supply is increased and price is further brought down to OP1.

4. Secular period Price

According to Marshall's analysis, secular period consists of more than ten years. The changes taking place fully both in demand and supply. Changes occur due to changes in population, raw materials and techniques of production.

Thus the above analysis brings out the importance of time element in the price theory. The demand and supply depending on the time period influence the price shorter the time period, higher the influence of demand. Longer the time period, greater will be the influence of supply on the determination of price of the commodities. Thus Marshall brings out the importance of time in the price determination.

LESSON – 5.2

MONOPOLY

Introduction – Characteristics of Monopoly – Price output equilibrium under monopoly – Monopoly equilibrium and perfect competition equilibrium: A comparison – Control of Monopoly power.

5.2.1 INTRODUCTION

Monopoly is a market form in which there is a single producer producing a product which has no close substitutes. „Mono means single and poly means seller. This monopoly implies single seller or producer. The monopolistic producers produce a product which has no close substitutes. This indicates absence of competition in the market. In other words the cross elasticity of the demand between the product of the monopolist and the product of any other producer is very small. The cross elasticity means a change in the demand for goods arising as a result of change in the price of another good. Thirdly, there exist strong barriers to the entry of other firms into the market.

Characteristics of monopoly:

The following characteristics are necessary for the monopoly to exist.

1. There is a single producer or seller of a product
2. There are no close substitutes for the product
3. Strong barriers exist to the entry into the industry

In a price monopoly, there is only one firm and it produces commodities which has no substitutes at all. The cross elasticity of demand of the product is zero. The producer has absolutely no rivals. But price monopoly does not exist in practice. Therefore, we can analyse the price output determination of simple monopoly.

5.2.2 PRICE OUTPUT EQUILIBRIUM UNDER MONOPOLY

Monopolist's main aim is to maximise his profits. The demand curve slopes downwards under monopoly. If a monopolist wants to increase the sale of his commodity, he has to reduce the price. The demand curve will be his average revenue curve, since AR slopes downward marginal revenue curve will lie below it. It means $MR < AR$ that is marginal revenue is less than the average revenue. A firm under perfect competition faces a horizontal straight line demand curve. AR is equal to MR and MC is equal to AC. But a

monopolist

faces a downward sloping MR and AR. MR lies below AR

The following figure illustrates price output determination in monopoly.

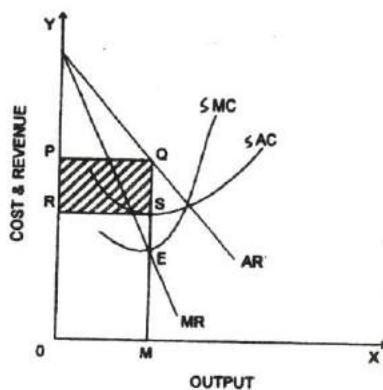


Fig. 59

The monopolist produces his output as long as the marginal revenue exceeds MC. He attains maximum profit at the level of output at which MR equals MC. In the figure, MR is equal to MC at OM level of output. When the monopoly produces beyond OM level of output additional units will increase the cost more than the revenue. It will reduce the profits if he produces more than OM level of output. In the figure AR shows that the monopoly fixes the price at OP by selling OM level of output. The total profit is shown by the rectangle area PQRS. In monopoly equilibrium when $MC = MR$, price is less than the AR. AR is the average revenue curve which slopes downward. MR is the marginal revenue curve. MR lies below AR. AC is the average cost curve. MC is the marginal cost. It is clear from the above figure that marginal cost and marginal revenue are equal. But they are less than AR. $ME < MS$.

A monopolist can never be in equilibrium at a point on the average revenue curve at which elasticity of demand is less than one. We have seen in lesson 4.2 under monopoly

$$MR = AR \cdot e^{-1/e}$$

Or

$$AR = MR \cdot e/e-1$$

AR is nothing but price.

Thus $\text{Price} = \text{MR} \cdot e / (e - 1)$

where MR stands for marginal revenue and e for elasticity. But in equilibrium, $\text{MR} = \text{MC}$. Therefore $\text{Price} = \text{MC} \cdot e / (e - 1)$

$\text{Price} = \text{MC} \cdot e / (e - 1)$

As $e / (e - 1)$ is greater than unity for a given value of elasticity under monopoly, $\text{Price} > \text{MC}$. That is, price is greater than marginal cost. Thus Monopoly price is a function of marginal cost and elasticity of demand.

Short-run Equilibrium under Monopoly

The following figure illustrates price output determination of monopoly in the short-run

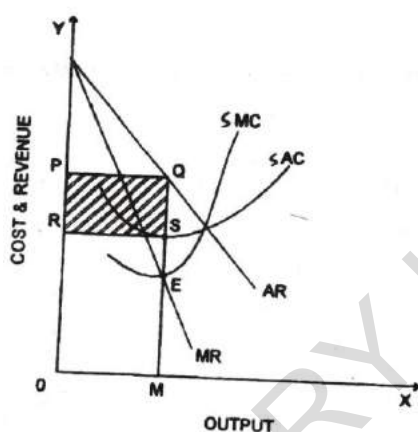


Fig. 60

Equilibrium under Monopoly with Maximum Profits

In the short run, monopoly cannot adjust the size of the plant. Short-run equilibrium is illustrated clearly in the diagram. SAC is the Short-run average cost curve. SMC is the Short-run marginal cost curve. Monopoly is in equilibrium at E where SMC is equal to MR. Price is fixed at OP. The total profit is represented by the rectangle PQSR. Monopoly can also make losses in the short-run. Monopoly equilibrium in case of losses is shown below.

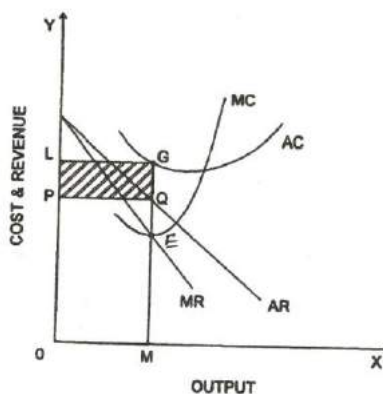


Fig. 61

MC cuts the MR curve at point E. The monopoly is in equilibrium at OM level of output and OP level of price. The price OP is smaller than average cost OL. Thus he makes losses equal to PQGL.

5.2.3 MONOPOLY EQUILIBRIUM AND PERFECT COMPETITION EQUILIBRIUM - A COMPARISON.

MONOPOLY COMPETITION	PERFECT COMPETITION
1. Price equals AC at the equilibrium output $\text{Price} = \text{MR} = \text{MC}$	Price is greater than AC
2. Equilibrium is possible only at the rising MC curve	$\text{Price} > \text{AC}$ Equilibrium is possible whether MC is rising or constant or falling
3. Equilibrium occurs at the minimum point of AC curve	Equilibrium occurs at the level of output where AC is declining
4. Only normal profit	Abnormal profit
5. Price is normal and maximum output	Price is high and minimum output
6. No price discrimination	Discriminate prices

Is Monopoly Price a High Price?

The Monopoly price is higher than the competitive price and the output is smaller than competitive outputs monopolist demand curve is less elastic and the marginal revenue lies below it. Hence the equilibrium between marginal revenue and marginal cost occurs at a lower level of output. Thus output is low under monopoly. But the price is higher than the price under competition. That is price $(\text{AR}) > \text{MR} = \text{MC}$.

But it is not always necessary for the price to be higher than competitive price. If the monopoly firm is subject to law of increasing returns, it has economies of production. As result cost of production decreases and the price may fall. The monopolist also will be willing to sell the larger output at a lower price than fixing a higher price and selling a smaller output. Also a monopolist cannot charge a higher price due to the fear of government control and regulation.

5.2.4 CONTROL OF MONOPOLY POWER

The monopolist always cannot exercise his powers of fixing high price due to the following controls.

1. Fear of potential rivals

When the monopolist fixes a higher price he earns higher profits. Attracted by this new firms enter into the industry. This will force the monopolist to charge a lower price and he gets only normal profits.

2. Government Regulation

When the monopolist fixes a higher price and enjoys a higher profit there is a risk of government regulation and government control.

3. Nationalisation by government

If the monopolist produces a public good there is a risk of the government taking over the firm. Therefore the monopolist charges a lower price due to the fear of nationalisation.

4. Public reaction

The public may ask for anti-monopoly legislations if the monopolist charges a very high price and earns abnormal profits.

5. Fear of boycott

Sometimes people may start their own cooperative societies and may boycott the commodity if the monopolist charges a very high, price.

Thus a monopolist cannot always charge a very high price and exercise monopoly power.

LESSON 5.3

PRICE DISCRIMINATION

Introduction - Types of Price Discrimination - Equilibrium under Price Discrimination

5.3.1 INTRODUCTION

Price discrimination means selling the same product at various prices to different buyers. For example, if a manufacturer sells the television at Rs.10,000 to one buyer and Rs.5,000 to another buyer he is practicing price discrimination. In the words of Professor Bugler, "the sales of technically similar products at prices which are not proportional to marginal costs".

5.3.2 TYPES OF PRICE DISCRIMINATION

Price discrimination may be classified into three types:

- a) Price discrimination of the first degree.
- b) Price discrimination of the second degree.
- c) Price discrimination of the third degree.

Under first degree price discrimination the seller forces the buyer to pay the maximum amount he is willing to pay.

There is no consumer surplus left with the buyer. This is also known as perfect price discrimination.

Under second degree price discrimination the seller decides, the buyers into different groups and from each group a different price is charged.

Under third degree price discrimination markets are divided into sub markets and different prices are charged in these submarkets, prices depend upon the output sold in the markets for e.g. electricity is charged at low prices for industrial purposes and at high price for house hold purposes . This type of price discrimination is very common.

When is price discrimination possible?

1. When there is no possibility to transfer the goods from dearer markets to cheaper markets.
2. When the buyer is not transferring himself from the dearer market to the cheaper market.

3. When markets are separated by long distance or tariff barriers. Ex. The monopolist may sell the commodity at a low price in the foreign market and at a higher price at home market.
4. When price discrimination is legally sanctioned
5. Due to preferences and prejudices
6. Due to ignorance and laziness of buyers
7. When different groups require same services, example. railways

People belonging to different group may require the same service like railways they are charged different prices such as the first class and second class. Thus monopolists only can practice price discrimination as he is the only seller.

When price discrimination is profitable?

So far, we have examined the conditions under which price discrimination is possible. Now, we shall analyse when price discrimination is profitable.

a) When demand curves in the separate markets are elastic.

When elasticity of demand is the same in different markets it is not profitable to charge different prices. When elasticity of demand is the same then $MR = AR \cdot e - 1/e$. then MC in two markets will be the same. Then it is not profitable for him to transfer the goods from one market to another.

- b) When elasticity of demand is different in various markets at the single monopoly price.

Equilibrium under Price Discrimination

The condition of possible and profitable price discrimination has been explained so far. Now let us analyse the equilibrium under price discrimination.

The monopolist is dividing the market into various sub markets according to the elasticity of demand. In this example, we can show two markets for the sake of simplicity. The monopolist has to decide about

- a) total output to be produced
- b) how the total output is to be distributed among two markets.

The equilibrium condition is the same as that of perfect competition and monopoly ie. $MR = MC$. The aggregate marginal two submarkets are taken together and compared with aggregate marginal cost and aggregate

revenue cost of the total output. In the figure MRa is the marginal revenue in market A and Da is the demand curve. MRb is the marginal revenue curve in market B and Db is the demand curve. The AMR i.e. aggregate marginal revenue is added unilaterally MRa and MRb. AMR refers to the total output to be sold in the two sub-markets corresponding to the MR curves.

The monopolist maximises his profit at the output where MC is equal to AMR and output is fixed at OM level. Next task of the monopolist is to discriminate the output between the two sub-markets. The total output is distributed so that MR in two sub-markets is equal. They must also be equal to the rest of the total output. Then only the output sold in two sub-markets will be equal to the total output by equalising aggregate MR with MC.

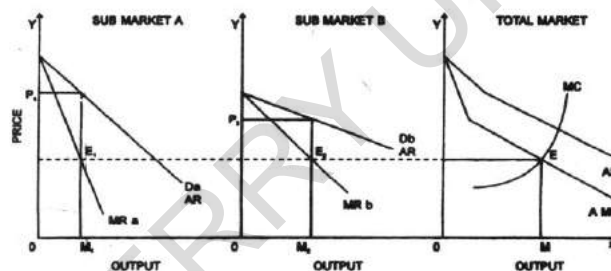


Fig. 62

Price and Output Determination in Discriminating Monopoly

In the above figure, OM total output is distributed in the two sub-markets. OMI output is sold in market A and OM2 is sold in market B. $OM_1 + OM_2 = OM$. Marginal revenue MI E1 is equal to the marginal cost of the total output. Similarly, at OM2 output marginal revenue H2 is equal to the marginal cost of the total output. Thus the total output OM is to be produced and the distribution of the total output as OMI and OM2 in two markets is explained clearly.

The second issue is the prices to be charged in different markets. OMI output is sold at P1 price in sub market A. OM is sold at P2 price in sub-market B. Price is higher in market A than in market B because the demand is less elastic in market A than in market B. Thus the two conditions necessary for equilibrium in a discriminating monopoly are

1. $AMR = MC$ of the total output.

2. $MR_a = MR_b = MC$

Dumping

Another type of price discrimination is dumping. Dumping refers to a situation in which a monopolist sells his output at a low price in the foreign market and at a higher price in the home market. The monopolist fixes a low price because he has to face competition in the foreign market and the demand is more elastic in the foreign market. He sells the product at a high price in the home market because the demand is less elastic. In this way the monopolist maximises his profits by dumping. Price discrimination is beneficial to the society as it helps to promote the economic welfare. In the absence of price discrimination the people may not be able to get the public utility services such as telephone, telegraph and rail transport at a lower price.

Price discrimination helps to reduce the inequality of the income and wealth. The poor people are charged lower prices and richer people are charged higher prices. Price discrimination is also justified in case of dumping because the profit from the foreign market can be used to increase the employment and income of the nation.

However, price discrimination is harmful to the society when it results in misdistribution of the resources. It is also harmful when the resources are diverted from their optimal use.

LESSON – 5.4

MONOPOLISTIC COMPETITION

Introduction - Characteristic Features of Monopolistic Competition - Price Output determination under monopolistic competition - Difference between monopoly and monopolistic competition.

5.4.1 INTRODUCTION

Perfect competition and monopoly are two extreme cases of market situation. In 1933, a synthesis of these two markets was brought out by E.H. Chamberlin in his theory of monopolistic competition. This monopolistic competition is a mixture of both monopoly and perfect competition. Monopolistic competition refers to a market where large numbers of sellers produce close but not perfect substitutes. Under monopolistic competition no seller can influence the price output policies.

5.4.2 CHARACTERISTIC FEATURES OF MONOPOLISTIC COMPETITION

The following are the features of monopolistic competition.

I. No Influence on Price.

No seller can influence the price output policies as there are large number of sellers in the market. The sellers' action will have a negligible effect on the market. Each seller has an independent action.

2. Differentiated product

Product differentiation is an important feature of monopolistic competition. Different varieties of the same product are produced by the seller. The products may be differentiated in the form of size, quality, design, colour, workmanship, the service rendered, and by the patents and trademarks. Many examples can be given such as the manufacturers of toothpastes, Colgate, Close up, Pepsodent etc. The manufacturer of Colgate is a monopoly as far as his product is concerned, at the same time he is facing competition from the other producers producing the same product.

Under Monopoly the demand curve for the product is given. But under monopolistic competition demand curve cannot be taken as given. Because the monopolist faces competition from the rival producers producing close substitutes.

Therefore monopolistic competition concerns not only with individual equilibrium but also with group equilibrium. "Group" according to Chamberlain refers to the industry or collection of firms.

3. Selling costs and advertisement

Advertisement and selling costs play an important role in influencing the demand for the product. The advertisement creates psychological reaction on the part of the consumer as to the superiority of the product over the other. Each seller tries to promote the sales by advertisement.

Advertisements are of two types. They are informative and competitive advertisement. Informative type of advertisement informs the buyer about the existence of the commodity. It does not force the buyer to buy the commodity example - Advertisement in the Newspapers.

Competitive type advertisement forces the buyers to buy the product. It compares the product with the other firm's products. For example, Films and Commercial Broadcast requesting the buyers to buy that product. Hence the selling costs are included in the cost of production. The selling cost is incurred to change the consumers' preferences for a particular product.

4. Freedom of entry and exit

There are no barriers for the entry of the sellers into the market. Similarly existing firms can exit the Industry at time of loss without any restriction.

5. Perfect knowledge and information

The firms under monopolistic competition have complete knowledge about all aspects of the industry. All firms have the same technological base, government liaison and other types of market information.

The above characteristics are seen in the case of firms under monopolistic competition.

5.4.3 PRICE OUTPUT DETERMINATION UNDER MONOPOLISTIC COMPETITION

Under monopolistic competition, a single firm can never influence the price of the output. If the firm increases the price of the product, it loses few of its customers. The other rival firms can attract only a

few customers. Similarly when the firm reduces the price it will increase the customers only by a few numbers. Therefore the demand curve for the product of an individual firm is downward sloping since the various firms under monopolistic competition produce products which are close substitutes. The demand curve is highly elastic but not perfectly elastic. Thus the elasticity of an individual firm's demand curve depends upon the value of 'cross elasticity among the rival products, and on the number of sellers and their contribution to the industrial demand.

Individual Equilibrium

A firm adjusts its price and output to get the maximum profit. In order to maximise the product, the firm will equal the marginal cost with the marginal revenue. Following figure illustrates firms' equilibrium under monopolistic competition with profits.

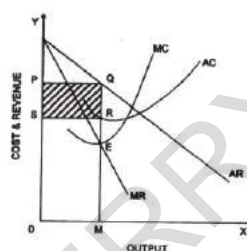


Fig. 63
Individual Equilibrium under Monopolistic Competition

The firm fixes its output at OM as the marginal cost equals the marginal revenue only at OM output. The demand curve AR shows that OM output is sold at OP price. The firm makes profit equivalent to the rectangle PQRS. This area represents the supernormal profit made by the firm in the Short-run.

A firm under monopolistic competition also makes losses in the Short-run as given in the following figure.

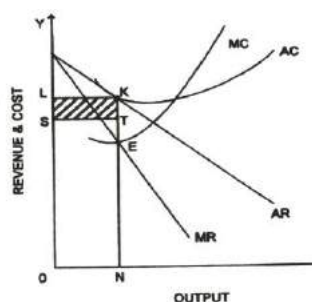


Fig. 64

Individual Equilibrium with Losses under Monopolistic Competition

The firm is in equilibrium at ON output and OS price where the marginal revenue and marginal cost are equal at point E. The average cost curve lies above the average revenue curve. This indicates the individual firm under monopolistic competition incurs losses equivalent to LSTK. Thus an individual firm under monopolistic competition in the short-run either makes abnormal profits or losses.

Due to product differentiation, the firms may have different output and prices, according to the SMC and MR curves. They cannot deviate much in price and output because other firms produce the close substitute products.

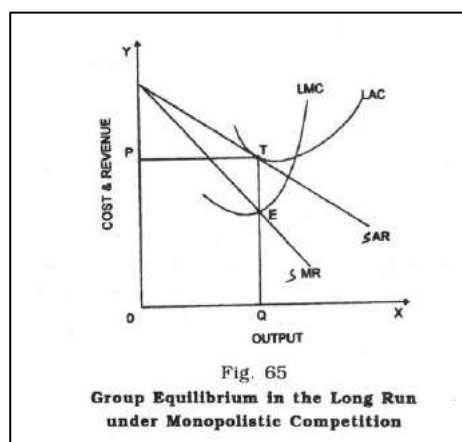
Group **Equilibrium** under Monopolistic Competition

Chamberlain introduces two assumptions in the group equilibrium namely.

1. Uniformity assumption

2. Symmetry assumption

By uniformity assumption he assumes both demand and cost curve for all products are uniform throughout the group. Secondly by symmetry assumption he assumes any adjustment of price or product by a single producer has a negligible effect in the Industry. When the firm enjoys supernormal profit in the short-run, it will attract new firm into the Industry. When the new firm enters the Industry, the average revenue curve will shift downward to the left until the average revenue curve becomes tangent to the average cost curve. Then the supernormal profit will completely disappear. This is explained in the following figure.



The long run average cost curve is tangent to the average revenue curve at point T. The firm produces OQ output which is less than the full capacity of the industry. The firm is in equilibrium when the LAC equals SAR curve and the firm gets normal profit. There

is no entry of new firms and the group will be in equilibrium. The industry stops production before the optimum level since the optimum production will bring down the price. The fullest capacity of the firm is not used. This excess capacity is a prominent feature of equilibrium under monopolistic competition. The concept of excess capacity is associated with monopolistic competition. It is defined as the "difference between ideal (optimum) output and the output actually obtained in the long run." Thus each firm under monopolistic competition will be of less than optimum size and work under excess capacity.

Thus in the long run, the firm fixes the high price due to the monopoly element and enjoys only normal profit. A firm under monopolistic competition charges monopoly prices without enjoying monopoly profit. The firm has an excess capacity as the production stops before the optimum level. Another important feature of the long-run equilibrium is the demand curve becomes more elastic in the long-run.

5.4.4 DIFFERENCE BETWEEN MONOPOLY AND MONOPOLISTIC COMPETITION

MONOPOLY	MONOPOLISTIC COMPETITION
1. Only one producer	Large Number of producers
2. No difference between monopoly firm and Industry	There are many firms and the industry is called a group
3. Only one product is produced and there is no product differentiation	Differentiated product exists and products are similar but not identical.
4. No selling cost	Selling cost is essential
5. Price discrimination is possible	Price discrimination is not possible
6. Demand curve is less elastic	Demand curve is more elastic
7. Monopoly fixes higher prices and no free entry	Free entry and exit by other firms
8. Super normal profits in the long run	Normal profits in the long run

LESSON – 5.5

OLIGOPOLY

Characteristic features of oligopoly - Price determination under oligopoly

5.5.1 CHARACTERISTIC FEATURES OF OLIGOPOLY

Oligopoly is a market situation in which there are few sellers dealing with homogeneous or differentiated products. The characteristic of oligopoly can be discussed below.

1. Interdependence

When the sellers are few, any change in the price output of a firm will have a direct effect on the industry. Thus the most important characteristic of oligopoly is the interdependence of the seller.

2. Advertisement and selling cost

According to Prof. Baumol, it is only under oligopoly that advertising comes fully into its own. Under oligopoly, advertising can become life and death matter. One firm's prosperity depends on other producers policies. Therefore the oligopolistic firm spends much in advertisement. Example of oligopolistic product such as newspaper, magazines, cigarettes, electric goods etc. have been advertised for this purpose.

3. Competition

Another important characteristic of oligopoly is the presence of competition among the rival firms. Only under oligopoly the competition consists of constant struggle and rival against rival can be seen.

4. Lack of uniformity

There is no uniformity in the size of the firms under oligopoly. The firms differ considerably in their size.

5. Indeterminate demand curve

The demand curve under oligopoly is more uncertain because of the interdependence of the firms. The firm cannot assume that when it changes prices, other firms will remain unchanged. As a result the

Therefore the demand curve facing oligopolistic is indeterminate.

There are two types of oligopoly namely pure oligopoly and imperfect oligopoly. As the pure oligopoly is rare the imperfect oligopoly price determination is discussed. The price determination can be studied under three parts.

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In many oligopolistic Industries, price rigidity is present. This price rigidity is explained by the kinked demand curve hypothesis. This hypothesis is given by Paul M.Sweezy, an American economist. Under oligopoly with product differentiation, when a firm rises its price all customers may not leave it. Therefore the demand curve facing the oligopoly is not perfectly elastic. The kinked demand curve is shown in the following diagram b) KPD and the price in the oligopoly market is OP_o . The output is determined at OR . Any increase in price above OP_o will reduce its sales because the other producers will not follow its price increase. The KP portion of the demand curve is elastic and KA portion of the MR curve is positive. Any price increase will not only reduce his total but also his total revenue in profit. On the other hand if he reduces the price below O his rival will also reduce the price. Though his sales increase the profit will decrease because the PD portion of the kinked demand curve is elastic and the marginal revenue curve below B is negative. Thus the seller losses in both increasing the price and reducing the price. Therefore he would stick to the existing market price OP_o which remains rigid.

Criticism of the Kinked Demand Curve

- I. The gap in the marginal revenue curve is not wide enough for the marginal cost curve to pass through it. This makes the price to be unstable.
2. The theory according to Knight does not explain the kink clearly.
3. Price stability is imaginary. The oligopolist may keep the price stable outwardly, but reduce the quality of the product.
4. According to the theory, only price cut is followed by other firms and not the price rise. But Bugler shows that the rise in price is followed by other firms at time of inflation.
5. Bugler also states that in case of the oligopoly sellers either very small or large the kinked demand curve may not be there.

Thus the kinked demand theory has been criticised severely by the economist.

QUESTIONS

1. Explain the characteristics of perfect competition.
2. Explain the price determination in a perfectly competitive market.
3. Discuss the importance of time element in the theory of value with suitable diagrams.
4. Distinguish between the market price and normal price.
5. Explain the price output determination under monopoly.
6. Explain the price discrimination under monopoly. Is price discrimination possible?
7. Give the main features of monopolistic competition.
8. How is price determined under monopolistic competition in the short and long run?
9. Compare and contrast perfect competition and monopolistic competition.
10. Examine the kinked demand theory under oligopoly.
11. Bring out the differences between the perfect competition and monopoly.
12. Write notes on 1) Product differentiation 2) Selling cost 3) Evils of monopoly.

UNIT – VI

LESSON 6.1 THEORY OF DISTRIBUTION

Introduction - Marginal Productivity Theory of Distribution - Factor Pricing under Perfect Competition.

6.1.1 INTRODUCTION

The pricing of factors of production is popularly known as theory of distribution. The distribution may be functional or personal. The concept of functional distribution should be carefully distinguished from that of personal distribution. Personal distribution means distribution of national income among various individuals or persons in the society. Thus the theory of personal distribution studies how personal incomes of individuals are determined and how the inequalities of income emerge. On the other hand, the theory of functional distribution, we study how the various factors of production are rewarded for their services in the production process. The distribution theory we are going to discuss is the theory of functional distribution. The factors of production have been classified into four major heads, viz. Land, Labour, Capital, and Enterprise. Thus in the theory of functional distribution we study how prices of these factors of production are determined.

6.1.2 MARGINAL PRODUCTIVITY THEORY OF DISTRIBUTION

The marginal productivity theory of distribution was developed by an American Economist J.B.Clark. The marginal theory of distribution is the most popular theory. This theory explains the factor pricing under perfect competition. The factor pricing is based on the demand and supply of factors just like the product pricing. The demand for a product is direct demand, while the factors' demand is derived demand, that is, it is demanded due to the demand for a product. Secondly, the supply of a product is based on its money cost of production, while the supply of product is based on its opportunity cost. Opportunity cost is the minimum earnings of a factor which it can earn in the next best alternative use. These are the differences between the factor prices and product prices.

The marginal productivity theory of distribution explains the determination

of prices of factors of production. According to this theory, the price of a factor of production depends upon its marginal productivity. Firstly marginal productivity theory tries to explain the determination of wages, the reward for labour; then it is used for the determination of prices of other factors also namely land capital etc. Marshall, and J.R Hicks. J.B. Clark popularised the marginal productivity theory of distribution i.e., the reward for a factor equals its marginal product. Marginal product is the productivity of an additional unit of factor. The marginal product of a factor is measured in terms of the marginal revenue product which is defined as the addition made to total revenue by the employment of one more unit of factor production. The marginal revenue product of a factor diminishes by increasing the unit of that factor or service. A firm under perfect competition has to pay the same price of an industry to all the factors. The firm substitute cheaper factor for the costlier factor till the marginal revenue productivity of each factor is equal to its price. Thus the factors of production were employed on the basis of the least cost combination. Finally the profits of the firm are maximised.

The theory says that the price of the factor must equal its marginal revenue productivity at the point of equilibrium. If the MRP of a factor is more than its price the firm can enjoy more units of this factor, till the MRP is equal to its price the units are employed. At the point of equilibrium firms can employ maximum profits. If the factors are employed beyond this point, the MRP will fall below this price and the firm will incur loss.

Finally the price of the factor must equal its marginal as well as average revenue productivity. If the price of the factor is higher than the ARP the firm will be incurring losses. Because of this the firm will leave the industry and the price of the factor will fall to the level of the average revenue productivity. Similarly if the prices are less than the ARP the firm will enjoy higher profits. This will attract the new firms to enter into the industry as a result the price will be pushed upwards or will rise upwards to the level of ARP.

Thus in the long run the price of the factor must equal its MRP and ARP. This is illustrated in the following diagram.

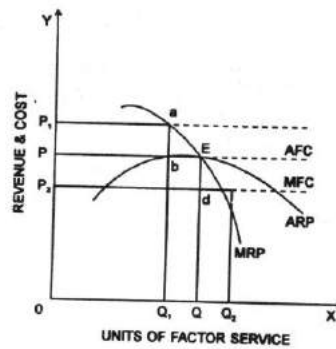


Fig. 67
Marginal Productivity Theory of Distribution

At point E, ARP is equal to MRP and they are equal to average factor cost and marginal factor cost. This price of a factor will be OP for Og units. Suppose the factor price rises to OPI the firms will incur loss of ab per unit. Some firm will leave the industry due to the loss. The price will fall down to E. On the other hand if the factor price falls to O firms will be getting profit of dE per unit. Being attracted by the point when the new firm enter the industry the price again will rise up to OP. These changes in the prices are possible only in the long run and in the long run equilibrium position E will not change.

Assumptions

The marginal productivity theory of distribution is based on the following assumptions:

1. All units of a factor are homogeneous.
2. They are substituted for each other.
3. Perfect mobility of a factor is assumed.
4. There is perfect competition in the factor and commodity market.
5. Full employment of factors and resources is assumed.
6. The units of the factors are divisible.
7. Maximum profit is the aim of the entrepreneurs.
8. This theory is applicable in the long run.
9. This theory is based on law of variable proportions.

Criticisms

The unrealistic assumptions of the theory are criticised.

1. The units of the factor are not homogeneous. Efficiency of the worker differ from person to person and they cannot be substituted for each other.
2. The factors are not easily mobile from one place to another. The greater the specialisation of labour lesser is the mobility of labour.
3. The perfect competition assumption is also criticised. In practice only imperfect competition is found and perfect competition is not a reality.
4. The full employment assumption is also criticised. According to Keynes underemployment is found in an economy.
5. It is not possible to divide the factors.
6. Profit motive is not the main motive of the entrepreneurs.
7. Finally the theory cannot be applied in the short run.

Thus Marginal productivity theory does not explain the determination of the factor price adequately. It emphasises the demand side and ignores the supply side. It is static and fails to explain the determination of factor pricing in a dynamic economy.

8.1.8 FACTOR PRICING UNDER PERFECT COMPETITION

The price of a factor is determined by the demand and supply just like price of product. Perfect competition prevails in the factor market when

1. The buyers and sellers are large
2. The factors are homogeneous
3. Perfect knowledge on the part of the buyers and sellers.
4. Both buyers and sellers are free to enter or leave the industry.

Demand of Factors

The demand for a factor is a derived demand. It is derived from the demand for the commodity that it produces. If the demand for the product is high, then the demand for the factors also will be high. In addition, the elasticity of the demand of the product also determines the demand

for the factor. Higher the elasticity of the demand for the product, higher will be the elasticity of the demand of the factor. The demand for the factor also depends upon the prices of the other factors. For example, if machines are cheaper the labour will be substituted by machines. The firm's demand for the factor depends upon the Marginal revenue productivity. The Marginal revenue productivity of the factor is arrived by multiplying the marginal physical product by its marginal revenue. MRP is equal to $MPP \times MR$. The price of the factor is the value of the marginal product (VMP) and it is arrived by multiplying its marginal physical product by its price. VMP is equal to $MPP \times \text{price}$. As under perfect competition AR equals MR , VMP also equals MRP .

The MRP of the factor is a firm's demand curve. VMP and MRP curves coincide with each other as shown in the diagram.

Supply of Factors

There is a direct relationship between the supply of a factor and its price. The supply of the factor is perfectly elastic in the long-run. As a result the average factor cost (AFC) and the Marginal Factor Cost (MFC) are equal. AFC is equal to MFC which is equal to price of the factor. AFC is horizontal to the X axis and the MFC curve coincides with the AFC curve. i.e., $AFC = MFC$; both are horizontal to X axis.

The MFC is equivalent to the price of the factor as shown in the diagram. The price of the factor in a market is OP and firm will continue to employ more units of a factor as long as the MRP is greater than MFC . The firm will attain equilibrium when $MRP = MFC$. The following diagram explains the equilibrium of the firm under perfect competition.

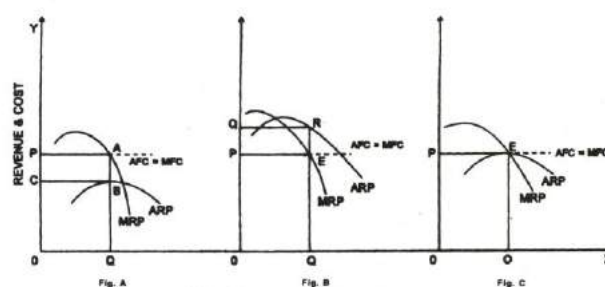


Fig. 68
Factor Pricing under Perfect Competition

The firm is in equilibrium at DO level of employment at which VMP (MRP) is equal to the price of the factor (MFG). At this point MRP is also equal to AFC. Thus under perfect competition in the factor market MRP is equal to AFC.

In figure A and B the short run equilibrium is shown with profits or loss. The ARP curve shows the firm is getting profit or loss. In figure A the firm is in equilibrium at point A where MRP cuts ARP from above. The price is determined at OP and the firm employs Og amount of labour. As the ARP is less than the price, the firm gets loss equivalent to PABL. As a result the demand for factors fall and the firms will leave the industry. The output of the industry decreases and the price of the product increases. The ARP and MRP curves shift upward. The new equilibrium E is attained.

Figure B shows the firms getting profits in the short run. At the equilibrium point E, $ARP=MRP=MFG$. All the firms earn only normal profits as shown in Figure C.

The firm is making profit in the short run equivalent to PRE. But in the long run the firm will get normal profit because of the entry of the new firms. Thus in the long run MRP is equal to MFC and ARP is equal to AFC. In the short run a firm may make supernormal profits or losses but in the long run only normal profits are being earned. Thus the marginal productivity theory of distribution touches the problem of factor pricing in a detailed manner.

LESSON 6.2

THEORY OF WAGES

Introduction - Subsistence Theory of wages – Wage fund theory – Residual claimant theory - Marginal productivity theory - Modern theory

6.2.1 INTRODUCTION

The reward for the services of labour is called wages. Wages are paid based on time and quantum of work. For example, wages are paid everyday, weekly and monthly. Depending on the quantity manufactured the wages are paid, for example, in a shoe factory wages are paid based number of units manufactured by the labour.

Many theories are expounded regarding the pricing of labour. Some of the theories such as subsistence theory of wages fund theory. Residual claimant theory, marginal productivity theory and modern theory of are discussed below.

6.2.2 SUBSISTENCE THEORY OF WAGES

The theory was formulated by Physocrates and later developed by German economists. The theory was also called iron law of wages. This theory states that labour should be paid a price which is sufficient to meet the subsistence expenses of the worker and his family. If the wages are higher than the subsistence level, the workers would increase the population as they are in a better condition. This would increase the labour supply and wages are reduced to the minimum subsistence level. On the other hand, if the wages fall below the subsistence level the population would decrease due to starvation. This decreases the supply of labour until the wages rise up to the level of minimum subsistence. Thus the wage level never rises higher or falls below subsistence level.

The name iron law of wages was given to this theory due to the rigidity of the level of wages.

Criticisms

The theory has been criticised by the economists as given below.

1. It was criticised as it was based on Malthusian theory of population. Malthus theory of population **is** not applicable to western economies.
2. Historically the theory was proved wrong. The rise in wages need not increase the labour supply.
3. The theory **is** unrealistic as the theory emphasises the uniformity of wages. But in practice wage rates differ.
4. The theory gives importance to the supply side and neglects the demand side.
5. The theory **is** highly pessimistic and the efficiency and productivity of labour are not considered.

Thus the subsistence theory cannot explain the determination of wages with historical facts.

6.2.3. WAGE FUND THEORY

This theory was developed by J.S. Mill. It is superior to the subsistence theory of wages as it takes into consideration both demand and supply side. There are two factors which determine the wages namely wage fund and population. Wage fund refers to the portion of capital kept by the producers to pay for the services of labour. Population refers to the labour supply in the market.

Wages have a direct relationship with wage fund. When wage fund rises, wages also rise and vice versa. Wages have indirect relationship with population. When population rises, wages fall and when population fall, there is a fall in labour supply and finally wages also fall.

The following equation explains this

$$\text{Average wage} = \frac{\text{wage fund}}{\text{population}}$$

Average wage **is** directly related to wage fund and indirectly related to population. Economists like Tevons and Thorton criticise the wage fund theory.

Criticisms

1. According to the criticism, national income is not a fixed fund but is a flow. Wages are paid out of national income and not out of wage fund.
2. An increase in the share of wages would reduce the profits according to the theory. But both wages and profits increase at times of inflation.
3. The theory is unrealistic as it cannot explain the wage differentiations

and the theory is based on the assumption that labour is homogenous. Actually they differ in their efficiency and productivity.

4. The theory neglects the influence of trade unions in the wages.

6.2.4 RESIDUAL CLAIMANT THEORY

American economist Francis A. Walker has propounded the Residual Claimant theory of wages. According to this theory, wages are, equal to the residual amount of the product after making payments for rent, interests and profits. The total product of the Industry includes the payments of rent, interest and profits and the residual amount determine the amount of wages. Higher the productivity of labour, higher will be the share of wages. Thus the theory recognises the efficiency and productivity of labour.

Criticisms

The theory has been criticised by many economists as discussed below. According to critics, actually entrepreneur is the residual claimant and not the labour. The theory emphasises the demand side and ignores the supply side. The theory lacks positive method of determining rent interest and profit. The theory was also one sided. Thus the theory was criticised on the above grounds.

6.2.5 MARGINAL PRODUCTIVITY THEORY OF WAGES

This theory applies the marginal productivity theory of distribution to the labour. The theory states that wages are determined equivalent to the marginal productivity of labour.

Marginal productivity of labour is the addition made to the total production by the employment of one additional labour. Marginal revenue productivity is the money value of the marginal physical productivity.

$$\text{MPP} \times \text{Price} = \text{MRP}$$

where MPP refers to the Marginal Physical Productivity and MRP refers to the Marginal Revenue Productivity. If the wages are below the marginal productivity the employment of labour will increase till the

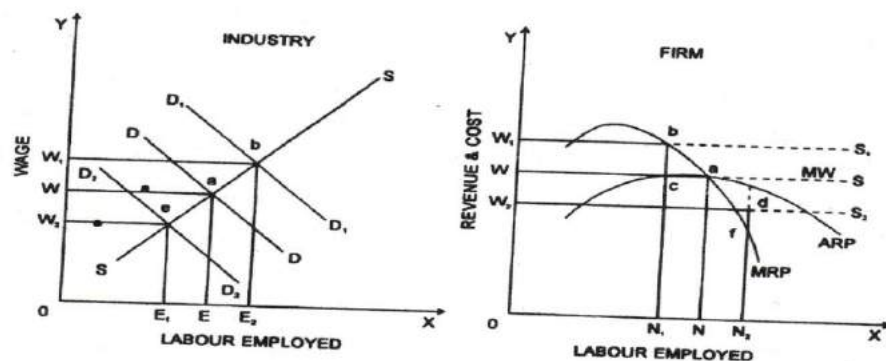
wages level equals the marginal productivity. The profit of the entrepreneur is the maximum and losses are at minimum, when the wages are equal to the marginal revenue productivity.

6.2.6 MODERN THEORY OF WAGES

This theory assumes perfect competition and absence of Trade Union. According to this theory, wage rates are determined by demand and supply factors. Demand for labour is a derived demand. It is derived from the demand for the product. When the demand for the product rises, the demand for labour also increases. On the other hand fall in the demand for product results in the fall in the demand for labour.

In fact, the elasticity of demand for labour determines elasticity of demand for the product. If the demand for the commodity is more elastic the demand for labour is also more elastic. When the wage falls, there is a percentage increase in the employment of labour. Sometimes when the labour is more skilled, demand for labour is inelastic. The demand for labour also depends on the substitutes. If machines are cheaper labour can be substituted for machines. Thus a rise in wages will lead to higher demand for machines.

Labour is demanded for its productivity. The wage rate is equal to the Marginal revenue productivity of labour. As long as the wages are below MRP employment of labour will increase. The demand curve for labour slopes downward from left to right and is given by the MRP curve. Supply of labour refers to the number of workers offered for employment at each possible wage rate. Wages and quantity of labour have a direct relationship. Supply curve of labour, therefore, slopes upward from left to right. Supply of labour depends upon the population. Hence the supply curve slopes upward as given in the following figure.



(A)

Fig. 69

(B)

Wage Determination

The wage rate in an industry will be determined at points where labour equals the supply of labour. In the figure A, OE workers are employed at OW wages. When the wage rates rise above this W, supply of labour will increase and wages are brought down to OW level. A fall in the wage rate results in the supply of labour decreases and wages will rise to OW level. The supply curve of labour of a firm is perfectly elastic at the current wage rate. The marginal productivity of labour curve cuts the supply curve of labour at the equilibrium point. The MRP of labour is equal to marginal cost and the average revenue product is equal to the average cost of labour. Hence average wage is equal to Marginal wage. and Marginal revenue product = Marginal wage = Average revenue product = Average wage (MRP = MW = ARP.)

In diagram B, ON number of workers are employed and profit per unit enjoyed when the wage rate OW2 is below the ARP line. When the firm employs ON labour incurs losses of cb per unit if the wage rate OW1 is above the ARP curve. Thus the firm gets loss or profit only in the short run. In the long run when the firm gets loss the firms will leave the industry and the demand for labour falls. The wage rate will come down to OW and equals ARP at. Similarly when the firm gets profit the firms will enter into industry and the demand for labour will increase. This will raise the wage rate to OW1 and the wage rate equals ARP. Thus the wage rate under perfect competition is always equal to the Marginal and average revenue product of labour.

Monopsony in Labour Market

In this market only one firm buys the service of labour. In oligopsony a few firms buy the services of labour. The labour market is imperfect and the labour is unorganised and the geographical mobility of labour is very much limited. Monopsony may prevail when a big employer hires a proportionally very large number of a given type of labour so that he is in a position to influence the wage rate. Or it may prevail when various big employers have an understanding not to compete for labour and

thus act as one in hiring labour. Because of this unorganised labour market and lack of mobility the labour is easily exploited by the monopsony.

Trade Union and Wages

The two kinds of theories known as institutional and psychological theories of wage determination assign an eminent role to trade unions and collective bargaining in the wage determination. Trade Union refers to the collective bargaining of the labour to raise the wage level. The trade union makes the wages uniform over the entire industry for the same category of workers. A trade union also helps to improve the productivity and efficiency of the workers. It provides general and technical education and medical and recreational facilities to its members. The trade union also can demand for the modernisation of industry and rise in the wage rate. Thus the trade unions play an important role in influencing wage level.

It is accepted that under the marginal productivity theory increase in wage rate by trade union power will lead to unemployment. But it is pointed out that when the wage increase is achieved through a successful bargaining, the marginal productivity curve may not remain the same but may shift above due to the rise in efficiency of workers brought about by the higher wage. Thus increased wage becomes equilibrium wage without creating unemployment.

LESSON 6.3

THEORY OF INTEREST

Introduction - Classical theory of interest – Loanable fund theory of interest -Liquidity preference theory of interest.

6.3. I INTRODUCTION

Interest has been variously defined by different economists. According to the classical economist interest is the earnings of capital i.e. rate of return over capital. The natural rate of interest can be distinguished from the market rate of interest. Market rate of interest means – the rate at which funds can be borrowed in the market and the natural rate of interest means rate of return on capital investment. When the natural rate of interest is higher than the market rate of interest then there will, be greater investment in capital with the result that the rate of return on capital (natural rate) will fall. The equilibrium will be established when the natural and market rate of interest become equal. The rate of interest has been defined by classical economists like Knight, J.B. Clark and neo classical economists like Wicksell, Keynes and modern economists like J.R. Hicks and A.P. Lerner.

6.3.2 CLASSICAL THEORY OF INTEREST

Classical Economists have visualised interest as marginal productivity of physical capital. But since the physical capital has to be purchased with monetary funds rate of interest becomes the rate of return over money invested in physical capital. The classical economists emphasized the role of real factors such as thrift (i.e. waiting or abstinence) time preference and productivity of capital in the determination of interest. Therefore, classical theory is also known as real theory of interest. According to the classical theory rate of interest is determined by the intersection of demand for capital and supply of capital. According to some economists, interest is a price paid for abstinence or waiting. When people save money by abstaining from consumption they should be given interest. The people will not be willing to part their money without interest. Thus according to the theory the supply of saving come from abstinence and depends upon the rate of interest. According to the Austrian economist

BohmBawerk, interest arises because people prefer present enjoyment for future enjoyment. In order to have present consumption people prefer to pay interest. According to Irving Fisher interest is paid because of time preferences.

Rate of interest arises because people are impatient to spend their income in the present. Interest is a compensation for the time preference of the individual. The greater the preference of the present enjoyment the higher will be the rate of interest to make them lend money.

Determination of Rate of Interest in the Classical Theory

Rate of interest is determined by the supply of saving and demand for savings. The higher rate of interest the higher will be the supply of savings. The supply of savings depends upon the above forces discussed. The supply curve of saving will be sloping upwards to right. The demand for saving comes from the entrepreneur who wishes to invest in capital goods. Capital has marginal revenue productivity. The marginal revenue productivity will determine the investment demand. The investment demand curve will be downward sloping. When the interest rate falls, more money will be demanded for investment and vice versa. The rate of interest is determined by the intersection of the investment demand curve and supply of savings curve.

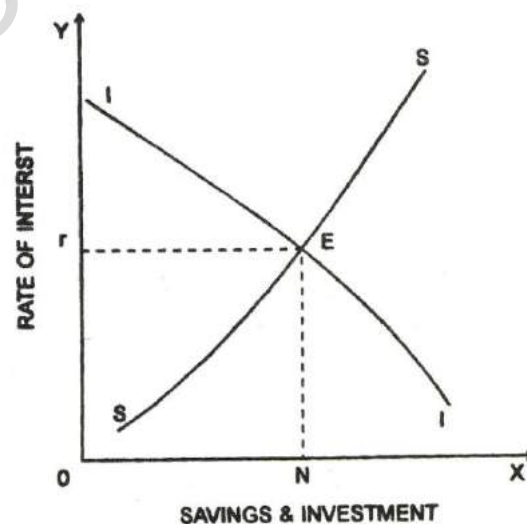


Fig. 70
Classical Theory
Determination of Interest

In the above figure curve II is the investment demand curve and SS is the supply of savings curve. The II curve and SS curve intersect at point E and or is the equilibrium rate of interest. ON is the amount of savings and investment. If any change in investment demand and supply of savings arises the curves will change and also equilibrium rate of interest.

Criticisms

The classical theory of interest propounded by Marshall and Hague has been severely criticised by Keynes.

1. The classical theory assumes that the level of income is given and rate of interest is determined by the supply and demand for saving. According to Keynes income is a variable and the equality between savings and investment is determined by changes in income and not by interest.
2. According to the classical theory the demand and supply curves of savings are independent of one another but according to Keynes they are not independent of one another.
3. The classical theory ignores effect of investment on the level of income. According to Keynes, investment depends on the marginal efficiency of capital and not on the interest.
4. Keynes criticises classical theory of interest as indeterminate. The classical theory neglects other sources of capital such as bank credit takes into consideration only savings as its source of capital. It is also based on the unrealistic assumption of full employment. Thus classical theory is criticised on the above grounds.
5. It has been criticised for its assumption of full employment of resources. When full employment of resources prevails people have to be induced by inter to curtail consumption so that resources can be devoted to capital goods. But when unemployed resources are found there is no need to pay interest.
6. According to classical theory more investment can occur only by cutting down consumption. More the reduction in consumption greater is investment in capital goods. It ignores the disincentive effect of lesser consumption on production of consumer goods there by adversely affecting demand for capital goods and thus on investment.

6.3.3 THE LOANABLE FUNDS THEORY OF INTEREST

The loanable funds theory of interest is a neo classical theory of interest. It was expounded by Wicksell and Ohlin, Robertson and Pigou. According to this theory, real forces as identified by classical theory alone do not go to determine the rate of interest monetary forces such as hoarding and dishoarding of money. Money created by banks, monetary loans for consumption purpose also plays a part in the determination of the rate of interest. Thus the interplay of monetary and non-monetary forces determines the rate of interest.

According to this theory, rate of interest is determined by demand and supply for loanable funds. The demand for loanable funds comes from Government, businessmen and consumers. The government demands funds for construction of public works or for defense purposes. The businessmen borrow for investment purposes and the consumers borrow for consumption purposes.

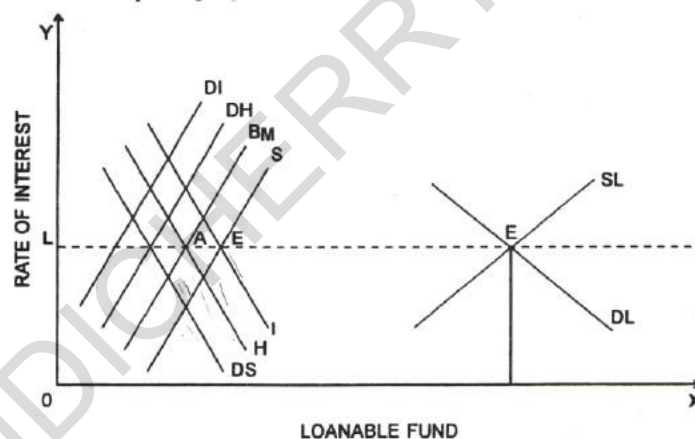


Fig. 71
Determination of Rate of Interest

In the figure, the investment demand for loanable funds slopes downward to the right and this is shown by the curve I, the consumption demand for loanable funds shown by curve Ds slopes downwards. Demand for fund for hoarding is also sloping downwards shown by the curve H. By adding up the investment demand curve I, consumption demand curve Ds and the hoarding demand curve H we get total demand curve for loanable funds DL.

The supply of loanable funds come from saving, dishoarding and bank credit. The supply curve of saving, slope upwards to the right. Dishoarding is also another source of saving at high rate of interest, the individuals will be induced to dis-hold money at higher rate of interest. The Dishoarding is interest elastic and the curve of Dishoarding slopes upward to the right as shown in the curve DH. Bank money is another source of supply of loanable funds. The banks lend more money at higher rate of interest. Supply curve of Bank money slope upward to the right as shown by the curve BM. Disinvestment is another source of the supply of loanable funds. At higher rate of interest there arises greater rate of disinvestment. The disinvestment curve DI slope upward to the right. By lateral summation of the curves of the saving S, Dishoarding DH, Bank money Bm and disinvestment DI. The total supply curve of loanable funds SL is derived and it slopes upward to the right showing that supply of loanable funds is large at higher rate of interest.

The demand for loanable funds DL and the supply of loanable funds SL determine the equilibrium rate of interest OL as shown in the diagram. Thus the rate of interest will be in equilibrium where the supply of net savings and Bank money will be equal to the demand for the investment and net hoardings. Thus at equilibrium interest supply of loanable funds is equal to demand for loanable funds.

Criticisms

Though loanable funds theory is superior to the classical theory of interest, however, it has been criticised by Keynes. The loanable funds theory according to Hansen is indeterminate. i.e. it does not provide a determinate solution to interest rate determination as the theory over emphasize the influence of the rate of on savings. It has also been criticised for combining monetary factors with real factors. Also the theory ignores the effect of changes in the level of income on the supply of savings. It is based on full employment assumption which does not hold good in the real world.

6.3.4 LIQUIDITY PREFERENCE THEORY OF INTEREST - KEYNES

Keynes defines the rate of interest as a reward for parting with liquidity

for a specific period. In his book **THE GENERAL THEORY OF EMPLOYMENT INTEREST AND MONEY**, he gave a new theory of interest. An individual with his given income has to decide how much to consume and how much to save. Keynes calls the demand for money to hold or the desire of the public to hold cash as liquidity preference.

Demand for money

The demand for money is known as liquidity preference in the Keynes theory of interest. The higher the liquidity preference, the higher will be the rate of interest. The lower the liquidity preference, the lower will be the rate of interest that will be paid to the cash holders. According to Keynes there are three motives of liquidity preference:

- 1) Transaction motive.
- 2) Precautionary motive.
- 3) Speculative motive.

Transaction motive: The transaction motive refers to the demand for money for the current transactions. Individuals hold cash to meet the interval between the receipt of income and its disbursement. This is called income motive. The businessmen and the entrepreneurs demand money to pay for the raw materials, wages and salary and for other business purposes. This is called business motive.

Precautionary motive: In order to meet the unforeseen contingencies people hold money. For example, unemployment, sickness, accidents are some of unforeseen contingencies for which people hold cash. The transaction and precautionary motive are relatively interest elastic and highly income elastic. The amount of money held under these two motives (M) is a function of (LI) the level of income (Y) and is given as M is equal to LI (Y). $M = LI(Y)$. The amount of money held under this motive will depend on the nature of individual and the condition in which he lives.

Speculative Motive: Speculative motive refers to the desire to hold cash in order to pay advantages of changes in the rate of interest. In the speculative motive cash is used to make speculative gains by dealing in bonds. The speculative motive demand for money is also a function

of rate of interest. If the interest rate is low, businessman will sell bonds expecting the rise in the rate of interest and they hold more cash. The higher the rate of interest the lower the speculative demand for money and vice versa. It is a smooth curve which slopes downwards from left to right. The speculative motive is expressed as $M - L_2\{r\}$. The total demand for money is $M = M_1 + M_2$ where M_1 is transaction and precautionary motive and M_2 is speculative demand since $M_1 = L_1(Y)$ and $M_2 = L_2(r)$

The total liquidity demand for money is given as $M = L(x, r)$. The following figure explains Keynes liquidity preference.

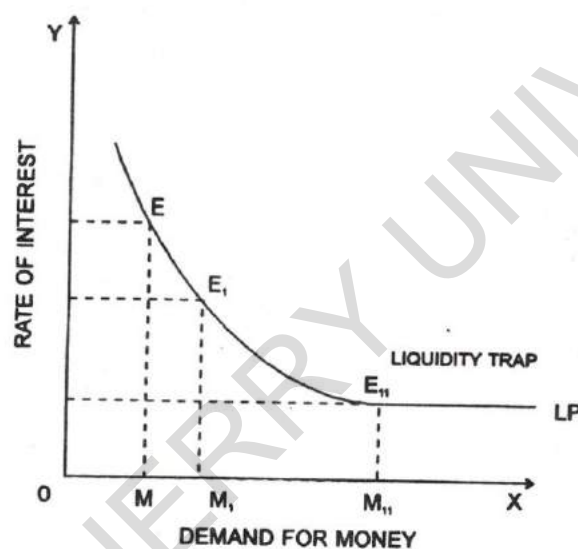


Fig. 72

Liquidity Demand and determination of Interest

The demand for money is measured along the X axis and the rate of interest is measured along the Y axis. The curve LP represents the speculative demand for money which increases with fallen rate of interest, decreases with the rise in rate of interest.

If the rate of interest falls to a very low rate, people prefer to keep cash rather lend it. LP curve becomes perfectly elastic. This position of a perfectly elastic liquidity preference curve is shown as the liquidity trap.

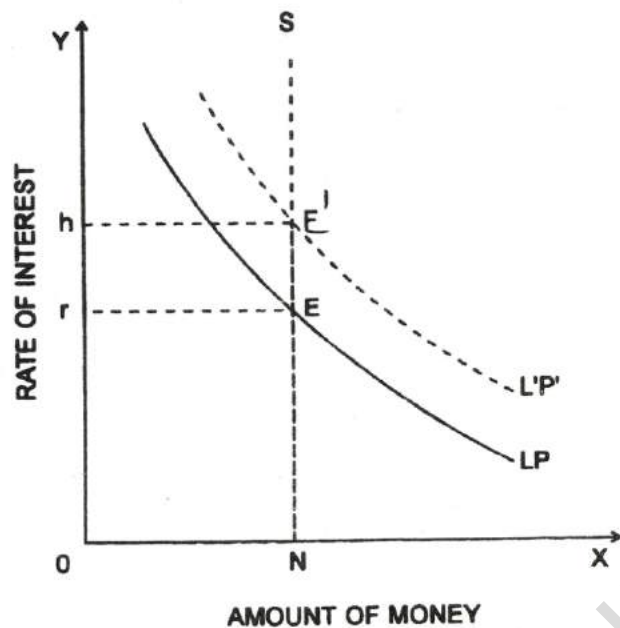


Fig. 73
Determination of Rate of Interest

In the above figure, the supply of money is shown by the vertical line SN. It is to be fixed by the monetary authorities. The supply curve of money is perfectly inelastic. The LP curve and SN curve intersect each other at Point E. The supply and demand for money is equal to ON at Or rate of interest. An increase in the demand for money for the speculative purposes, shift the LP curve to the right as shown by the L'P' curve. The rate of interest rises to h as the new LP curve intersects the supply curve of money at E'.

It is worth noting that when the liquidity preference of speculative motive rises from LP to L'P' the amount of money hoarded does not increase it remains ON as before only the rate of interest rises from OR to OH to equilibrate the new liquidity preference for speculative motive with the available quantity of money ON.

Thus according to Keynes demand for money for speculative motive together with supply of money determines the rate of interest.

Criticisms

The Keynes theory of interest has been criticised by Hansen, Robertson, Knight and others. Keynes theory is criticised because it is inadequate

and misleading. It is also criticised for its methodological fallacy. Knight criticises Keynes theory for its inconsistency. It also ignores the real factors and there is a confusion regarding the relation between interest rate and quantity of money. Liquidity preference is not helpful in explaining the nature of interest. To conclude Keynesian theory of interest is not only indeterminate but also gives inadequate explanations of the rate of interest.

LESSON - 6.4

THEORY OF RENT

Introduction –Ricardian Theory of Rent - Modern Theory of Rent - Quasi Rent

6.4.1 INTRODUCTION

In ordinary language, the term Rent is used to denote the payments made for the use of land or a building or a shop. The term economic rent is employed for the surplus earned by the factor of production over and above the minimum earnings. In other words, it is a surplus over the transfer earnings. Economic rent is applicable to all factors but not to land alone. The term rent is used in the following senses in modern economic theory.

1. The term rent refers to payment made for the use of these factors of production whose existence is not dependent on any human effort or sacrifice. The chief example of such factor is land. However rent in this sense is often referred to as land rent.
2. The term economic rent is employed for the surplus earned by a unit of a factor of production over and above the minimum earning to induce it to stay in the present use. In the second sense economic rent is understood as the payment to a unit of a factor of production in excess of its transfer earnings.
3. The term economic rent also applies to cover the earnings (net of depreciation and interest charges) of fixed capital equipment since the capital equipment's are not permanently in fixed supply like land and instead their supply is very much elastic in long run. Their earnings in the short period are called Quasi Rent.

6.4.2 RICARDIAN THEORY OF RENT

David Ricardo of England has propounded the theory of rent which is popularly known as Ricardian theory of rent. According to Ricardo "Rent is that portion of the produce of the earth which is paid to the

landlords for the use of original and indestructible powers of the soil ".

Assumptions of the Theory

1. The supply of land is fixed and perfectly inelastic.
2. Land cannot be used for alternative uses.
3. Land differs in quality and there are various grades of land.
4. There is perfect competition.

According to Ricardian theory of rent, rent arises due to scarcity of land even though land is homogeneous. Ricardo calls it as scarcity rent. Rent also arises due to the differences in the fertility of the land. This is called as differential rent. He explains the theory of rent with an example. There are four grades of land i.e. A grade, B grade, C grade, and D grade.

In a new country, the best land A grade is cultivated first and there will be no rent. The increase in population will increase the demand for crop. This will lead to the cultivation of B grade land. Then rent will arise on A grade land. Thus the increase in population will result in the cultivation of other grades of land C&D etc. The last land cultivated is known as Marginal land. There is no rent from this land. Thus according to Ricardo rent is a differential surplus. It is the difference between the produce of the superior and marginal land. This is explained in the following diagram. With increase in population after the whole of the grade A land is put to use and demand of corn still increases two courses of action will be adopted. First grade B land will be taken up for production Secondly Grade A land will be more intensively used. Grade B land will be taken up only when the price sufficiently rises to cover up the cost of production on grade B land i.e. if price is less than the lowest average cost on grade B land, it will not be brought under cultivation. The figure depicts that when the price of corn has gone up to op' , grade B land is put to use.

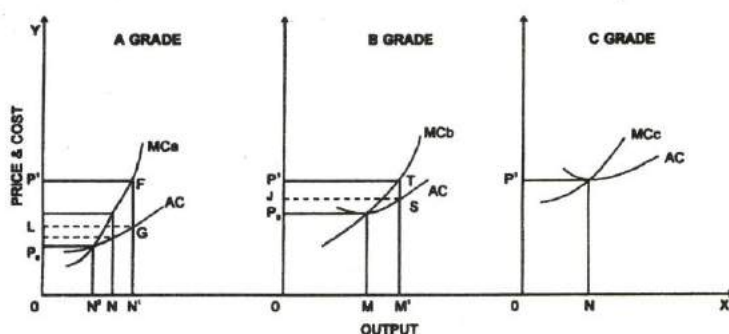


Fig. 74
Differential Rent Determination

It will be seen in the figure that output is increased to ON' on grade A land and OM' on Grade B land. Total revenue on grade B land is OM.TP..while total cost is equal to OM'SJ. The surplus of total revenue on total cost is JSTP" which is the rent earned by grade B land. The total revenue of A grade land rises due to the rise in price to OP' with a total revenue equal ON'PP' while the total cost of production is ON'GL. Hence the rent on grade A land has increased to LGFP'.

With the price of the corn rising to OP` the land C grade is cultivated and it becomes the marginal land and earns no rent. The A and B grade land, intra-marginal lands earn rent. A is earning more rent than B. According to Ricardo rent is not a part of cost of production. It is the earnings over and above the cost of production. Hence it does not determine price. It is the price that determines rent and rent is the price determined. Rent does not form a part of the cost of production. Rent is the earnings over and above the cost of production. As it does not enter into price it is not determining price. According to Ricardo rent is not price determining but rent is price determined. Ricardo states "Corn is not high because a rent is paid but a rent is paid because corn is high."

Critical Evaluation of Ricardian Theory of Rent

The theory is criticised on the basis of its unrealistic assumptions.

1. There are no original and indestructible powers of the soil. According to the theory rent is a payment for the use of original and indestructible powers of the soil. But there is no land which has been kept in its natural form.
2. Superior land is cultivated first. The order of cultivation may be reverse and there is no historical fact supporting this assumption.
3. Land differs in fertility. Rent arises not because of differences in fertility but due to the scarcity of land in relation to its demand. There is no marginal land. In reality no such land exists. The no rent land can be put into some other use where it can earn surplus.
4. Ricardian theory is criticised as it is based on unrealistic assumption

of perfect competition.

5. Rent is not the payment for land use alone, but also other factors which are scarce in supply earn rent. Rent arises during the scarcity.
6. Much criticisms centre around the price determined rent. Rent is included in the cost of production.
7. In Richardo's view rent of land does not enter into cost of production and therefore does not take part in the determination of the price of corn.

In spite of the above criticisms, Ricardian theory of rent is of great importance as it throws light on the stand point of policy.

6.4.3 MODERN THEORY OF RENT

The Modern economists criticised the Ricardian theory of rent. The differential surplus rent and the assumption that land has no alternative use are also criticised. Modern economists give a comprehensive treatment to the problem of rent.

They are of the view that other factors of production, labour capital, entrepreneur may also be found to be earning economic rent when they are getting payment greater than what is required to induce them to work in the present industry or use. Thus in modern economic theory, economic rent is not merely confined to land. Units of other factors may also earn economic rent.

The modern theory of rent is based on the demand and supply analysis. The demand for land depends upon the Marginal Revenue Productivity (MRP). A farmer will pay a rent equal to the MRP of land. The MRP falls due to the operation of law of diminishing returns. The demand curve slopes downwards.

The supply of land is perfectly elastic. The supply curve is horizontal to the X-axis for a firm. For an industry supply is less than perfectly elastic. For an entire economy the supply of land is perfectly inelastic. The following figure explains the modern theory of Rent.

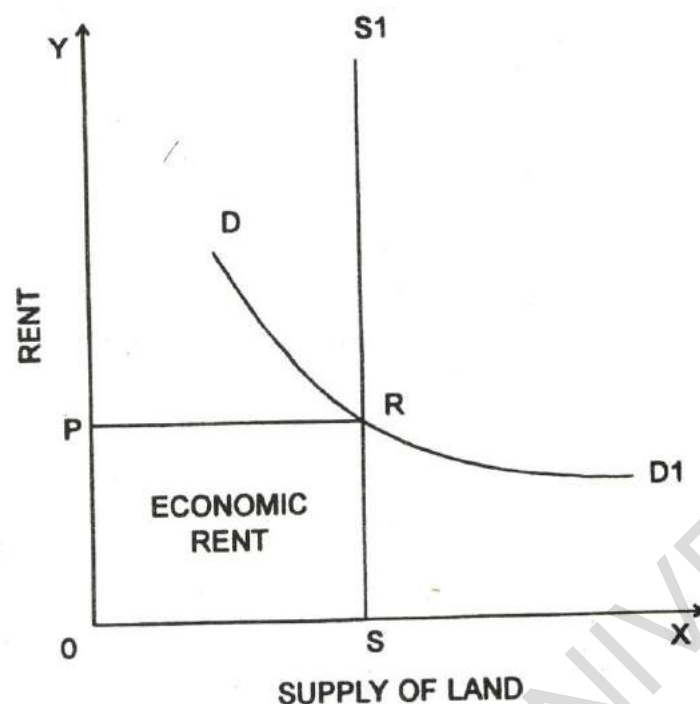


Fig. 75
Determination of Economic Rent

OS is the amount of land available to the society. SS' is the perfectly inelastic supply curve of land. The supply of land remains at OS even if the rent falls to zero. Thus transfer earnings of the land are zero. DD' represents the demand of land of the society as whole. The intersection of demand and supply curves of land determines the price OP and the whole price OP will be the economic rent as there is no transfer earnings.

Economic rent is defined as payment for any factor whose supply is perfectly inelastic when the supply is less than perfectly elastic. A part of the earnings become transfer earnings. Thus the modern theory of rent is a payment made for not only to land but also to other factors. They explain rent in terms of economic rent and transfer earnings.

6.4.4 QUASI RENT

The quasi rent is introduced by Marshall. It is an extension of Ricardian theory of rent. Quasi rent is the short-run earnings of the capital equipments such as machinery, building which are inelastic supply in the short-run. The quasi rent is only on temporary earnings. The capital equipment such as machinery, building, ship, cannot be increased in the short-run

and there is an increase in the demand for it and which will disappear in the long run due to the increase in supply of capital equipment in responses to the increased demand. In the long run, when the supply of capital equipment increases the quasi rent will disappear. In the short-run, specialised machinery has no alternative use and therefore its supply will remain fixed in the short-run even if it's earning falls to zero. Thus the transfer earning of capital equipment in short-run is zero. Therefore the whole of the earning of the machinery in short-run is a surplus over transfer earning and therefore represent rent. According to Professor Stonier and Hague, "the supply of machines is fixed in the short-run whether they are much money or little so they earn a kind of rent. In the long run this rent disappears for it is not a true rent but only an ephemeral reward a Quasi Rent."

LESSON 6.5

THEORY OF PROFIT

Introduction - Dynamic theory of Profit - Risk and uncertainty bearing theory - Rent theory of Profit.

6.5.1 INTRODUCTION

Profit is reward for the entrepreneur and it is the balance left with the entrepreneur after he makes payment for all factor services. It is worth mentioning that profits are residual income left after the payment of the contractual records to other factors of production. The entrepreneur while engaging the factor of production pays wage to workers, rent on land employed, interest on loan taken at the rate already fixed. What is left after paying the contractual record of other factors employed is the profit. Thus profit is a non-contractual income and may be positive or negative. Contractual incomes of other factors such as wage rent, and interest are always positive and never negative. The entrepreneur earns profit because he takes risks. According to Schumpeter profit is the reward of innovation. The profit can be classified as Gross profit and Net profit. The gross profit is the total profit of the entrepreneur and the net profit is arrived at by deducting from the gross profit the remuneration for the entrepreneur's own land labour and capital.

The theories of profit given by J.B.Clark, Schumpeter, Knight and others are discussed below.

6.5.2 DYNAMIC THEORY OF PROFIT

The dynamic theory of profit was propounded by J.B.Clark. A dynamic economy is one where changes are taking place. In a static economy no changes are taking place. According to him the five changes that occur in the economy are due to changes in population, capital, methods of production, forms of industrial establishment, and the demand of the consumers. These changes are constantly taking place and bring about the divergence between price and cost and thereby give rise to profit, positive or negative. In a static state, competition eliminates these types of changes. The

selling price and cost of production are equal and there are no profits. All the changes can be classified as innovation and exogenous changes.

According to Clark, innovation enables the entrepreneur to increase his production, reduce costs introduce new product, new way of advertisement etc. This will give rise to profits. But this is only temporary. The increase in profits will result in competition and the other producers follow this invention. As a result of increase in production prices fall and the profits also fall. Exogenous changes refer to those changes which are external to the firm or industry in the economy. These changes affect all firms in an industry and sometimes all the industries in the economy. Breaking out of war, occurrence of inflation or deflation, change in taste and preference of the consumers, change in the availability of substitute products are exogenous in nature resulting profit or loss for the entrepreneur.

However, the continuous changes in a society make the entrepreneur to enter into competition. The increase in profits leads to increase in wages. But wages always lie behind profits so that profits emerge.

Criticisms

Professor Knight views that dynamic theory of profits considers all dynamic changes. However,

1. All changes cannot be foreseen. There are changes which can be foreseen and not foreseen. The theory fails to make any differences in the changes.
2. Only unforeseen changes and uncertainty result in emergence of profits. If the changes are foreseen profits will disappear and only wages, interest, rent will remain.
3. According to Knight profit may arise even in the absence of five changes as stated by Clark.
4. He has ignored the risk factors.
5. According to Prof. A.K. Dasgupta dynamism, is a notion of comparative statics.

6.5.8 INNOVATION THEORY OF PROFIT

According to Schumpeter the profit is the reward for introducing innovation. Innovation is defined as a new measure or policy adopted by an entrepreneur to reduce cost of production.

Innovations here are of two types.

- I. Which reduces cost of production example new machinery new technologies etc.,
- II. Which increases the demand for the product, example a new product or a new design of the product. If innovation proves successful that is if it achieves the aim of either reducing cost of production or enhancing the demand for the product it will give rise to profit.

Thus profits arise due to innovation. In a monopoly market profit is continuously enjoyed by him if the innovations are protected by patent right. In a competitive economy the innovations are adopted by other producers and the profits shortly disappear.

Profit is both cause and effect of innovation. Profits induce the entrepreneur to introduce innovation and because of innovation profit arises. Innovation helps for the economic development of the economy.

Schumpeter's theory of innovation is also criticised.

1. Schumpeter regards the risk taking as the function of capitalist and not that of entrepreneur.
2. Uncertainty is completely ignored by Schumpeter.
3. Profit is not the reward for only innovation but also for the other functions of an entrepreneur such as organisation.

6.5.4 RISK AND UNCERTAINTY BEARING THEORY

According to Prof.Knight, profit is the reward for uncertainty bearing. He distinguished between risk and uncertainty on the one hand and predictable and unpredictable changes on the other. According to him only unforeseen changes can give rise to profits.

Risks are classified as insurable risks and non-insurable risks. Examples of insurable risks are theft, fire and of death by accident. Examples of

non-insurable risks are changes in price, demand, supply etc. According to Knight, profit is the reward for bearing non-insurable risks and uncertainty.

In a society the entrepreneur has to undertake the production under uncertainty condition. There is uncertainty regarding demand, price and cost. As there is a time gap between the period of producing and selling and many changes may take place during that period. If the entrepreneur enters into contractual agreement with the factor owners, predicting rightly the uncertainty, he earns good profits. If the predictions are wrong he gets losses. Thus profit is a reward for uncertainty. Thus profit is a residual and non-contractual income for bearing risk of uncertainty. Thus, we see that profit is a residual and non-contractual income which accrues to the entrepreneur because of the fact of uncertainty. The entrepreneur is un-hired factor he hires other factors for production. It is therefore, entrepreneur who bears uncertainty and earns profit as a reward of it.

Similarly the insurable risks are covered by insurance companies. But the non-insurable risks cannot be insured. Therefore the non-insurable risks involves uncertainty and give rise to profits.

Criticisms

1. This theory is unrealistic as it fails to separate owner and salaried manager.
2. The theory is vague in measuring the uncertainty bearing.
3. Profit as a residual income has also been criticised. Lastly the theory throws light only on monopoly profit.

Normal Profit

According to Marshall, normal profits are the supply price of average business ability and energy. It is a reward which an entrepreneur receives in the long run and it enters into the cost of production.

Monopoly Profit

Monopoly profit arises due to the power of monopoly to change the price or supply. He also has the patent right. It earns profit because of its monopoly position in the labour market. It is also innovation and uncertainty that give rise to surplus above normal profit.

Rent Theory of Profit

Rent and profits are surplus payments determined by price. Profit **is** a residual income and rent **is** a contractual income. Rent is a surplus over the transfer earnings of a factor. Profits are the residual after making all payments. It is a surplus over the cost of production. It **is** a reward for uncertainty and innovation. Thus profits are rents as both are surplus incomes which are determined by price.

QUESTIONS

1. Critically examine marginal productivity theory of distribution
2. Explain the modern theory of distribution. „
3. Examine various theories of wages.
4. State the role of trade unions in influencing wages.
5. Examine Ricardian theory of rent.
6. Explain the modern theory of rent with suitable diagrams.
7. Write notes on 1) transfer earnings 2) quasi rent.
8. "The classical theory of interest is indeterminate" - Comment.
9. Examine Keynes liquidity preference theory of interest.
10. What is liquidity preference?
11. Explain the concept of profit.
12. "Profit is the reward of innovation" - Discuss.
13. Explain the dynamic theory of profit.

UNIT – VII

LESSON 7.1 NATIONAL INCOME

Meaning - Definition - Concepts - Measurement of national income –Difficulties in measurement - National income and economic welfare.

7.1.1 MEANING OF NATIONAL INCOME

The term National Income is used to refer the money value of the total income of the economy in a year. In common parlance national income means the total value of goods and services produced annually in a country. In other words the total amount of income accruing to a country from economics activities in a years' time is known as national income. Firstly, it measures the market value of annual product. Secondly, National income is a monetary measure. Thirdly, national income includes the market value of all final goods and the value of intermediate products is not included. A final product is one which is available for immediate consumption. For example, a shirt or a sewing machine. The example of intermediate product is raw materials.

7.1.2 DEFINITIONS OF NATIONAL INCOME

The definitions of National income can be grouped into two classes as the traditional definition advanced by Marshall, Pigou and Fisher and the modern definitions.

Marshallian Definition:- According to Marshall, the labour and capital of a country acting on its natural resources produce annually a certain net aggregate of commodities, material and immaterial including services of all kinds. This is the true net annual income or revenue of the country or national dividend.

Pigovian Definition.-According to Pigou, "National income is that part of objective income of the community, including of course income derived from abroad which can be measured in money".

Fisher's Definition:-Fisher adopted consumption as the criterion of national income whereas Marshall and Pigou regarded it to be production.

According to Fisher, “The national income consists solely of services as received by ultimate consumers whether from their material or from their human environment”.

From the modern point of view, national income is defined as the net output of commodities and services flowing during the year from country's productive system in the hands of ultimate consumer.

Circular Flow of Income

The total income obtained as wages, rent, interest and profits are the national income of the country. Various households get their income from the firms for the production of goods and services. The value of all the goods produced is the national product. Thus the total national product produced by firms in a year is distributed to all factors in the form of wages, interest, rent and profits. The sum of all these factors income will be equal to the national income. Thus the national product is equal to the national income.

National Income = wages + rent + interest + profit

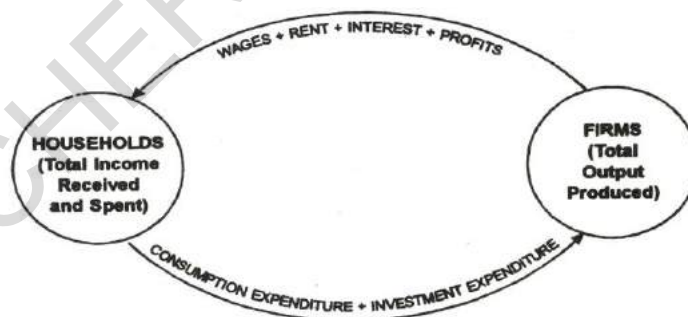


Fig. 76
Circular Flow of Income

The above figure explains clearly the circular flow of income.

7.1.3 CONCEPTS OF NATIONAL INCOME

There are various concepts of national income.

1. Gross National Product (GNP)

Gross national product is defined as the total market value of all final goods and services produced in a year. GNP includes four types of final goods and services produced in a year. GNP includes four types of final goods and services. (i) Consumer goods and services to satisfy the

immediate wants of the people (ii) gross private domestic investment on capital goods consisting of fixed capital formation, residential constructions and inventories of finished and unfinished goods (iii) goods and services produced by government and (iv) net export of goods and services.

$GNP = \text{government production} + \text{private output}$

2 . Net National Product (NNP)

The second concept is Net National Product. The capital goods like machinery wear out as a result of continuous use. This is called depreciation. This is also called National Income at market prices. Hence $NNP = GNP - \text{depreciation}$.

3 . National Income at factor cost

National income at factor cost denotes the sum of all incomes earned by the factors. GNP at factor cost is the sum of the money value of the income produced by and accruing to the various factors of production in one year in a country. It includes all items of GNP less indirect tax. GNP at market price is always more than GNP at factor cost as GNP at factor cost is the income which the factors of production receive in return for their service alone.

$\text{National income at factor cost} = \text{net national product} - \text{indirect taxes} + \text{subsidies}$.

4 . Personal Income (PI)

Personal income is the sum of all incomes received by all individuals during a given year. Some incomes such as social security contribution are not received by individuals, similarly some incomes such as transfer payments are not currently earned, for example old age pension. Therefore,

$\text{Personal income} = \text{National income} - \text{social security contribution}$
 $- \text{corporate income taxes} - \text{undistributed corporate profit} + \text{transfer payment}$.

5. Disposable Income (DI)

$\text{Disposable income} = \text{personal income} - \text{personal taxes}$

After a part of the income is paid to the Government in the form of taxes, the remaining income is called disposable income.

Definition of National Income

Marshall defines national income as, "the labour and capital of a country acting on its natural resources produced annually a certain net aggregate of commodities material and immaterial including services of all kinds. This is the true net annual income or revenue of the country or the National dividend".

7.1.4 MEASUREMENT OF NATIONAL INCOME

There are three alternative methods for measuring national income. They are:-

I. Product method

Under this method the income from all the sectors of the economy are taken. For this, the total value of final goods and services produced in a country during a year is calculated at market price. The economy is divided into sectors such as agriculture, mining, Manufacturing, small enterprises, commerce, transport, communication etc. The net value of all the products in various industries during a given year is added up. The aggregate value of all the industrial production plus the income from abroad gives the gross national product. This method of estimating national income is known as product method. However, only final goods and services are considered in this method and the intermediary goods and services are left out.

2. Income Method

Under this method, the income earned by all individuals of the country during a year is taken. Individuals earn income in the form of rent, profit, wages, salaries, and interest. This method is called income method.

8. Expenditure Method

This method includes the total expenditure of a country during a given year. The income is spent on consumer goods or on producer goods. The consumption expenditure and investment expenditure of all the individuals in a government during a year is added. Thus

National Income = Consumption Expenditure + Investment Expenditure + government expenditure + exports - imports.

$$Y = C + I + G + X - M$$

4. Value Added Method

Another method of measuring national income is the value added by industries. The difference between the value of material output and input at each stage of production is the value added. If all such differences

are added up for all industries in the economy we arrive at the gross domestic product.

Any one of the above four methods can be used to measure National Income.

7.1.5 DIFFICULTIES IN THE MEASUREMENT OF NATIONAL INCOME

There are certain difficulties in the measurement of National Income. They are given below:

1. The National Income must be calculated in monetary terms. There are certain nonmonetary transactions which are not included in the value of product. For example the unpaid personal services of a house wife cannot be included in the national product.
2. The Government services such as justice, administration and defense should be treated as equivalent to any other capital formation.
3. The treatment of profits of foreign firms as income of the parent country is another difficulty in measurement, because the foreign firms production is taking place in India while the profits of the firm is not considered in the income calculation of the country.
4. In underdeveloped countries like India, the major part of the output does not come to the market due to nonmonetised transaction. This results in the underestimation of the National Income.
5. Due to illiteracy, regular accounts are not kept by the producers. This also makes the national income calculation more difficult.
6. The agriculture and industrial sectors are unorganized and scattered in India.
7. Finally the lack of statistical data and unreliability of statistics is the major difficulties in measuring the National Income.
8. A greatest difficulty in calculating the national income is of double counting which arises from the failure to distinguish properly between a final and intermediate product.
9. Income earned through illegal activities such as gambling or illicit extraction of wine etc. is not included in national income. Such goods and services do have value and meet the needs of consumers. But by leaving them out national income works out to less than actual.
10. There arises difficulty of including transfer payments in the national

income. Individuals get pension, unemployment allowance and interest on loans. But whether these should be included on the national income is a difficult problem.

11. Another difficulty in calculating national income is that of price changes which fail to keep stable the measuring rod of money for national income. When the price level in the country rises the national income also shows an increase even though production might have fallen.

Thus the above difficulties involved in National Income analysis are both statistical and conceptual. Therefore the National Income cannot be calculated accurately.

7.1.6 NATIONAL INCOME AND ECONOMIC WELFARE

National Income of the country shows the importance of different sectors and their intersectoral relationship. National Income is used to estimate the level of business activity in an economy. It is also useful in giving a correct picture of the structure of economy. National Income is used in fiscal measures such as allocation of resources and grants to different parts of the country. For economic planning, national income data play an important role. The development plans are based on the appraisal of the National Income. Thus the National Income is used to measure the economic welfare of a country. The greater the national income larger will be the wellbeing of the people. Thus the national Income is very useful in measuring the welfare of the people.

However there are some limitations of national income as a measure of economic welfare as it does not include certain services and production activities which affect welfare. Some of the factors which affect human welfare are not included. Of the GNP estimates the factors like leisure, quality of life, Non-market transactions, standard of living etc. are outside the preview of GNP which measure the welfare.

LESSON 7.2

BUSINESS CYCLES

Meaning - Types of cycles – Phases of trade cycles - Theory of trade cycle -Measures to control business cycles.

7.2.1 MEANING

The fluctuations in economic activities such as employment, Income, output and price level are called business cycles. "A trade cycle is composed of periods of good trade characterised by falling prices and low unemployment percentage."-Keynes. Professor Michell states that "Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organise mainly in business enterprises". A cycle consists of expansions occurring at about the same time in many economic activities followed by similarly general recessions, contractions and revivals which merge into the expansion phase of next cycle. This sequence of changes is recurrent. Thus business cycles refer to the fluctuations in aggregate employment, output and price level.

7.2.2 TYPES OF CYCLES

Business cycles are classified as under:

I. The short Kitchin cycle

This cycle duration is approximately 40 months. It is named after the British Economist Joseph Kitchin in 1923. According to him a major cycle consists of three minor cycles of 40 months.

2.The long Jugler cycle

Clement Jugler in 1862, a French economist considered major cycles of duration of 9 1/2 years. This cycle is also known as major cycle.

3. Very long Kondratieff cycles

These are long period cycles of 50 to 60 years. According to Kondratieff, there are longer waves of cycles of more than 50 years duration made of 6 Juglar cycles.

7.2.8 PHASES OF TRADE CYCLES

A trade cycle has four distinct phases. They are Depression, Recovery, Prosperity, and Recession. They are shown in diagram given below:

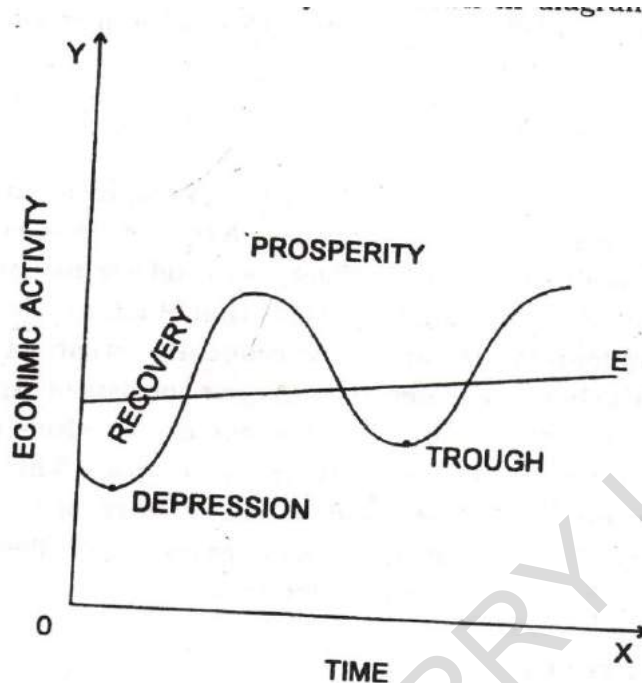


FIG. 77
Various Phases of Business Cycles

In the figure, E represents the equilibrium line. Starting from depression the cycle passes through recovery and prosperity phase, recession and depression. These phases are recurrent and uniform in the case of different cycles.

The characteristic features of each phase are discussed below.

Depression: During this phase of the trade cycle all economic activities of a community are at low level. There is a decline in the production of goods and services, employment, income, demand and prices. The general decline in business activity leads to a fall in bank deposits. Business borrowings also decline. Thus depression faces mass unemployment, fall in prices, profits, wages, interest rate, consumption, expenditure, investment and bank credit. Though it is short lived, but the limiting factors tend to bring the contraction phase to an end. It paves the way for revival.

Recovery: The originating forces result in the replacement of semi-durable goods. Investment increases in order to meet this increased demand. Employment also increases. Industry revival starts. Capital goods industry and consumer goods industry starts increasing production. This process becomes cumulative. There is a rise in employment, output, price level and profits. Finally revival leads to prosperity.

Prosperity: During prosperity, output, employment, income and demand are at a high level. The factor prices particularly wages will not rise in proportion to the rise in prices. The gap between prices and cost increases the profits. The increase of profits combined with waves of optimism results in increased investment. The fall in interest rate leads to higher borrowings by businessmen for investment purpose. This leads to an expansion of economic activity. Demand for consumer good rises and the price level also rises. Thus the process becomes cumulative and self-reinforcing. The economy reaches the peak known as prosperity or boom.

The overall employment and inflation acts as breaks in the expansionary path. The recession starts as there is a fall in profit. The fall in profits is due to the rise in cost of production. Thus recession starts.

Recession: During recession investment, employment, income, output and demand falls. As costs are higher than prices, profits fall and investment declines. This process becomes cumulative. Recession may lead to crisis. Depression follows recession and there is a general decline in economic activity. Thus the cycle is completed.

7.2.4 THEORIES OF TRADE CYCLES

They are Hawtreys' theory of trade cycle, Schumpeters' theory of innovation and Keynes theory of trade cycle.

1. Hawtreys' Theory of Trade Cycle

According to Hawtreys, business cycle is caused by monetary phenomenon. The expansion and contractions of bank credit creates business cycle. The expansion of bank credit and fall in interest rate cause prosperity. The contraction of bank credit and rise in interest rate result in depression.

This theory has been criticised for over emphasising the monetary factors to the neglect of nonmonetary factor in explaining cyclical fluctuations.

2.Schumpeter Theory of Trade Cycle

The innovations theory of trade cycles is associated with the nature of Joseph Schumpeter. According to him innovations in the structure of an economy are the source of economic fluctuations. Trade cycles are the outcome of economic development in a capitalistic society.

The innovations in the economy cause business cycle. An innovation may be a new product, new method of production, new market or new raw materials. Innovation leads to increase in money income and price and profits. Innovation in a field spread over to other fields.

This theory is also criticised as it gives importance to innovation and bank credit. Schumpeter's contention that cyclical fluctuations are due to innovations is not correct. As a matter of fact trade cycles may be due to psychological, natural or financial causes. Schumpeter's analysis is based on unrealistic assumptions of full employment of resources.

3. Keynes' Theory Of Trade Cycles

According to Keynes, a change in marginal efficiency of capital (MEC) results in fluctuations in business activity. Lack of aggregate demand is the cause of unemployment and depression. By increasing aggregate demand revival can be brought out. During prosperity MEC is high, investment raises output, employment and income also increases. Keynes criticises for over emphasising MEC and his cheap money policy as a remedy for economic crisis. The government intervention is also criticised. Keynes' theory of trade cycle is superior to the earlier theories because it is more than a theory of the business cycle in the sense that it offers a general explanation of the level of employment, quite independently of cyclical nature of changes in employment. However, Keynes has been criticised for his analysis of business cycle based on expectation. In fact, he over emphasised the role of expectation in influencing MEG. Another weakness of Keynes's theory of trade cycle is that some of its variables such as expectations, marginal efficiency of capital and investment cannot explain the different phases of the

cycle. It is regarded as less than a complete theory of business cycle because it makes no attempt to give a detailed account of the various phases of the cycle.

7.2.5 MEASURES TO CONTROL BUSINESS CYCLES

The measures to correct business cycles are discussed below.

1. Monetary measures

The monetary measures refer to the policy of the central monetary authority of the country. The monetary policy consists of two types of measures.

i. Measures for the regulation of credit money

ii. Measures for appropriate interest policy

The Central Bank uses the bank rate policy, open market operations and other instruments to regularise the volume of credit in the economy. The second type of measures, refer to the increase in the bank rate and reduction in the investments at times of prosperity. At times of depression the bank rate is lowered so that investments are encouraged.

Monetary policies are regarded as a major weapon against cyclical fluctuations. According to Keynes business cycles cannot be eliminated by monetary policies. High interest rate may not reduce investment if the profit expectations are high. According to Keynes business cycle are not due to monetary factors but due to the fluctuations in the marginal efficiency of capital. Business cycles can be eliminated only by maintaining full employment. However Keynes accepts that suitable monetary policy can attain full employment by keeping interest rate at a low level.

2. Social measures

According to socialistic economists, business cycle occur in a capitalistic system. The capitalistic system should be replaced by socialistic system then the trade cycles will automatically disappear.

3. Increase in purchasing power

Under-consumption and over-saving is the cause of business cycle. Robson recommends rising wage rate in times of boom to increase the purchasing power. He also recommends reduction in the inequality of wealth. The government also should subsidise the consumers' purchases.

4. Direct controls

Some measures of direct controls are price control, price support and rationing. Price support is a method which fixes a minimum price of certain commodities. Rationing and price control are adopted at times of boom.

5. Stabilisation policy

To stabilise the economy some fiscal measures can be adopted. They are changes in taxation, unemployment, compensation, welfare transfers, and changes in government expenditure. Thus business cycles can be remedied by adopting simultaneously all the above said measures. Government should act with the right type of taxation and expenditure measures, to check business fluctuations. It may not be possible for the government officials to follow these measures promptly. The economists have suggested the built in stabilizations to deal with the business cycles. An automatic stabiliser or built in stabiliser is one which smoothen the cyclical fluctuations without any direct action on the part of the government. The progressive type of income tax automatically offsets the cyclical fluctuations. In upswing people pay more taxes and their expenditure is reduced. Similarly in the downswing people pay less tax and they have more income to spend. Thus the automatic stabiliser helps to reduce the fluctuations in the economic activities.

QUESTIONS

1. Examine various concepts of national income and the importance of national income in the economic development.
2. State the various methods of measuring national Income. Comment on the difficulties in the measurement of national Income.
3. Distinguish between GNP and NNP.
4. What are the various phases of Business Cycle? Suggest suitable measures and appropriate policies to overcome the Business Cycle.
5. Explain the concept of built in stabilizers.
6. What is the relevance of national income statistics in business decisions?. What kinds of business decisions are influenced by change in national income?
7. Is national income a satisfactory measure of economic welfare? Give reasons.
8. Examine the usefulness of the concept of national income in analysing an economy's aggregate behaviour.
9. What parts do fiscal and monetary policy of government play in controlling business cycles?
10. Describe the 'turning points' and the factors responsible for that in the business cycles.

UNIT VIII

LESSON 8.1 INTERNATIONAL TRADE

Introduction - Difference between internal trade and international trade - Theory of international trade - Superiority of modern theory over classical theory.

8.1.1 INTRODUCTION

International trade refers to the trade between different regions and countries. In a highly interdependent modern world all countries depend on one another for the goods and factors. No country can exist without foreign trade. The international trade has got certain advantages. It helps to get gains from the international division of labour. It helps for the growth of the industrial economy. For example, England, Japan, Germany, Denmark, etc., depend on foreign trade for their development. Countries like the U.S.A. Russia and China are less dependent on foreign trade. Thus the international trade plays an important role in the growth of GNP (Gross National Product) of all countries. Countries like India depend on foreign trade for the goods and services and financial assistance. India cannot achieve development without the international trade.

The importance of international trade stresses the need for globalisation. The international trade is different from domestic trade. The differences between international and internal trade are discussed below.

8.1.2 DIFFERENCES BETWEEN INTERNAL TRADE AND INTERNATIONAL TRADE

1. Immobility of labour and capital

There is free mobility of labour and capital within the country. They are not so mobile between two countries. In classical economics, the principles with determined relative values or prices were different for internal and international trade because the factors of production, particularly labour and capital, were immobile between the countries and mobile within a country.

2. Different production conditions

The production conditions differ from country to country due to technological differences and resources, and cost of production. The

production condition remains the same within the country. This difference in cost of production is the basis for international trade.

3.No restrictions on trade

In internal trade, trade can take place between different parts of the country without any restrictions. In international trade, restrictions on imports and exports such as export duties import duties, quota are imposed

4.Different monetary system

Different countries have different currencies. For example, America make payments in dollar, Britain in pound and Japan in yen. In national trade same currency is used for making payment.

5.Difference in national policies

National policies are evolved mainly to tackle local national problems which differ widely in different countries. National policies are therefore evolved to deal with such domestic matters as Wages, Prices, Competition, Investment, Business regulation and on their counts too, these are wide differences in various countries. The course of international trade is often affected by such national policies as tariffs, exchange controls, quotas, barriers etc.

6. Separate markets

National markets are separated by language, customers, wages, habits, tastes, rules and regulations, laws, weights and measures, terms of sales etc. Such differences lead to interference by the State for national reasons. But in international trade even standards of production differ as also of measurements. For example, Oil is measured in the US in barrel per day while in England it is measured in tons per year.

These are the differences between internal and international trade.

8.1.3 THEORY OF INTERNATIONAL TRADE

Different theories were propounded to explain the equilibrium in international trade. They can be classified as classical theory, neo classical

theory and modern theory. Economists like Adam Smith, David Ricardo and J.S.Mill have developed the classical theory. The theory was further developed by Haberler and Bastables. The modern exponents of the theory of international trade are Hecksher and Ohlin.

Absolute Cost Theory

According to Adam Smith, trade is based on the principle of absolute cost advantage. A country may be more efficient in producing one commodity and less efficient in the production of another commodity. It will be beneficial for a country when it specialises in the production of these commodities in which it has a comparative advantage over other.

According to Adam Smith trade arises if one country has an absolute cost advantage in the production of one and disadvantage in the production of other. The price of the commodity which it exports should be low relative to its price in other country. This can be explained with the following example. The unit costs of production in labour unit of the commodities in the two countries are given as follows.

Country	Unit cost of production	
	cotton	Jute
INDIA	5	10
BANGLADESH	10	5

Indian labour is more efficient in the production of cotton and Bangladesh is more efficient on the production of jute. One man hour produces 0.2 unit of cotton and 0.1 unit of jute in India. In Bangladesh one man hour produces 0.1 unit of cotton and 0.2 unit of jute. India has an absolute cost advantage in the production of cotton and Bangladesh enjoys an absolute cost advantage in the production of Jute.

Both the countries gain if India exports cotton and Bangladesh exports jute. After specialisation both countries gain from trade. When India gets more than half unit of jute in exchange for one unit of cotton from Bangladesh she gains from trade. Similarly, when Bangladesh can gain maximum of two units of jute in exchange for one unit of cotton she also gains from trade. Thus the international trade takes place.

According to Adam Smith, trade arises due to absolute differences

in costs. Smith's argument of absolute advantage and trade seems to be very convincing, but it assumes and rather unnecessarily, that international trade requires the producer of exports to have an absolute advantage and an importing country to have an absolute disadvantage. That is, an exporting industry must be able to produce, with a given amount of capital and labour, a larger output than any rival.

However, Adam Smith's analysis was far narrow and a more comprehensive theory was needed to explain general theory of international trade. Adam Smith's analysis was incapable of dealing with the kind of situation where a country had no line of production in which it was clearly superior.

Robert Torrens and David Ricardo elaborated the Adam Smith statement by formulating a more general theory of international trade.

Comparative Cost Theory

The classical theory of international trade is also known as theory of comparative cost propounded by David Ricardo. It was further developed by J.S. Mill, Cairnes, Bastables and Von Haberler who were the modern exponents of the theory.

The theory of comparative cost is based on the following assumptions.

1. Labour cost is the only cost of production.
2. All units of labour are homogeneous. Labour is perfectly mobile within country and perfectly immobile between countries.
3. Transport costs are zero.
4. Production is subject to law of constant returns to scale
5. The theory was 2×2 model. That is trade takes place between two countries, two commodities and two factors.
6. Product and factor markets are perfectly competitive.

Ricardo explains the comparative cost advantage with an arithmetical illustration. England and Portugal are the two countries where wine and cloth are the two commodities produced. The following table explains this.

Country	Man hours required to produce one unit	
	CLOTH	WINE
PORTUGAL	90	80
ENGLAND	100	120

Portugal has an absolute cost advantage in the production of both cloth and wine. But she has a comparative cost advantage only in the production of wine as given by $80/120 < 90/100$. England has a comparative disadvantage in the production of both the goods. But she has smaller comparative disadvantage in the production of cloth as given by $100/90 < 120/80$. Therefore she specialises in the production of cloth. She exports cloth to Portugal and imports wine from Portugal. Thereby both countries gain from trade. The theory of comparative cost is basically a simple extension of the principle of division of labour.

Though Ricardo's comparative cost theory is an improvement over the absolute cost theory, the actual terms of trade was not considered by him. Ricardo's theory was incomplete as it focussed attention only on the supply side and ignored the demand side. As Harberler put it "this doctrine simplifies reality too much to be adequate". This theory fails to establish the precise terms of profitable exchange. The theory has been criticised on the grounds that the two country two commodity trade was unrealistic, immobility of labour internationally and mobility nationally was also illogical.

Ricardo's theory was further developed by John Stuart Mill, Alfred Marshall and Edgeworth who considered both demand and supply.

Modern Theory of International Trade

Bertil Ohlin and Eli Hecksher had propounded the modern theory of international trade. According to Bertil Ohlin, the base for international trade lies with two factors viz. the factor endowment and factor requirements. The cause of international trade lies in the differences in prices of commodities.

The following are the assumptions of the modern theory:

1. It is a 2*2*2 model. The theory considers two factors, two commodities and two countries;
2. Perfect competition is assumed in both product and factor markets;
3. There is full employment;
4. Factors are homogeneous;
5. The two commodities have different factor intensities – labour intensity and

- capital intensity;
- 6. Production function is the same in both countries;
- 7. Perfect mobility of factors within country and immobile between countries;
- 8. There are no transport cost;
- 9. There is free trade between countries;
- 10. Technology is fixed.

With these assumptions, Ohlin states that the difference in relative commodity prices which are due to the differences in their factor endowments is the cause of international trade. The country imports the commodity which requires large amount of the scarce factor. It exports the commodity which requires abundant amount of the factor available in the country.

He explains this with the help of the trade between England and Australia. In Australia land is available in large quantity. Therefore commodities which require more of land such as wheat, wool can be produced, in large quantity at cheaper cost. England is abundant in capital factor. It can produce commodities which require more unit of capital. England can export the capital intensive commodity to Australia and Australia can export the labour intensive commodity to England. The theory is explained in the following figure.

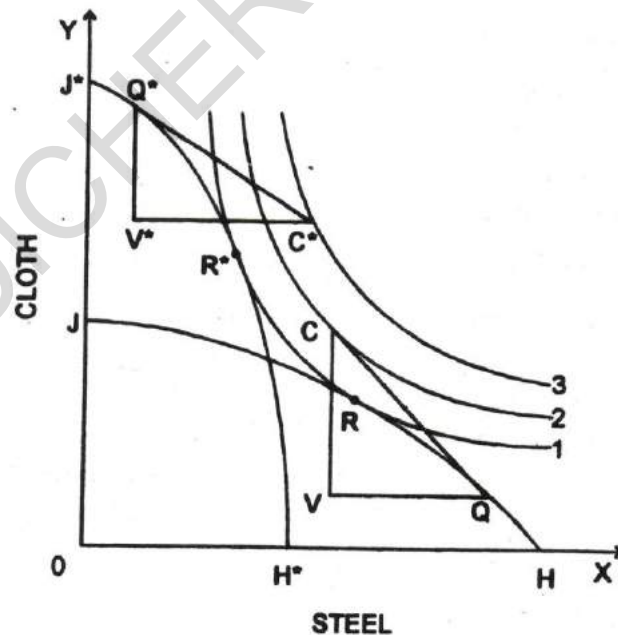


Fig. 78

Ohlin explains the factor abundance in terms of factor prices. There are two countries A and B. America, is abundant in capital and England

is abundant in labour. A can produce capital intensive commodity and export. B can produce labour intensive commodity and export. Steel is the capital intensive commodity and cloth is the labour intensive commodity. The Jff curve is the production possibility curve of America. J'H' is the production possibility curve of England. Before trade America produces and consumes at R and Britain at R. With free trade America produces at g and consumes at C and Britain at g and Cl. The trade triangles are CgV AND g C'V'. America exports steel and Britain exports cloth.

Criticisms:

However the theory has been criticised on the following grounds:

1. The model considered only two countries, two factors and two commodities. The theory is based on unrealistic assumptions of full employment and perfect competition
2. Ohlin model is static model. The factors are not homogeneous. For example, labour differs in skill and efficiency.
3. Production technique is also not the same in all countries.
4. It fails to give a comprehensive approach for the theory of international trade.
5. Factors are not homogeneous as the theory assumes in reality, between two countries which can be measured for calculating factor endowment ratio.
6. The theory is often criticised on the ground that it is a partial equilibrium analysis. It has failed to develop a comprehensive general equilibrium concept.
7. Ohlin's theory has been characterised as somewhat vague and conditional. As pointed out by Haberler, "with many factors of production some of which are qualitatively incommensurable as between different countries, and with dissimilar production functions in different countries no sweeping a priori generalisation concerning the composition of trade are possible ".

In spite of the above criticisms, the modern theory of international trade is certainly superior to the classical theory of international trade.

8.1.4 SUPERIORITY OF MODERN THEORY OVER CLASSICAL THEORY

Modern theory of international trade is superior to the classical theory in the following aspects.

1. It considers international trade as inter regional trade.

2. This theory considers two factors, labour and capital unlike the labour theory of value of classical economists.
3. The factor endowment differences in different countries are taken into consideration by the modern theory.
4. It is more realistic as it takes into consideration the relative prices of factors and the relative prices of goods. The classical theory considers only the relative prices of goods.
5. Ohlin's theory is superior to Ricardian theory in that it regards difference in factor supplies as basic for determining the pattern of International trade.
6. It considers difference in relative productivity of labour and capital as the basis of international trade while classical theory considers productivity of labour alone.
7. The modern theory satisfactorily explains the causes of difference in comparative advantage whereas Ricardian theory could not.
8. The classical theory demonstrates gains from trade between the two countries. On the other hand Ohlin's model is scientific and concentrates on the basis of trade.

LESSON 8.2

BALANCE OF PAYMENTS AND BALANCE OF TRADE

Introduction - Meaning and Definition - Causes of disequilibrium in the Balance of Payments - Measures to correct disequilibrium – Importance of Balance of Payments.

8.2.1 INTRODUCTION

The balance of payment is an indicator of country's economic growth. Where the country has a favourable balance of payment it indicates the economic prosperity of the nation. The deficit balance of payment indicates the country's underdevelopment. Sometimes the developed countries also may have deficit balance of payment. For example, the United States of America may have a deficit balance of payment because of the huge assistance given to the poor countries.

8.2.2 MEANING AND DEFINITION

The term balance of payments is used to denote the record of economic transactions between one country and another. It is a statistical record in the form of balance sheet. It comprises of all its transactions with the rest of the world during any given period. According to International Monetary Fund, the balance of payments for a given period is defined as a systematic record of all economic transactions during the period between residents of the reporting countries. It comprises of all payments made by a country and all receipts which are received by a country. The difference between the receipts and payments is the surplus or deficit. It is an application of double entry book keeping. The balance of payments is usually given in two parts the current account and the capital account. The current account includes the exports and imports of all goods and services, interest and dividend payments, private gifts etc. The capital account includes the capital transfers, imports and exports, all debt instruments, capital stock and imports and exports of monetary gold.

The following table lists out the components of balance of payments.

RECEIPTS (Credits)	PAYMENTS (Debits)
1. Exports of goods and services a. Merchandise b. Services c. Income from foreign investments	Imports of goods and services a. Merchandise b. Services c. Foreign income from investments made at home
2. Sales of long term claims a. equity claims b. debt claims	Purchases of short term claims a. Equity b. Debt claims
3. Sales of short term claims a. Against deposits b. Others	Purchases of long term claims a. Against deposits b. others
4. Sales of good	Purchases of good
5. Unilateral receipts	Unilateral payments
6. Errors and Omissions	Errors and Omissions

A country's total exports of goods and services are the sources of receipts. In addition to this it includes invisible services such as tourism, shipping, air transport, banking and insurance services etc. Similarly payments made to the other countries for the imports and other services are included in the payments side.

Thus, there are two categories in the Balance of Payment Accounts of a Country.

1. Payments in respect of exports and imports (including visible and invisible items) and
2. Payments in respect of lending and borrowing. If during any period payments are greater than receipts. Balance of payments is said to be deficit, if the country's payments are less than the receipts, balance of payments is said to be surplus.

Balance of Payments and Balance of Trade:

A country's balance of trade is different from its balance of payments. Balance of Trade refers to the value of imports and exports of merchandise. Balance of Payments includes not only the exports and imports but also the invisible item such as shipping, insurance, tourism and other services. It includes all debit and credit items for which the country makes and recovers payments during a given period. This Balance of Trade is only

a part of Balance of Payments.

A favourable Balance of Trade refers to the surplus of exports over imports of goods and services. An unfavourable balance of trade refers to the excess of imports over exports.

8.2.3 CAUSES OF DISEQUILIBRIUM IN THE BALANCE OF PAYMENTS

The disequilibrium arises when the total amount payable to other countries on account of international transactions is not equal to the total amount receivable by the country. The causes for the disequilibrium in balance of payments are given below;

1. The main cause for the disequilibrium is the imbalance between exports and imports by goods and services. The exports are small because of high cost and prices. When the price of goods are high, exports are discouraged and imports are encouraged.
2. Trade cycles also cause the disequilibrium. Fluctuations in the economic activity are shown as Trade cycles. At the time of prosperity the imports will increase due to the change in the income of the people. At times of depression the exports will increase due to fall in the prices.
3. The lack of capital available in the economy also causes disequilibrium in the balance of payments. When the domestic investments exceed domestic saving, imports exceed the exports. Thus, changes in the economic growth and the demand for capital cause disequilibrium.
4. Technological changes means innovations or inventions of new goods. The changes in technology affect the demand for goods and services. Innovation leads to an increase in exports and a fall in imports.
5. Structural changes in the economy also cause disequilibrium. For example, due to change in the crop pattern in India jute production may fall. This results in fall in the Indian jute exports.
6. The balance of payment is affected by changes in the rate of foreign exchange. If the country's currency value increases, import will become cheap and exports become dearer. The imports will increase and exports decline. Thus a change in the value of the currency causes disequilibrium in the balance of payments.
7. Change in the price level causes disequilibrium in the balance of

payment. Price changes may be inflationary or deflationary. Deflation causes surplus in the balance of payment. Surplus balance of payment does not cause serious concern from surplus country's point of view unless it leads to wasteful expenditure and misallocation of resources. On the other hand inflationary changes in prices create deficit in the balance of payment. Deficit balances of payments result on increased indebtedness, depletion of gold reserves, loss of employment, distortion in the domestic economy, and causes serious problems in the deficit countries.

8. Other factors which may cause temporal disequilibrium maybe as follows:

- a. Seasonal disturbances or crop failure particularly in the primary goods producing countries.
- b. Rapid growth in population leading to large scale import of food items.
- c. Ambitious development projects requiring heavy imports of technological equipment, machinery etc. and technical know- how.
- d. Demonstration-effect of advanced countries on the consumption pattern of people of less developed countries.

So far, different types of causes such as price and cost, quantity of trade, national income, structural change, trade cycles and rate of exchange are discussed. Now, measures to correct disequilibrium can be discussed. There are four important methods of correcting disequilibrium in the balance of payments.

8.2.4 MEASURES TO CORRECT DISEQUILIBRIUM

The basic fact which a policy maker has to bear in mind is that under free trade system deficit in the balance of payment arises mainly either because the aggregate domestic demand for goods and services is greater than total domestic supply, prices of domestic and foreign goods being comparable or because domestic prices are significantly higher than foreign prices. Thus the deficit may be removed in two ways (a) by increasing domestic production at an internationally comparable cost of production or (b) by reducing excess demand.

1. Export Promotion And Import Restrictions

To encourage export, the cost of production has to be reduced. The wages and the interest rate should be reduced. The supply of money has to be reduced to bring down the prices. Export subsidies are granted to the producers to increase the exports. Imports are discouraged by the imposition of import duties and quota.

2. Devaluation or exchange depreciation

Relative prices of import and export can be changed through devaluation or exchange depreciation. While exchange depreciation refers to fall in the value of home currency in terms of foreign currency, devaluation refers to fall in the value of home currency in terms of gold. Devaluation and exchange depreciation change the relative price of import and export-import price increase and export price decrease not necessarily in the proposition of devaluation. Thus if devaluation or exchange depreciation is effective, import decreases and export increases.

Another method is to reduce the external value of the currency. When the home currency's value is reduced, the domestic goods become cheaper and export prices fall. The prices of the imports will go up. This encourages export and discourages imports. Devaluation may not be successful when the other countries also follow devaluation. After independence India has devalued her currency in 1949, in 1966, in 1991 and recently in 1995 October.

3. Inflation

When the inflation is checked, the prices are lowered. The exports will increase and imports decreased. This will correct the adverse balance of payments. Prices can be reduced by adopting fiscal and monetary measures.

4. Exchange Control

Finally exchange control method is used to correct the disequilibrium. Exchange control refers to a set of restrictions imposed on the international transactions and payments by the government or exchange control authority. Deflation is dangerous. Devaluation is a temporary method. Therefore these methods cannot be used successfully. The government has to control the foreign exchange directly. All the exporters have to surrender the

foreign currency to the government. Then the government distributes the foreign currency to the licensed importers. Exchange control system as a measure of adjusting adverse balance of payment differs radically from the indirect corrective measures. While, the latter works through market forces of demand and supply conditions, the former works through artificial system created by arbitrary rules and regulations. Exchange control mechanism acts as the last resort in the hands of Government under severe strain of balance of payment deficit. The exchange control is said to possess a superior effectiveness in providing solution to the deficit problem.

In short, balance of payment disequilibrium can be corrected by the combination of the following methods.

- I. Monetary and fiscal measures
2. Exchange rate adjusted for with devaluation
3. Trade restrictions i.e. tariff, quota etc.
4. Capital movement i.e. Borrowing or lending abroad.

All the above methods can be applied depending upon the nature of disequilibrium.

8.2.5 IMPORTANCE OF BALANCE OF PAYMENT

The balance of payments gives clear picture of the country's international transaction during a particular period. The balance of payment reflects the international financial position of the economy. It helps the government to take monetary and fiscal measures. The balance of payments serves as a very useful purpose in so far as it yields necessary information for the future policy formulation in regard to domestic monetary and fiscal policy and foreign trade policy. The balance of payment account provides extremely useful data to the economic analysis of country's strength and weakness as a partner in the international trade. It also reveals the changes in the composition and magnitude of foreign trade. The changes that are deferent to the economic wellbeing of the country warrant necessary action by the government. It emphasises the importance of international trade on the national income. For example, the developing countries depend upon foreign countries for their economic development.

The balance of payment is an indicator of country's economic growth. When the country has a favourable balance of payment it indicates the economic prosperity of the nation. The deficit balance of payment indicates the country's underdevelopment. Sometimes the developed countries also may have deficit balance of payment.

For example, USA may have a deficit balance of payment because of the huge assistance given to the poor countries. Thus the country's balance of payment cannot be an index of the economic development.

Questions:

1. Discuss the classical theory of international trade.
2. State the differences between the internal trade and international trade.
3. Examine the Bertil Ohlin theory of international Trade.
4. Distinguish between Balance of Trade and Balance of Payments.
5. Examine the causes of disequilibrium in the balance of Payment. Suggest measures to solve the disequilibrium.
6. Discuss the doctrine of comparative advantage. What is its superiority over the classical theory?
7. What do you understand by balance of payment? Discuss various types of balance of payment accounts.
8. Define balance of payment. Why is balance of payment statistic important?
9. What is meant by devaluation? How can devaluation act as a Corrective measure of unfavourable balance of payment?
10. What is the purpose of exchange control? Examine the efficacy of exchange control as measure to correct adverse balance of payment.