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ECONOMICS FOR ENGINEERS

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**VK (INDIA)
ENTERPRISES**

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Short Answer Type Questions with their Answers

SYLLABUS

ECONOMICS FOR ENGINEERS (COMMON FOR ALL BRANCHES)

Class Work: 50 Marks

Theory: 100 Marks

Total : 150 Marks

Duration of Exam: 3 Hrs

UNIT I

Definition of Economics - various definitions, Nature of Economic Problem, Production Technology and Economics.

Concepts and measurement of utility

Law of Diminishing Marginal Utility, Law of equi-marginal utility - its practical application and importance.

UNIT II

Meaning of Demand, Individual and Market demand schedule, Law of demand, shape of demand curve, Elasticity of demand, measurement of elasticity of demand, factors affecting elasticity of demand.

UNIT III

Point form
Meaning of production and factors of production, Law of variable proportions, Returns to scale, Internal and External economies and diseconomies of scale. Various concepts of cost - Fixed cost, variable cost, average cost, marginal cost, money cost, real cost, opportunity cost. Shape of average cost, marginal cost, total cost etc. in short run and long run.

UNIT IV

Meaning of Market, Types of market - Perfect Competition, Monopoly, Oligopoly, Monopolistic competition (Main features of these markets) Supply and Law of Supply, Role of Demand & Supply in Price Determination and effect of changes in demand and supply on price.

UNIT V

Nature and characteristics of Indian economy Privatisation - meaning, merits and demerits, Elementary Concepts of VAT, WTO, GATT & TRIPS agreement.

UNIT VI

Enquiry into the Nature and Causes of Wealth of Nations Till the end of 18th and the mid of the 19th century (1776-1850), several great Economists like Ricardo, Malthus, J.B. Say etc. had fully supported the thoughts of Adam Smith. These economists are known as classical economists. From the middle of 19th century to the first three decades of the 20th century (1850-1930) economists like Menger, Walras, Cournot, Marshall, Pigou etc. had made significant contributions to the development of the study of Economics. A good number of these

1 DEFINITION OF ECONOMICS

Q 1. What is Economics ?

Economics is a popular, useful and significant social study. It studies economic activities of a society as possibility curve Economic laws and their nature, Relation between Science, Engineering and Economics.

Economic activities are those activities which are concerned with the efficient use of such scarce means as can satisfy the wants of the man. Human wants are unlimited, in the sense that as soon as one want is satisfied another crops up. Most of the means satisfying these wants are limited, because their supply is less than demand. These means have many alternative uses. Because of scarcity of means and the diverse uses, there emerges a problem of choice. Everybody has to make a choice with regard to the use of his scarce means so that he may get maximum satisfaction from them. In short Economics is the study of those activities of human beings which are concerned with the satisfaction of unlimited wants by utilizing limited resources.

Economics is not concerned with lifeless matter as is the case with natural sciences like Physics and Chemistry.

Q 2. Evolution of Economics

The term 'Economics' is derived from two words of Greek language, namely Oikos (household) and Nemein (to manage), meaning thereby Household Management. Earlier, it used to be called as Political Economy. Following this approach, Indian statesman, Chanakya or Kautilya in his famous book 'Arth-Shashtra' has examined both kinds of activities, i.e., economic and political. Great Greek philosopher Aristotle had used the term economics to mean the management of family and the state. At the beginning of 18th century, several nomenclatures were attributed to the study of economics. Wheately called it Catalactics, Haren called it Plutology and Ingram referred to it as Charemannistics. The term 'economics' was first of all used by Dr. Marshall in 1890 in his famous work "Principles of Economics". Economists like Prof. Schumpeter, Boulding etc. have given it the name of Economic Analysis.

As a scholarly subject, the study of Economics is barely 200 years old. The form in which we study Economics today is shaped by Adam Smith, the founder of Modern Economics. His famous book "An Enquiry into the Nature and Causes of Wealth of Nations" was published in 1776.

Till the end of 18th and the mid of the 19th century (1776-1850), several great Economists like Ricardo, Malthus, J.B. Say etc. had fully supported the thoughts of Adam Smith. These economists are known as classical economists. From the middle of 19th century to the first three decades of the 20th century (1850-1930) economists like Menger, Walras, Cournot, Marshall, Pigou etc. had made significant contributions to the development of the study of Economics. A good number of these

Definition of Economics

economists were great mathematicians. Making use of the principles of mathematics, the technique the study of economics into two parts - (1) Micro Economics, also known as **Marginal Analysis**. These economists adopted to analyse economic problems is popularly known as **Marginal Analysis**. The present book is mainly concerned with marginal analysis. are known as Neo-classical economists. The present book is mainly concerned with marginal analysis.

In 1933, **Prof. Ragnar Frisch**, the famous economist of Oslo University, Norway, divided the study of economics into two parts - (1) Micro Economics, also known as **Price Theory** and (2) Macro Economics also known as **Theory of Income and Employment**. Development of Macro Economic took place after the publication in 1936 of the well-known book "The General Theory of Employment Interest and Money" by **Lord Keynes**. Followers of the philosophy of **Lord Keynes**, such as **Hansen, Harris, Hicks** etc. are popularly called Keynesian Economists. In the post-World War II era, several economists like **Samuelson, Boulding, Friedman, Patinkin** etc. have modified and reformulated Keynesian Economics and Neo-classical theories. The economists of this era are referred to as post-Keynesian Economists.

3. Definition of Economics

It is difficult to give an accurate definition of economics. A test of good definition is that it delimits boundaries of the subject clearly and correctly. In the words of **Seligman**, "Economics has suffered more than any other discipline from the malaise of polemics about definitions." In this respect, **Barbara Wootton's** remark, "Whenever six economists gather there are seven opinions," appears to be quite pertinent. According to **Zuehren**, "Economics is an unfinished science." Scope of economics has not as yet been delimited. It has constantly been in the process of development. There are two distinct approaches of the economists in respect of the definition of economics :

(1) No need of defining Economics

According to some modern economists the subject of Economics has been growing continuously. It will, therefore, be improper to limit its growth to the confines of a given definition. There is no need of defining it. According to **Gunnar Myrdal**, "Such definitions are both unnecessary and undesirable." **Jacob Viner** says, "Economics is what economists do." **Mark Kasson** observes, "Economics is what economists disagree about." In the words of **Von Mises**, "It is illegitimate to regard economics as definite sphere of human action."

(2) Necessity of defining Economics

Most of the economists agree with the view that defining Economics is a must. **Eric Roll** is of the view that for a scientific study of a subject, knowledge of its definition is as much essential as the knowledge of the boundaries of a farm to be cultivated. By giving a precise definition of Economics, it becomes possible to study it scientifically and properly. But the supporters of this view have given so many definitions of Economics that **J.N. Keynes** was obliged to remark, "Political Economy is said to have started first with definitions." Nobel Laureate **Prof. Samuelson** observes, "Beginners often want a short definition of economics and in response to this demand there is no shortage of supply." In order to facilitate their study, definitions of Economics have been broadly divided into four parts:

(a) Wealth Definition ————— Adam Smith

(b) Welfare Definition ————— Marshall

(c) Scarcity Definition ————— Robbins

(d) Growth Oriented Definition ————— Samuelson

Extensive and critical study of the above definitions of economics is very essential for every student of this discipline. These definitions will be studied under four headings (1) Definition (2) Features (3) Merits and (4) Criticism.

3.1 Wealth-Definition or Is Economics a study of Wealth?

According to classical Economists like **Adam Smith, J.B. Say, Walker, J.S. Mill** etc. Economics is a subject that studies nature of wealth and its production, consumption, exchange and distribution etc.

(1) Definitions

Adam Smith, "Economics is an enquiry into the nature and causes of wealth of nations."

J.B. Say, "Economics is the science which treats of wealth."

Walker, "Economics is the body of knowledge which relates to wealth."

Senior, "The subject treated by political economics is not happiness but wealth."

J.S. Mill, "Economics is the practical science of the production and distribution of wealth."

(2) Features

(i) Economics is a study of Wealth only. According to these definitions, Economics confines itself to the study of wealth. These definitions give primary place to the study of wealth and secondary to the study of man. According to Adam Smith, the purpose of the study of economics is to increase the wealth of a nation. Its study includes the consumption, production, exchange and distribution of wealth.

(ii) Nature or Meaning of Wealth.

The term 'wealth' in these definitions is used to signify those material goods which are scarce. Material goods are those goods which can be seen and touched, for example, cloth, furniture, book, gold, silver, etc. Non-material goods or services are those which cannot be seen or touched, for example, the services of a professor, lawyer, doctor, dancer, clerk, peon etc. are not considered as wealth and so remain outside the scope of the study of economics.

(iii) Causes of Wealth.

According to these wealth definitions Economics seeks to investigate the cause that leads to increase of wealth.

There are two ways of increasing wealth : (a) by increasing the supply of goods through large-scale production made possible by the saving of the community (b) by increasing the demand for goods through extension of market.

(iv) Economic Man. The supporters and followers of wealth definition of Economics have imagined such a man who is fully aware of his self-interest and who makes persistent efforts to achieve his selfish ends to the maximum. Such a man is called economic man.

(3) Merits

The main merit of wealth-definition is that it has helped develop Economics as an extensive and independent study concerning problems of wealth. Economics had not developed as an independent and important study before the publication in 1776 of the famous book of **Adam Smith** titled "An Enquiry into the Nature and Causes of Wealth of Nations." Previously, Economics used to be treated as a study dealing with wealth getting, trade and agricultural activities of the state. According to wealth definition, the purpose of the study of Economics is to increase the prosperity of both the individual and the state,

criticised wealth definition of Economics. According to them, study of Economics turns man into a selfish

and mean fellow. **Ruskin** and **Carlyle** condemned it as 'Bastard Science', as a 'Dismal Science' and as a 'Science of Bread and Butter.' It was also called as 'gospel of mammon.' **Bailey** called it 'a mean, degrading, sordid enquiry.' Main points of criticism of wealth definition are as follows:

(i) **More Emphasis on Wealth:** This definition has given more importance to wealth than to man. Wealth takes precedence over man. In fact, wealth is a means to satisfy man's wants. Man, and not wealth, should have been given greater importance.

(ii) **Narrow meaning of Wealth:** According to this definition wealth means only tangible material goods, such as, apple, furniture, desk, fan etc. Non-material goods or services like that of a dancer, doctor, nurse, lawyer etc. have been excluded from it. Modern Economists, include in the term of wealth, both material and non-material goods. Thus, wealth definition has restricted the scope of economics by interpreting material goods alone as wealth.

(iii) **Concept of Economic Man:** Wealth definition of economics is based on the concept of economic man. But according to Marshall and his followers such an economic man who works for his selfish-motives alone is not found in real life. What we see in actual life is that the economic activities of a man are influenced not only by his self-interests, but also by moral, social, religious and other factors. Economics, therefore, is a study of a real social human being and not of an economic-man.

(iv) **Neglect of Welfare:** This definition attaches no significance to the study of economic welfare of the society. It lays too much emphasis on the study of wealth-getting activities alone. It pays no attention to the economic well-being of the society by proper use and equitable distribution of wealth. Criticising this definition, **Sismondi** has aptly remarked, that the purpose of economics is not merely to acquire wealth but also to promote the welfare of man.

(v) **Neglect of the Problem of Scarcity and Choice:** This definition completely ignores the study of two main features of economic activities, namely: (1) scarcity, and (2) choice. Economic activities are undertaken because not only the goods and services satisfying human wants are scarce, but they, have also several uses. Wants being unlimited, and economic goods having several uses being limited, there arises the problem of choice. Wealth-definition has ignored both these characteristics of economic activities.

(vi) **Neglect of Means to Attain Wealth:** This definition chooses attainment of wealth as the sole purpose of economics, but it does not specify the means, which should be adopted to acquire wealth. Wealth can be obtained through proper and lawful means and it can also be obtained through illegal and anti-social activities, like black-marketing, tax evasion, smuggling etc. This definition gives no clear indication as to whether wealth be obtained through legal or illegal means. As a matter of fact, economics studies exclusively those means of wealth-getting which are lawful and just.

(vii) **Narrow Subject-Matter:** This definition has restricted the scope and subject-matter of economics. In fact, it does not study the acquisition of **material goods alone**. According to **Lord Keynes**, study of economics should embrace material goods as well as non-material services, such as that of a lawyer, a teacher, a nurse etc.

In short, economics is not merely a study of wealth. Wealth-definition of economics is quite vague and narrow.

asserts that economics is a human science. It studies economic activities of all human beings whether they are members of the society or not.

(v) **Not analytical but Classificatory:** It is a classificatory definition because it has divided human activities into different classes, such as, 'material' and 'non-material', 'economic' and 'non-economic', 'welfare' and otherwise etc. This classification of economic activities is unsystematic and narrow. According to **Lord Robbins**, definition of economics should relate to scientific analysis of economic activities and should not be classificatory. It should tell us what economic problem is about? and How it arises?

(vi) **Economics is only a Positive Science:** In terms of material welfare definition, economics is both a positive and normative science and also an art. But **Lord Robbins** asserts that it is merely a positive science. It simply informs what economic activities are? Economics has nothing to do with the propriety or otherwise of economic activities. It is the function of Ethics. Economics does not give any clue to solve economic problems. It is neutral between ends'. It is wrong to call it a normative science or an art.

(vii) **Impractical:** It is an impractical definition. Its assumption that those activities of man are studied in it which are concerned with his well-being, is wrong. It is not so from practical point of view. Economics studies all those activities which are related to income-earning and income-spending by man, whether they promote his well-being or not. For instance, a man can earn his income either by selling the milk or by producing liquor. Both are economic activities, but the former adds to well-being whereas the latter does not. Thus it is practically not possible to divide these activities into economic and non-economic activities on the basis of material welfare as this definition seeks to do.

In short, welfare definition of economics is superior to wealth definition but according to Lord Robbins it is a classificatory and narrow definition.

3.3 Scarcity Definitions

With regard to scarcity definition of Economics, Austrian economists **Menger**, **Pettet** and English economist **Stigler** had expressed their views but it was examined in detail by **Prof. Robbins** in his book 'An Essay on the Nature and Significance of Economic Science' published in 1932.

(1) Definitions

- (1) According to **Lord Robbins**, "Economics is a science that studies human behaviour as a relationship between ends and scarce means which have alternative uses."
- (2) In the words of **Scitovsky**, "Economics is a science concerned with the administration of scarce resources."
- (3) According to **Stonier and Hague**, "Economics is fundamentally a study of scarcity and the problems which scarcity gives rise."
- (4) In the words of **Harvey**, "Economics is the study of how men allocate their limited resources to provide for their wants."

(2) Features

- (1) **Unlimited Wants or Ends:** By 'ends' Lord Robbins means wants. In Economics, we study those wants of man which are concerned with goods and services. These are called **economic wants**. There is no limit to these wants. As one want is satisfied, immediately another crops up. This chain of wants is endless. That is why it is said that wants are unlimited. They can be satisfied one by one, but to

satisfy all of them at one time is not possible. Economics is concerned with the satisfaction of economic wants irrespective of their being virtuous or otherwise.

(2) **Limited or Scarce Means:** Most of the means satisfying economic wants like, cloth, radio, doctor or professor's services, etc. are scarce. Means may be material goods or non-material services. The term scarce is used in the relative sense here. Those means are scarce whose demand is more than the supply. If we buy from the market a packed case of apples weighing 30 kg. to satisfy our demand, but find only 25 kg. of apples as good and the rest 5 kg. as rotten and over-ripe which we throw out, then these apples will not be called scarce. However, 25 kg. of good apples being much more in quantity than 5 kg. of rotten ones, will be called scarce because their demand is more than supply. Thus, wants are greater than means. Or,

$$\boxed{W > M}$$

(Here, W = Wants, M = Means, $>$ = Greater than.)

It will be read as : Wants are greater than means.

(3) **Alternative Uses of Means:** Third main cause giving rise to economic problem is that these scarce means have alternative uses. Milk we know, is a means. It can be used for preparing butter, curd, cheese etc. Milk being scarce, if more of it is used for preparing cheese, less will be available for making curd and butter.

(4) **Wants differ in urgency:** Man has several wants, but at any given time one of these wants may be more urgent and important than other wants. As such, wants differ in urgency. A person wants for his sick child, medicine, milk and fruit. But he will go in for medicine first, thereafter he will buy milk and fruit.

(5) **Economic Problem:** It is clear from the definition of Economics given by Lord Robbins that when all the four characteristics of human life, namely, (a) unlimited wants (b) scarce means (c) alternative uses of means and (d) different urgency of wants, become operative, there arises the problem of choice. One has to make a choice as to which want be satisfied first and by which means. Problem of choice-making is called economic problem. This problem arises when all the four characteristics of human life operate together. For example, if a person has only two wants and there is no difference in their urgency, there will be no question of choice. He will satisfy both. Similarly, if means are not scarce then all wants can be fulfilled. Again there will be no problem of choice. Mere scarcity of means does not give rise to any economic problem. If means do not have alternative uses, then despite their being scarce there will arise no problem of choice regarding their use. Economic problem or problem of choice will therefore arise when all the above four characteristics of human life are in operation.

(6) **Opportunity Cost:** Lord Robbins' definition tells us that it is due to the problem of choice that in order to fulfil one want we have to forego another. We cannot fulfil all our wants (ends) simultaneously. If a person spends all his pocket money in buying a cinema ticket, he will remain deprived of tea and snacks. Likewise, if a nation makes use of its scarce resources for the manufacture of weapons given quantity of goods 'X' is the opportunity cost of producing goods 'Y'. The opportunity cost of a thing is always expressed in terms of the next best alternative foregone. In the above example, opportunity cost of consumer goods. Concept of opportunity cost helps in the proper analysis of economic problems.

○ (3) Merits or Superiority of Robbins' Definition

In support of Robbins' definition of economics Prof. Macfie says, "Whatever he (Robbins) has said cannot be resaid. To me, it appears final within chosen scope."

Robbins' definition has the following merits :

(1) **Positive Science:** Lord Robbins' has sought to make economics a more certain and positive science. According to this definition, economics is a positive science. It explains the nature of economic activities. It has nothing to say whether those activities are good or bad. It is neutral with regard to welfare. In other words, it is 'neutral between ends'. It is silent about the value-judgment. It is neither a normative science nor ap. art. It is simply a positive science.

(2) **Study of Human Behaviour:** This definition has made economics a study of human behaviour instead of a study of a social man. Economics studies the behaviour of man both at individual and beings whether living in or out of society. Economics studies the behaviour of man both at individual and social level.

(3) **Analytical:** Lord Robbins has made the study of economics analytical instead of classificatory. Economic problems of man are analysed in economics. Economic problems arise because ends (wants) of man are unlimited but the means to satisfy them are not only scarce but also have alternative uses. Man has to make a choice with regard to ends and scarce means. This definition is a scientific analysis of the origin of economic problems and their solution.

(4) **Wider Scope:** This definition has widened the scope of economics. In economics we study all sorts of economic activities relating to the scarce means of man. These means may be material goods or non-material services. They may or may not promote well-being. Economics therefore encompasses all sorts of economic activities whether they are related to material goods or non-material services; whether they are conducive to well-being or not.

(5) **Universal:** Robbins' definition of economics is regarded as universal. It is concerned with the problem of unlimited ends (wants) and scarce means. This problem is found at any place and in any type of economy, that is, capitalism, socialism, etc. In the words of Eric Roll, "The laws depending on this definition shall be applicable to all societies."

(6) **More logical explanation of Economic Problem:** This definition has offered a more logical and precise explanation of the nature of economics. Economic problem does not arise due to material well-being. It arises mainly due to the scarcity of means in relation to their demand. These means can be material or non-material. Air and water are material resources but they are not scarce. As such, no economic problem arises in their respect. On the other hand, many services like that of a teacher, a lawyer etc. are non-material yet the same are part of the study of economics. Problem of choice or valuation, which is the main problem of economics arises because of scarcity of means and their alternative uses.

○ 4. Criticisms

Robbins' definition, though scientific and logical, yet has been severely criticised by economists like Ely, Durbin, Woolton, Fraser, Boulding etc. They have criticised it on the following scores:-

(1) **Ignores Social Aspect of Economic Activities:** Robbins' definition ignores the social aspect of economic activities. Robbins is wrong when he holds that the activities of those who live outside the society also form part of the study of economics. Need of the study of economics is felt only when the actions of one group of people economic problems assume social significance. In other words, when the actions of one group of people

influence the actions of another group of people. Social aspect of individual and group action has special significance in economics. Under it one should study the economic activities of only those living in society.

(2) **Economics is not Neutral as Regards Ends:** Critics do not agree with the view of Robbins, "Economics is neutral between ends" i.e., "it is not concerned with ends as such." In reality, economics cannot afford to be neutral between ends. Economics is a social science. Economists have to pronounce their judgment as to which ends are noble and which ones are base and so need be discarded. In the words of Thomas, "The function of an economist is not only to explore and explain, but also to advocate and condemn."

(3) **Concealed Concept of Welfare:** This definition has opposed, in vain, the concept of welfare. According to critics the concept of welfare is implied in the definition given by Robbins. Robbins' definition relates the study of economics to allocating the scarce means into alternative uses in such a manner as to get maximum satisfaction. Pigou regards satisfaction as indicative of welfare. This definition, therefore, also refers to maximization of satisfaction or welfare. In other words, the concept of welfare has entered into Robbins' definition through back-door.

(4) **Very wide scope of Economics:** It has unnecessarily widened the scope of economics. If economics is to be considered as the study of choice of all sorts of scarce means, then it would become difficult to decide which action of man is to be studied and which is to be left out. For example, time is a scarce means. We have to make a choice regarding its allocation in activities like earning of income, playing, studying and gossiping. According to Robbins all problems concerning this allocation of time are to be considered as economic problems. In fact, earning of income is an economic activity but not that of playing and gossiping. If we go by the definition of Robbins, then all activities of the man will become economic activities and the study of economics will encompass the study of religious, political and social activities, which is wrong. In fact, Economics is concerned with economic activities only.

(5) **Not only a Positive Science:** Robbins asserts that economics is a positive science that concerns itself with mere choice-making or valuation and that it has nothing to do with ethics or welfare of man. Boulding said, "Prof. Robbins in defining economics as a valuation problem seems to deprive economics of the right to study welfare." Criticising Robbins' definition Fraser remarked, "Economics is something more than a value theory or Equilibrium Analysis." If economics does not concern itself with human welfare then the ordinary man will have no interest in its study. It will become a dry and emotionless science. As a matter of fact, economics is not only a positive science, it is also a normative science and an art.

(6) **Division of Personality:** Criticising Robbins' definition Eric Roll pointed out that it had splitted the personality of the economists into two parts: (1) As an economist where he simply analyses economic phenomenon and does not bother about its good or bad effects, (2) As a citizen when he expresses its good or bad effects. But the personality of an economist cannot be so divided. Where an economist analyses an economic phenomenon, he will also give his judgment regarding its good or bad effects.

(7) **Impractical:** This definition has rendered economics an impractical subject. It is known to all of us that wants are unlimited and means are scarce. Actually, the problem is how to make optimum use of the means to get maximum satisfaction. But according to Robbins, economics cannot give any advice in this respect. If it is so, then economics has no practical utility.

(8) **Scarcity is not the Cause of Economic Problem:** This definition is based on the wrong assumption that scarcity is the main cause of arousal of economic problems. Many important problems, such as the problems of unemployment and depression are economic problems, but they arise not due to scarcity. Their cause is abundance. Unemployment takes place when supply of labour is more than demand and depression arises when supply of goods is more than demand.

(9) **Study of Static Condition:** According to this definition means and ends are assumed to be constant. Consequently, this definition has made economics a static study. In real life, means and ends are always changing. Economic growth is mainly due to continuous change in the means. Economic means are always dynamic. Study of economics therefore necessitates study of dynamic condition.

(10) **Not fully applicable to Rich Countries:** Robbins' definition does not fully apply to rich countries because in those countries many economic problems arise due to plenty and not scarcity. According to Galbraith, in order to maintain equilibrium of the market in America, production of some commodities is deliberately kept at a low level. There is a large number of affluent households whose main worry is how to make the best use of their ever increasing financial resources.

(11) **Not Applicable to Under-Developed Countries:** Robbins' definition is inapplicable to less-developed economies. Problem of these economies is to make proper use of their resources. These economies do have abundant economic resources but the same are not exploited fully. They are therefore faced with the problem of economic development.

(12) **Not Applicable to Centrally Planned Economies:** This definition has little relevance to centrally planned economies because the responsibility of choice-making in these economies vests with the society as a whole and not with an individual. Under socialism (centrally planned economy), responsibility for mobilization of resources for the satisfaction of individuals' wants is that of the government. Robbins' definition of economics is based on the assumption that man's behaviour is conditioned by his own reasoning capacity. Under planned economies, man's economic actions are not always based on his rational behaviour; rather the same are determined by the government policies.

(13) **Complex and Abstract:** This definition has made economics a complex and emotionless subject. "It is a definition of economics for economists." It has no utility for an ordinary man.

(14) **Use of the words 'Means' and 'Ends':** In the definition given by Robbins the difference between the terms 'means' and 'ends' has not been made clear. A thing may be a means at one time and an end at another time. For example, to acquire B.A. degree is an end of a student. Having achieved the

same, it serves as a means to get a job.

In short, Robbins definition is a scientific and analytical definition of economics. Its main defect is that it has treated economics as a mere theoretical study. It has ignored the practical or welfare aspect of economics. In fact, economics cannot be separated from its welfare content.

3.4 Comparison between Robbins' and Marshall's definitions

There are many dissimilarities and some similarities in the definitions of economics as given by Lord Robbins and Marshall.

Concerned with 'similarities' definitions of economics have the following differences :

(i) **Nature of the Definition:** Marshall's definition is **classificatory** while the one given by Robbins is **analytical**. Marshall has classified man's economic activities into material and non-material promoting well-being and not promoting well-being; ordinary business of life and extra-ordinary business of life etc. Robbins has not made any such classificatory distinction of economic activities. Rather he has examined the causes that give rise to economic activities, that is, scarcity and choice-making problems.

(ii) **Subject matter of Economics:** According to Marshall the subject matter of economics is the study of those activities of a social man which are closely connected with his material well-being. According to Robbins economics is concerned with all human beings, whether they are part and parcel of the society or not. It has no concern with well-being. Its subject matter is the study of human behaviour as a relationship between ends and scarce means having alternative uses. Marshall's definition is narrow and that of Robbins is wide.

(iii) **Nature of Economics:** According to Marshall, economics is both a social science and an art. On the other hand, Robbins maintains that it is only a positive science and a human science.

(iv) **Objectives of Economics:** According to Marshall the objective of the study of economics is to promote the well-being of man. But Robbins holds that its objective is to study the cause and effect of economic activities.

(v) **Characteristics of Definitions:** Marshall's definition of economics is simple and empirical but it is not logically sound. On the contrary, Robbins' definition is complex and impractical but logically quite sound.

(2) **Similarities**
Despite the above differences in the respective definitions of Marshall and Robbins, they have some striking similarities as under :

- (i) **More importance to the study of Man:** Both the definitions accord greater importance to man than to wealth. In both, man is primary and wealth secondary.
- (ii) **Scarcity:** According to Robbins all those means which are scarce are the subject of study of economics. Marshall holds that economics studies those means, which are material. But then material means are also scarce.
- (iii) **Science:** Both Marshall and Robbins regard economics as a science.

- (iv) **Welfare:** According to Marshall, economics aims at maximizing the welfare of man. Robbins claims that it aims at choice-making. As a matter of fact, this choice-making is also directed to achieve maximum satisfaction or welfare.
- In short, both these definitions are not complete; both have some shortcomings. Although Marshall's definition is more practical, simple and human in approach, yet it is narrow and unsatisfactory. On the contrary, though Robbins' definition is more scientific and logical, yet it is impractical and complex. That definition of economics will be considered appropriate which embodies the good points of both.

other words, while economics is a study of scarce means, it also examines their efficient use and maximum satisfaction of wants.

3.5 Growth-Oriented Definitions

According to modern economists like nobel prize-winner Prof. Samuelson, Benham, Lipsey, Steiner, Ferguson etc. both the problems concerning nature of scarce means and their proper use are the subject of study of economics. Problems of the present use of scarce resources is mainly a problem of choice-making and the problem of their future growth is a problem of economic growth. Consequently, economics is concerned with **choice-making and economic growth**. While problem of choice-making is the problem of valuation, that of economic growth is the problem of removal of poverty, unemployment and the efficient use of resources. As a matter of fact, growth-oriented definitions of economics are the combination of the merits of the definition of Adam Smith, Marshall and Robbins. In terms of growth-oriented definitions, economics is concerned with the efficient use and allocation of scarce resources so as to accelerate the rate of economic growth and promote social welfare.

(1) Definitions

In the words of nobel prize winner Prof. Samuelson, "Economics is the study of how people and society end up choosing with or without the use of money, to employ scarce productive resources that could have alternative uses, it produces various commodities over time and distributes them for consumption, now or in the future, among various persons and groups in society. It analyses costs and benefits of improving patterns of resource allocation."

(i) According to Benham, "Economics is the study of the factors affecting employment and standard of living."

(ii) C.E. Ferguson has defined economics in these terms, "Economics is a study of the economic allocation of scarce physical and human means (resources) among competing ends, an allocation that achieves a stipulated optimising or maximising objective."

(iii) According to ~~Lipsey~~ and Steiner, "Economics, broadly defined concerns - (1) the ways in which a society uses its resources and distributes the fruits of production to individuals and groups in the society, (2) the ways in which production and distribution change over time and (3) the efficiencies of economic systems.

(2) Features

The salient features of growth-oriented definitions of economics are as follows:-

- (i) **Economic Resources:** These definitions underline the point that economics is a study of economic resources. These economic resources refer to natural, human and physical resources which satisfy human wants but are scarce and have alternative uses. These resources are obtained on payment of price or by making some sacrifice.
- (ii) **Efficient allocation of Resources:** Choice-making is the main problem of economics. Efficient allocation and use are the chief objectives of choice-making.
- (iii) **Full Utilisation of Resources:** According to growth-oriented definitions, economics is not concerned with the allocation of resources only but also with their full use and employment.

(ii) **Increase in Resources:** These definitions also underline the fact that the objective of economics is to increase the quantum and productivity of resources in future. This results in an increase in the growth rate of economy, more employment and higher standard of living.

(3) Merits

Growth-oriented definitions have the following merits :

(i) **Realistic Explanation of economic problems:** These definitions offer realistic explanation of economic problems. Economic problems arise because wants (ends) are unlimited but means to satisfy them are not only scarce, but have alternative uses also. This gives rise to the problem of choice-making.

The objective of the choice-making is the efficient allocation of scarce resources which accelerates the rate of economic growth. Like the definition given by Robbins, these definitions are also **analytical**.

(ii) **Science and Art:** According to **Samuelson**, **economics is oldest among arts and newest among the groups of sciences**. In fact, it is the **Queen of Social Sciences**. These definitions concur with the statement of Marshall that economics is a social science and an art. It is a positive and normative science. These definitions do not subscribe to Robbins' definition that economics is a mere positive science. Economics has its theoretical and practical aspects.

(iii) **Not Neutral as Regards Ends:** As per these definitions, economic welfare forms part of the study of economics. Economic welfare is that part of general welfare which is measured in terms of money. Economics studies both material and non-material means of economic welfare. These definitions are therefore wider in scope than the definition of Marshall in respect of the concept of welfare. Marshall's definition is restricted to the material means of welfare. These definitions are more realistic than the definition given by Robbins. The latter maintains that economics has nothing to do with welfare. It is not true. It is impossible to keep welfare out of the scope of economics, and so also the wants and their satisfactions.

(iv) **Practical:** These definitions have imparted economics a more practical and useful subject. Economics does not analyse economic problems only rather it suggests measures to solve them. Study of economics helps in the formulation of economic policies. It is not a mere Theory of Valuation, it offers solutions to economic problems.

(v) **Dynamic:** These definitions have imparted dynamism to economics. Study of economics is not restricted to the present day problems relating to the consumption, production, distribution etc. of economic resources, but it studies their future problems as well. Economics, therefore, is concerned with the dynamic problem of economic development.

(vi) **Universal:** These definitions of economics are universal. These are concerned with the economic problems of all types of economies, developed or under-developed. Main problem of the developed economies is to maintain the situation of full employment. On the other hand, the main problem of the under-developed economies is to achieve the level of full employment and raise the standard of living of the people by increasing their per capita income. Economics is thus concerned with all these issues.

(vii) **Analysis of Economic Quantities:** **Boulding** holds that according to growth-oriented definitions of economics, a major part of the economic analysis relates to the investigation of the forces determining the form of economic quantities and their mutual relations. This way, these definitions have rendered economics as a more definite science.

□ 4. Which of these definitions is the Best?

Different economists have given different definitions of economics. **Boulding** is of the opinion that any single concise definition of economics will be inadequate. Of course, to define it as "a study of mankind in the ordinary business of life" is to give a very wide view of economics. If it is defined as a study of "human valuation and choice-making" then it will be too wide a definition, and if it is defined as "a study of that part of man's actions which are measured in terms of money", then it will be too narrow a definition. The subjects which form part of the study of economics at one time may fall outside its scope at another time. In this way, definitions of economics are liable to undergo change with changing times and conditions. It is so because the subject matter of economics is ever changing.

According to **Adam Smith**, economics is a study of wealth. It is a narrow and unscientific definition of economics as it puts more emphasis on wealth than man. Actually, wealth is simply a means to satisfy man's wants. **Dr. Marshall** was of the opinion that "it examines that part of individual and social action which is most closely connected with the attainment and with the use of material requisites of well-being." This definition of economics is superior to the one given by Adam Smith, but this definition does not provide true information with regard to the nature of economic activities. **Robbins** is of the view that "economics is a science that studies human behaviour as a relationship between ends and scarce means which have alternative uses." This definition explains the true nature of economic activities. As such, the definition given by **Lord Robbins** is regarded pertinent and scientific compared to those given by **Adam Smith**, **Marshall** etc. But **Samuelson**, **Fraser** etc. point out that the main defect of the definition given by Lord Robbins is that it has completely deprived economics of the study of **welfare**. Consequently, economics has been reduced to a dull and complex subject having little utility for an ordinary man. All the three main definitions of economics therefore suffer from one defect or the other. It is by combining all the three that we can construct a more appropriate definition of economics.

Picking up the term 'wealth' from the definition of **Adam Smith**, 'welfare' from that of **Marshall**, 'scarcity' from that of **Robbins** and 'economic growth' from that of **Samuelson**, an acceptable definition of economics can be constructed in these words: "Economics is a subject that studies those activities of man which are concerned with the maximum satisfaction of wants or with the promotion of welfare and economic growth by the efficient consumption, production and exchange of scarce means having alternative uses."

QUESTIONS

1. Economics is the body of knowledge which considers the actions of man in relation to wealth. Describe.

2. Economics is the study of mankind in the ordinary business of life. Explain critically.

Critically examine Marshall's definition of Economics.

3. Economics is a science of material welfare. Discuss.

Or

Critically examine Robbins' definition of Economics.

Or

Multiplicity of wants and scarcity of the means are the two foundation stones of economics. Explain it critically.

4. Which in your opinion is the most acceptable definition of economics?

Or

Give a suitable definition of Economics.

5. Explain Robbins' definition of Economics. How is this definition an improvement upon the material welfare definition of Economics?

6. Discuss the need to redefine economics in the light of new dimensions of the economic problems and recent changes in economic theory and attempt a growth centred definition of economics.

NATURE OF ECONOMIC PROBLEM AND PRODUCTION POSSIBILITY CURVE

2

□ 1. Economic Problem

Every economy has some central economic problems. Before a detailed study of these central problems, it is necessary to know what is meant by economic problems.

Human wants are unlimited but most of the means which can satisfy these wants are limited. It is not possible for an economy to produce every kind of good for every citizen because no economy has available resources like land, labour and capital which have alternative uses. For instance, it has to be decided as to how much of the resources should be utilized for the production of butter and how much for the production of guns. Thus, problem regarding allocation of resources across different uses is called economic problem. In other words, economic problem is a problem of choice or problem of economising the use of resources. It may however be noted that economic problem is not concerned with the allocation of present resources only, it is also the problem of their growth and distribution in future. Accordingly, economic problem refers to that problem which is concerned with the optimum allocation of the present resources and with the growth and distribution of future resources.

□ 1.1 Definitions

(1) According to **Robert Awh**, "Economic problem is the problem relating to the necessity of choosing what, how and for whom to produce and how to achieve economic growth."

(2) In the words of **Leftwich**, "Economic problem is concerned with the use of scarce resources among alternative human wants and in using these resources towards the end of satisfying wants as fully as possible."

□ 1.2 Causes of Economic Problem

Economic problem arises because of the following two main causes:

(1) **Unlimited Wants**: Human wants that can be satisfied by consuming goods and services are unlimited. No individual can fully satisfy his wants. Wants of all the members of a society cannot be fully satisfied in a given time. In reality, human wants have been multiplying day in and day out. A few years back there was no demand for colour T.V. in India. Now every household is keen to buy it. In the coming years, there is great possibility of the rise in demand for such consumer goods as video cameras, VCR, deluxe cars, computers, calculators, electronic typewriters etc. It can therefore, be said that at any given time there do exist innumerable unsatisfied wants in a community.

(2) **Limited Means:** Large number of goods and services are needed to satisfy human wants. To satisfy hunger, one needs bread, fruit or milk. A patient needs the services of a doctor. To quench one's thirst one needs water. To breathe one needs air. In order to get water or air one does not make any sacrifice or pay any price. On the contrary, to get bread, fruit, milk or the services of a doctor, you will have to part with some of your goods or services or pay the price in terms of money. Accordingly, goods and services satisfying human wants are divided into two parts : (1) **Free Goods:** One has not to pay any price to get these goods and services. That is why the same are called free goods, e.g., air, water, sunshine etc. These goods are free because their supply is more than their demand. (2) **Economic Goods:** One has to pay a price to get economic goods and services. Economic goods are also called **scarce means** e.g., bread, fruit, or the services of a doctor or a lawyer etc. These are called scarce means because their demand is more than their supply. Most of the means, capable of satisfying human wants are scarce. The term scarce is used in a relative sense. That means is taken to be scarce whose demand is more than its supply. Supposing we buy a 30-kg. case full of apples. Out of it 25 kg. of apples are of good quality but 5 kgs. are rotten. We throw the rotten ones out. 5 kg. of rotten apples so thrown will not be called scarce. On the contrary, although 25 kg. of good quality apples are more than 5 kg. of rotten apples yet the same are called scarce ; because their demand exceeds their supply. The economic goods are scarce since the resources required to produce them are also scarce. By resources, we refer to natural, human and man-made means which are instrumental in the production of goods and services. These means include, factories, fields, machines, tools, different types of labour and skills, all kinds of minerals etc. To simplify their study, these means are classified into four different categories.

(1) **Land:** It refers to all those natural resources which are the free gifts of nature and are used in production process. These include, land, minerals, petroleum, water, sunshine, rivers, forests etc.

(2) **Labour:** Labour in economics refers to all those physical and mental activities which are used in the production of goods and services. It includes all kinds of services, whether of a domestic servant or of an engineer or a scientist.

(3) **Capital:** Capital refers to man-made means of production, as a result of which there can be more production. It includes machines, tools, means of transport, office premises, factories etc.

(4) **Enterprise:** It refers to taking of risk and conducting of business on the part of an entrepreneur as a result of which it becomes possible to organise production. An entrepreneur takes risk of his time, labour and capital and is responsible for production-decisions.

All factors of production i.e., land, labour, capital and enterprise are scarce. It means that their supply is not unlimited and some price has to be paid for their availability. Although supply of labour power in India is very large yet it is not infinite as to be available free of charge. In fact, scarcity of means indicates their insufficiency to satisfy unlimited wants. With the passage of time availability of means goes on increasing, yet they remain inadequate to satisfy all our wants, because wants too go on multiplying. Had the means of production been unlimited there would have arisen no economic problem. In fact, then there would have been no economics as such. **Scarcity is the root cause of economic problems.**

Another peculiarity of means of production is that they have **alternative uses.** Timber can be used for making furniture, sports goods, doors, railway wagons etc. It is because of alternative uses of the means that the problem of choice arises. **Problem of choice is, in fact, problem of economics.** If a means is put to one use we are forced to abandon its alternative use. In order to gain one alternative, the other alternative that we forego is the **opportunity cost** of the gained alternative. Opportunity cost

is the cost of using resources for a certain purpose measured by the benefit given up by not using them in their best alternative use. The concept of opportunity cost emphasizes the problem of choice by measuring the cost of obtaining a quantity of the commodity in terms of the quantity of other commodities that could have been obtained instead. In short, scarcity of means and their alternative uses are the main cause of the origin of economic problems.

Since an economy cannot produce all the goods and services needed, it means it cannot produce every good for each and every individual. So every economy has some basic problems about which it has to make choice. These problems are called the central problems of an economy.

□ 2. Central Economic Problems of an Economic System

Every economic system has some basic economic problems. These are known as the **central problems** of an economy. There is some difference of opinion regarding the number of central problems of an economy. According to Prof. Samuelson there exist three central problems and according to Prof. Halm, Stigler and Leftwich their number is seven, four and five respectively. We discuss the following central problems of an economy :

(1) **What to produce and how much to produce ?**

(2) **How to produce ?**

(3) **For whom to produce ?**

(4) **How to achieve fuller utilisation of resources ?**

(5) **How to achieve efficiency in production and distribution ?**

(6) **How to achieve economic growth ?**

Comprehensive study of these problems is as under :

O (1) What to Produce and How much to Produce ? Or Problem of Allocation of Resources:

First problem that every economy faces is what goods and services be produced with the scarce resources so that maximum wants of the people are satisfied. The main cause that gives rise to this problem is that resources are scarce in relation to their wants. In fact, **it is the problem of allocation of scarce resources.** The allocation of scarce resources among alternative uses is called resource allocation. Choosing to produce a particular combination of goods means choosing a particular allocation of resources among the industries producing these goods. For example producing a large output of one good requires that a large amount of resources be allocated to its production. Every economy has to make a choice as to what wants can be satisfied and what can be foregone. In other words, for a rational allocation of resources a society must set priorities among their needs. Wants which are decided to be satisfied call for two more decisions :

(a) **What Goods and Services are to be Produced ?** For instance, which of the consumer goods like sugar, cloth, vegetable oil etc. are to be produced and which of the capital goods like machines, tractor's etc. are to be produced? If the economy aims at satisfying present wants, then more of consumer goods will be produced. On the contrary, if the economy aims at increasing present production capacity to satisfy more wants in future, then stress will be laid on the production of capital goods. Choice is also to be made regarding which of the war-time goods, like guns, tanks, rifles etc. and which of the peace-time goods, like cloth, foodgrains, T.V. sets etc. should be produced. If the economy accords top priority to the

defence of the country then war-time goods will be produced more. On the other hand, if the economy puts premium on promotion of economic welfare then peace time goods will be produced more.

(b) How much to Produce?: When an economy decides about the goods and services it is to produce, it also decides about the quantity of the same to be produced. How much quantity of consumer goods and how much of capital goods be produced? This decision requires information regarding production possibilities of different commodities with the given resources. Such information can be summarised in the production possibility curve. For instance, if an economy wants to produce more of cloth and foodgrains in a given time with its limited resources then it will have to produce less of machines.

In **capitalist economies** like America this problem is mainly solved with the help of **price mechanism**. Price mechanism refers to the relative price structure as determined by the free play of the market forces of demand and supply. In **socialist economies**, like China this problem is solved by **central planning authority** or the government. It is the central authority that decides what goods are to be produced and in what quantity. In **mixed economies**, like India, this problem is solved both with the help of **price mechanism** as well as by the **central planning authority** popularly known as planning commission.

O (2) How to Produce ?

Second central problem of an economy is how to produce. It is based on the first problem itself. Having decided what to produce and how much to produce, the next decision relates to how to produce. This problem is concerned with the **choice of technique**. Three questions arise in this context:

(a) How to make use of resources in the production of those goods and services which are wanted by the people and how to prevent the use of resources in producing those goods and services which are not wanted by the people. For instance, if the economy has decided to produce only cloth and wheat then it must ensure that factors of production (resources) are used only in producing wheat and cloth and not other goods.

(b) Economy is also to ensure that those firms which are producing such goods and services as are decided to be produced must get the relevant resources to produce them, in ample measure. In other words, economy producing wheat and cloth must select such farmers and firms as are willing to produce these goods. These farmers and firms must be amply provided with those means of production which are essential for the production of these two goods.

(c) The economy will also determine the most efficient combination of the resources required for the production of a given level of output of goods decided to be produced. In other words, it will have to decide on the most appropriate technology to be adopted. For example, whether the cloth is to be produced with the help of handlooms or modern powerlooms, whether wheat is to be produced with the help of wooden plough and unskilled labourer or with tractors and skilled agricultural labourers. Thus, it is a **problem of choice of technology**. This problem also arises because of the scarcity of means of production. Had means of production been available in plenty then any technology could have been adopted. But in different economies different types of means are scarce. That is why different economies adopt different technology. For instance, in under-developed countries supply of labour is large and wage-rate is very low, but capital is relatively more scarce and rate of interest is very high. Consequently, **labour-intensive technology** is generally preferred in production. On the contrary, in developed economies, **capital-intensive technology** is made use of.

In **capitalist economies** this problem is solved on the basis of the **availability of resources and their relative prices**. In **socialist economies** this problem is solved by the **planning authority** in accordance with the objective of the plan.

O (4) How to Achieve Fuller Utilisation of Resources ?

An economy also decides how to distribute production of capital goods among different industries and among different firms of these industries. It also decides about the share of government in the total output. In short, the problem for whom to produce is the problem of how the economy will distribute its production among households, firms and government sectors.

Fourth main problem of an economy is how to achieve fuller utilization of resources. Initially, the economy is to decide the extent to which it is willing to utilize its resources. For instance if the economy makes large-scale exploitation of its mineral resources like, coal, iron, petroleum etc. in the present then the availability of these resources in the future will go down. On the contrary, if these resources are sparingly used in the present then the same will be available for exploitation on the large scale in future. Thus, every economy has to decide about the scale of utilisation of its resources. Having decided about the level of utilisation of its resources, the economy has to decide how to achieve fuller utilisation of the available resources. Every economy makes a determined bid to remove involuntary unemployment as well as excess capacity. **Involuntary unemployment** refers to a situation in which people are willing to work at the prevailing wage-rate but they do not get work. **Excess capacity** refers to the non-utilisation of the installed productive capacity.

O (5) How to Attain Efficiency in Production and Distribution?

Another central problem of an economy is to attain efficiency in production and distribution of resources. According to **Pareto**, efficient production refers to a situation in which production of a good cannot be increased unless production of another good is decreased. Similarly, efficient distribution refers to a situation in which consumption of an individual cannot be increased unless consumption of another individual is decreased. In other words, **Pareto's efficiency** is a situation in which it is not possible to make some one better off without making some one worse off. This is the ideal situation which every economy tends to strive for. When deeply analysed, the problem of efficiency in production is simply the off-shoot of the problem of 'How to Produce', and that of efficiency in distribution is the off-shoot of the problem of 'For Whom to Produce.'

O (6) How to Accelerate Economic Growth?

One of the main problems of the economy is the problem to increase production. This problem refers to the problem of economic growth. Every economy is keen to raise the standard of living of its people. In under-developed countries it is possible only by breaking the vicious circle of poverty and raising the level of savings, investment or the rate of capital formation. To increase the rate of economic growth in a country, its social and institutional factors like, ownership of means of production, land reforms and

techniques of production must undergo a radical change. According to **Nurkse, Higgins and Arthur Lewis** this problems is concerned with the scarcity of capital and backwardness of technology.

3. Production Possibility Curve (P)

Modern economists explain central problems of an economic system with the help of **Production Possibility Schedule** and **Production Possibility Curve**. Let us appreciate these concepts before these are used in explaining the central problems.

(i) Production Possibility Schedule : Production possibility schedule is that schedule which shows alternative production possibilities of two sets of goods with the given resources and technique of production.

(ii) Production Possibility Curve : "The production possibility curve is a graphic presentation of production possibility schedule, showing alternative production possibilities of two sets of goods with the given resources and technique of production. It is also called **Production possibility boundary** or **frontier** because it shows the limit of what it is possible to produce with present resources.

This curve is also called **Transformation Line** or **Transformation curve** because it indicates that if more of good-X is to be produced then factors will have to be withdrawn from the production of good-Y and transferred to the production of good-X. In other words, good-Y is transferred into good-X.

(iii) Definition (P) In the words of **Lipsey**, "The production possibility curve is that curve which shows the possible combinations of two goods that can be produced by an economy, given available resources and technology."

② Assumptions :

The concept of production possibility curve is based on the following assumptions:

(i) **Fixed Quantity of Factors of Production:** The quantity of factors of production is assumed to be fixed but they can be transferred from one use to the other, albeit to a limited extent.

(ii) **Full Employment:** All factors are fully employed in the economy. In other words, there is no unemployment in the economy. In fact, fixity of factors, subsumes their full employment.

(iii) **Constant Technology:** Technique of production is constant and is not susceptible to change.

(iv) **Two Goods:** For the sake of simplicity of study, it is assumed that only two goods or two sets of goods are produced in the economy, that is, wheat and cloth or capital goods and consumer goods.

(3) Properties

Production possibility curve has two main properties:

(1) **Production Possibility Curve Slopes Downwards:** Production possibility curve slopes downwards from left to right. It is because under full employment situation production of both the goods cannot be increased. If, for instance, good-X is produced more then good-Y will be produced less.

(2) **Production Possibility Curve is Concave to the Point of Origin:** It is because to produce each additional unit of good-X, more and more units of good-Y will have to be sacrificed than before. Opportunity cost of producing every additional unit of good-X, tends to increase in terms of the loss of production of good-Y. In other words, production will obey the **law of increasing opportunity costs**.

○ An Illustration:

Supposing an economy decides to produce only two goods, namely wheat and cloth, with its available resources. If all the resources of production are used for the production of wheat alone then 100 lakh tonnes of wheat can be produced. On the contrary, if all the factors of production are used for the production of cloth alone then 4,000 bales of cloth can be produced. If the economy produces both the goods, then within these limits, various combinations of two goods can be produced. Schedule 1 shows different possibilities of production of wheat and cloth. It is called production possibility schedule.

Schedule 1: Production Possibility Schedule

Goods	Production Possibilities
A	
B	
C	
D	
E	

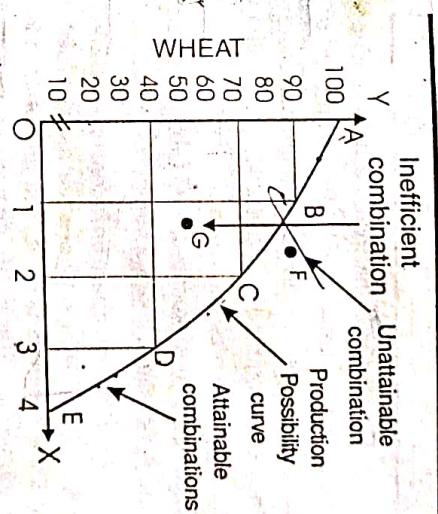


Figure 1

Fig. 1. Similarly points B, C and D represent different combinations of wheat and cloth. Point E represents production possibility of 4000 bales of cloth and no wheat. By combining all these points we get the curve AE. It is the production possibility or transformation curve. Point F represents unattainable combination and point G inside the curve represents inefficient use of resources.

A production possibility curve illustrates three concepts:

- (i) **Scarcity:** It is implied by the unattainable combinations beyond the production possibility curve.
- (ii) **Choice:** It is implied by the need to choose among the attainable points on the curve.
- (iii) **Opportunity Cost:** It tells us the opportunity cost of cloth in terms of wheat or vice versa.

Opportunity cost of producing every additional unit of good-X, tends to increase in terms of the loss of production of good-Y. In other words, production will obey the **law of increasing opportunity costs**.

Q (4) Why is Production Possibility Curve Concave to the Origin?

A production possibility curve is concave to the point of origin. Table 2 indicates that increase in production of every additional unit of cloth is accompanied by the sacrifice of more and more units of wheat. In other words the rate of substitution of cloth for wheat is increasing.

Table 2: Production Possibility Schedule

Combinations	Cloth (000 Bales)	Wheat (Lakh Tonnes)	Rate of Substitution
A	0	100	—
B	1	90	1 : 10
C	2	70	1 : 20
D	3	40	1 : 30
E	4	0	1 : 40

Fig.2 indicates that increase in the produc-

tion of every additional unit of X-commodity is accompanied by the sacrifice of more and more units of Y-commodity. Production possibility curve AE indicates that when first unit of cloth (X-commodity) is produced, 10 (ab) units of wheat (Y-commodity) are abandoned.

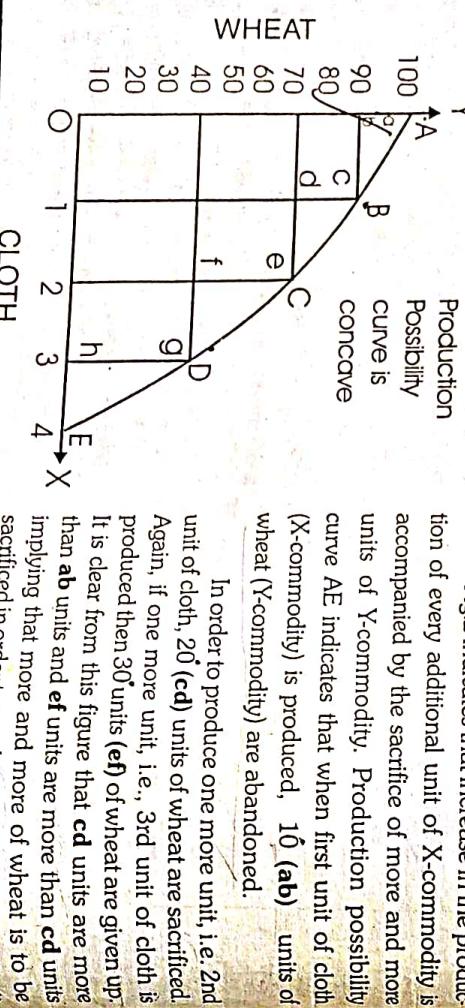


Figure 2

additional unit of good X (cloth) is also referred to as **Increasing Marginal Rate of Transformation (MRT)**. The marginal rate of transformation is the numerical value of the slope of the production possibility curve. Hence, the fact that production possi-

bility curve is concave to the origin. (Concavity of production possibility curve implies that production is obtained under law of increasing opportunity costs or that production is obtained under the law of increasing marginal rate of transformation.)

increasing opportunity costs or that production is obtained under law of increasing marginal rate of transformation.

Q Straight Line Production Possibility Curve

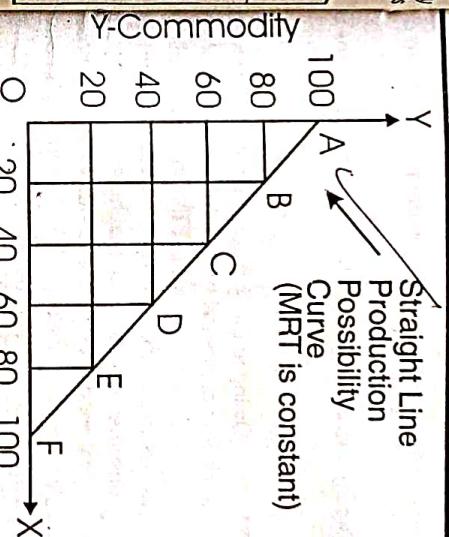


Figure 3

Q (5) Why should Law of Increasing Opportunity Cost Prevail?

Why should law of increasing opportunity cost or increasing marginal rate of transformation prevail as we produce more of good-X in place of Good-Y? Answer lies in the 'relative adaptability of resources'. Resources at the command of the society are not equally adapted to the production of all goods and services that the society needs. Some are more adapted to the production of Good-X while others may be more adapted to the production of Good-Y. So what happens as we start up more production of Good-X by shifting resources from Good-Y to Good-X, the first resources directed to Good-X will be those that are least productive for Good-Y and whose transfer produces only a small drop in the output of Good-Y. But as more and more resources are transferred to Good-X, we will have to draw on resources that are better and better adapted to the production of Good-Y, and sacrifice of the output of Good-Y will increase steadily. Hence, the fact that opportunity cost of producing more of Good-X in place of Good-Y tends to increase. As more and more resources are withdrawn from Good-Y in favour of Good-X, loss of production of Good-Y for every successive unit of Good-X tends to increase.

4. Production Possibility Curve and Solution of Central Problems

Or

Uses of Production Possibility Curves.

The production possibility curve can be used to explain the concepts of **scarcity**, efficiency and opportunity cost. It also depicts clearly the problem of choice. Points that lie outside the production possibility curve such as point F in Fig. 1 are said to be unattainable due to scarcity of resources. Points such as point G which lie inside the curve, are inefficient because society is wasting resources. The points

shown in figure 3 is a straight line. It indicates that increase in production of X commodity is accompanied by the sacrifice of equal units of Y commodity. Production possibility curve AF indicates that to produce every 20 additional units of X commodity, 20 units of Y-commodity are to be abandoned. In other words the production is obtained under the law of constant marginal rate of transformation.

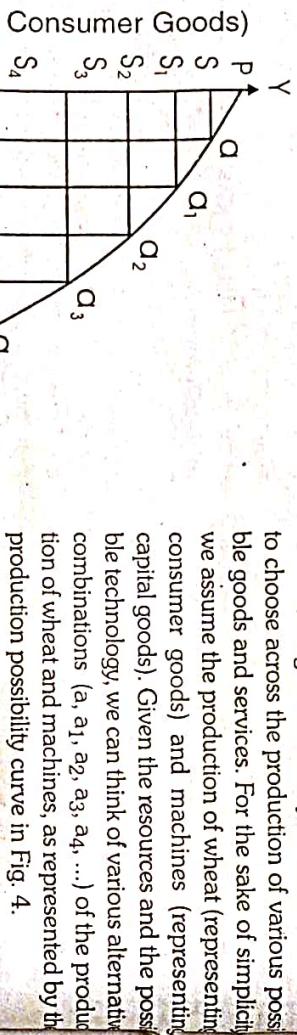
Thus production possibility curve may be a straight-line if production is obtained under law of constant costs or when marginal rate of transformation (MRT) of both the commodities is constant. For example, to produce one more unit of X-commodity if only one unit of Y-commodity is sacrificed then the production possibility curve will be a straight line. But this is largely a conceptual possibility.

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on the production possibility curve shows the points at which society is producing efficiently. More output of one good can be obtained only by sacrificing output of other good. This clarifies the concept of opportunity cost. Society's problem is therefore to make a choice between the different points that lie on the production possibility curve.

Moreover using the concept of production possibility curve, we can explain the central problems of an economy, as under:

O(1) What to Produce and How Much ?



In the figure PP is the production possibility curve. It is representing alternative combinations $a, a_1, a_2, a_3, a_4, \dots$ of wheat and machines.

The various possibilities of production re-

sible only when less of wheat is produced. So that

resources are to be withdrawn from the production of wheat for greater production of machines.

Figure 4

(ii) Every time we plan to produce more of machines, production of wheat is to be sacrificed at an increasing rate ($S_3S_4 > S_2S_3 > S_1S_2 > S_1S_1$)

So that, there is increasing marginal rate of transformation between the production of wheat and machines. It also means that the opportunity cost of producing machines (in terms of the loss of production of wheat) tends to rise as more of machines are produced.

O A Vital Question:

Why should machines be produced at all when the opportunity cost of producing machines tends to rise? This is because the production of machines is as essential as the production of wheat. Machine are capital goods representing productive capacity of the nation. By producing machines we are adding to the productive capacity, and hence the potential of growth. Equally important, however, is the production of wheat representing consumer goods. Level of living of the present generation depends upon the availability of consumer goods. We are thus, between the devil and deep sea: more of wheat implies less of future welfare and more of machines implies less of present welfare. And, this precisely is the problem of what to produce and how much?

O(2) How to Produce?

The other central problem of the economy is how to produce? This problem relates to the choice of technique of production. If an economy does not choose an appropriate technique then the actual output of the economy will be less than the potential output.

This situation is explained with the help of Fig. 5. The figure shows how an economy chooses a technique that makes optimum use of the available factors of production. As is evident, point 'E' is very much inside the production possibility curve PP. It shows the use of inefficient technique. If efficient technique is made use of then there will be more production of one of the two commodities without sacrificing the production of the other, as shown by points 'A' and 'C' or there will be more production of both the commodities as shown by point 'B'. An efficient technique of production is the technique which uses that combination of resources which maximises output or minimises cost for a given output.

WHEAT

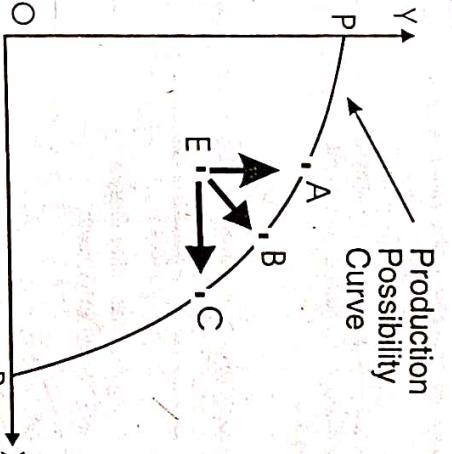


Figure 5

However an economy may not always opt for an optimum solution. It may be looking for some socially ideal solution. In a country like India inflicted with the chronic problem of unemployment preference may be given to absorb more and more of labour, adopting labour intensive technique which may be less efficient compared to the capital intensive technique. But it is not always that simple. Every country equally cares for future growth that necessitates the use of capital intensive technique. Hence, the problem is of striking a balance between labour intensive technique and capital intensive technique. In other words, it is the problem of optimal solution and socially ideal solution.

In terms of production possibility curve, it is the problem of deciding how best we are on or close to production possibility frontier as in Fig.5.

O(3) How to Achieve Full Employment of Resources?

In figure 6, PP curve refers to that production possibility of an economy wherein factors are partly unemployed. On the other hand P_1P_1 curve refers to that production possibility wherein full employment of factors is obtained. Supposing this economy produces quantities of cloth and wheat as shown by point 'A' on PP curve.

If the economy desires to increase the production level of wheat and cloth, it will have to make use of unemployed factors. As a result of it, production possibility curve will shift to the right as shown by P_1P_1 . If the economy can produce the combination shown by point

WHEAT

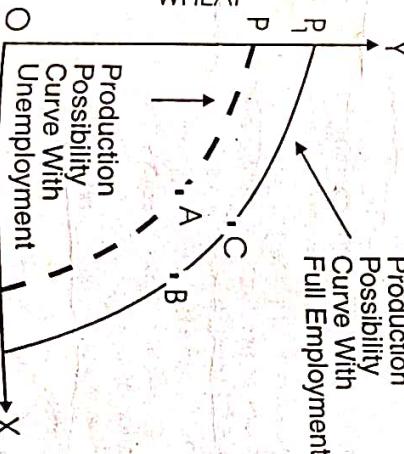


Figure 6

'B' on production possibility curve P_1P_1 , it means it can produce more of cloth without reducing the output of wheat. Similarly, if it can produce the combination shown by point 'C', it means it can produce more of cloth and more of wheat. Thus, an economy can increase its total output by fuller utilisation of its resources. But this surplus can be gainfully employed only if supplemented with capital which we don't have. Moving from A to B or to C thus, becomes a problem.

○ (4) How to Accelerate Economic Growth

Economic growth refers to sustained increase in the volume of output. Situation of economic growth can be explained with the help of production possibility curve as in Fig. 7.

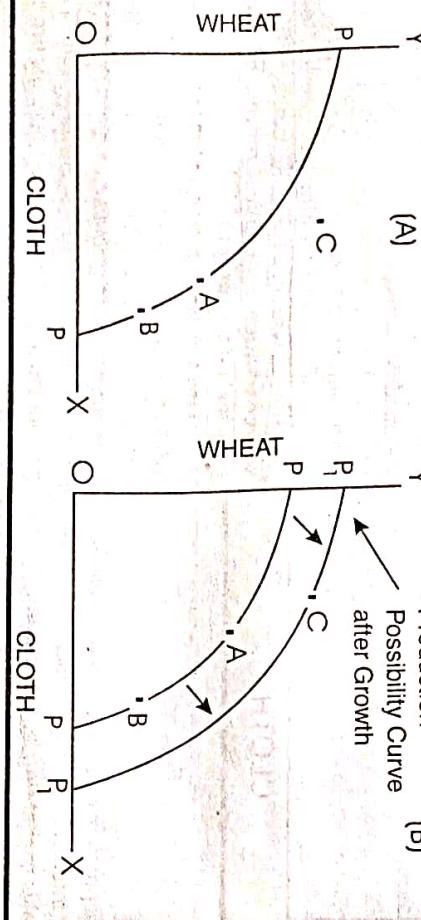


Figure 7

In Fig. 7(A) PP is the production possibility curve of an underdeveloped economy. The economy can attain combinations 'A' and 'B' but owing to the **scarcity of resources** or **lack of 'know-how'** combination 'C' remains unattainable. There can be a possibility of increasing the production of both the commodities by (i) **increasing the supply of factors of production**, (ii) **by adopting new and improved technique of production** or (iii) **by capital formation**. As a result of it, production possibility curve of the economy will shift to the right as shown by curve P_1P_1 . Consequently, the economy will be able to attain combination 'C' as well. This situation represents economic growth. Thus, shifting the production possibility curve to the right indicates situation of economic growth. This perhaps is the essence of all central problems. Expanding the resource base and/or adopting productive-technology is so very difficult if not impossible for any less developed country.

○ Shift in Production Possibility Curve

The upward shift in production possibility curve stands for higher growth. Two main reasons for this are as follows:

(1) **Growth in Capital Stock or Increase in Investment:** The growth in the capital stock shifts out the production possibility curve. But such growth requires investment which diverts production from present consumption. In the following figures 8 (A) and 8 (B), the consumer goods are represented on

Nature of Economic problem and production Possibility Curve

OX-axis and investment goods on OY-axis. It becomes clear that investment in one period causes the production possibility curve PP to move out farther to P_1P_1 in the next period. In Fig 8 (A), year 1 involves a level of investment OM represented by point A. The curve P_1P_1 for year 2 is therefore well outside the initial curve. But figure 8 (B) shows that lower amount of investment ON occurs, represented by point B so that the curve PP moves out very little to P_1P_1 by year 2.

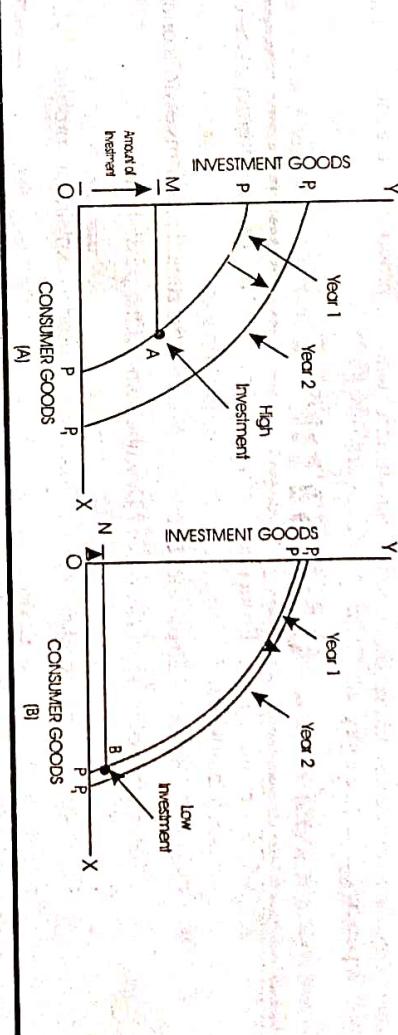


Figure 8

(2) **Improvement in Technology:** The second reason for upward shift of the production possibility curve is improvement in technology which enables us to get more output from the same quantities of resources. In fact, technological progress is defined as increase in the quantity of output that can be produced from a given input of resources. Fig. 9 shows two possibilities of improvement in technology (i) If the technological progress affects the productive capacity for both kinds of output equally the new production possibility curve PP would shift upwards to P_1P_1 . But this is not the only possibility (ii) Technology need not enlarge the capacity for both goods equally. Suppose there is the technological improvement in the production of wheat only. Then the new production possibility curve would be the dotted line PP_2 . The interesting point revealed by this illustration is that the technological improvement even though it is limited to one product, enables us to have more of both products. Increased productivity of agriculture makes it possible to increase the output of wheat which at the same time releasing resources from farming which can then be employed to raise the output of clothing.

Figure 9

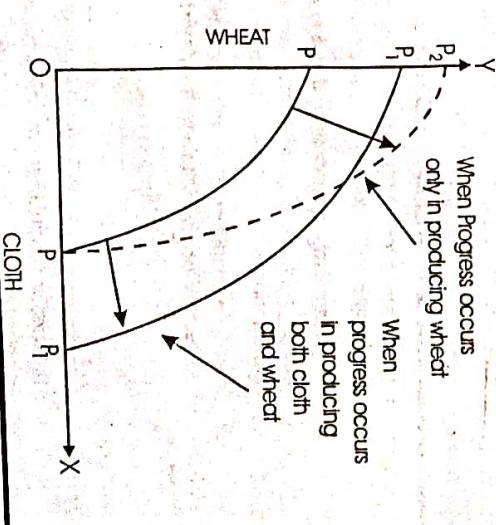


illustration is that the technological improvement even though it is limited to one product, enables us to have more of both products. Increased productivity of agriculture makes it possible to increase the output of wheat which at the same time releasing resources from farming which can then be employed to raise the output of clothing.

□ 4. Interdependence of Central Problems

Central problems of economic systems are inter-dependent. These problems arise due to scarcity of resources and unlimited wants. Since these problems arise on account of similar causes, their simultaneous solution becomes necessary. The problem what to produce relates to the availability of the resources and so determines the problem of their allocation among different uses. Both these factors jointly help in solving the problem of distribution of production or for whom to produce? Thus, we find that central problems of every economy, that is, what to produce, for whom to produce etc. are mutually related and dependent. Their solution calls for simultaneous decisions.

QUESTIONS

1. What is meant by an Economic Problem? What are the causes of emergence of an economic problem?
2. Discuss the nature of an economic problem. What are the central problems of an economy?
3. What is production possibility curve? Describe some of the possible uses.

Or

1. What is production possibility curve? How can it be used to explain the problem, What to produce?
2. Write note on shape of production possibility curve and assumption underlying it.

3. "Scarcity is the root of the problem of choice which every economic system has to face." Discuss this basic problem of an economic system, illustrating your answer with the use of production possibility curve.
4. (a) What is production possibility curve? How does it help in understanding the central problems of an economy?
(b) Why is PPC concave to the point of origin?
5. Explain clearly the meaning, shape and underlying assumptions of a production possibility curve. How does production possibility curve change with changes in its underlying assumptions?
6. Draw an imaginary production possibility curve. Explain its possible shape. Also explain the concept of opportunity cost by using the production possibility curve.
7. Draw two production possibility curves when production is subject to (i) Constant Cost (ii) Increasing Cost
8. (a) Use the production possibility curve to illustrate and discuss the problem of allocation of resources.
(b) Discuss the effect of any two of the following on the production frontier of a country.
 - (i) Increase in resources (ii) more efficient utilisation of resources (iii) improvement in technology.

□ 2. What are Economic Laws?

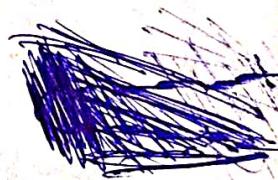
Economic laws are neither statutory nor social nor moral. They are scientific laws because they establish relationship between economic causes and their effects.

For example, Law of Demand states:

"When the price of a commodity rises its demand is likely to contract." It is a scientific law, because it seeks to establish a relationship between the cause (that is rise in price) and the effect (that is contraction of demand).

Unlike the laws of other sciences, the laws of economics do not describe a particular phenomenon, rather they describe general features of all similar phenomenon. That is why these laws are also known as generalisations.

ECONOMIC LAWS



3

2.1 Definitions

(1) According to **Marshall**, "Economic Laws or statements of economic tendencies are those social laws which relate to branches of conduct in which the strength of motives, chiefly concerned can be measured by a money price." This definition states: (i) Economic Laws are mere statements of economic tendencies. (ii) These laws are concerned with such ends of man as can be measured by money. Criticism: this definition Robertson said that economic laws are not concerned with those activities alone which can be measured in terms of money. Economic laws are equally applicable to non-monetized economies.

(2) In the words of **Robbins**, "Economic laws are statements of uniformities which govern human behaviour concerning the utilisation of limited resources for the attainment of unlimited ends."

2.2 Features or Nature of Economic Laws

Salient features of economic laws are as under:

(1) **Economic Laws are human laws:** Economic laws are concerned with human behaviour. They are not concerned with the behaviour of lifeless things. Economic laws tell about the expected behaviour of such economic units as consumer, producer, employer, employee, debtor, creditor, buyer etc. under given circumstances.

(2) **Statements of tendencies:** Economic laws express tendencies. They are not exact laws categorically that fall in price, supply is likely to fall but it does not claim found in the relationship between 'price' and 'supply'.

(3) **Generalisation:** Economic laws do not explain any particular phenomenon, rather they refer to the general features found in all phenomenon. Law of demand does not assert that rise in the price of petrol will be followed by fall in its demand or fall in its price will be followed by rise in its demand. This law states the relationship between price and demand for "all" things. Economic laws are concerned with 'the average' not with "any particular" phenomenon or event. That is why these laws are called 'generalisations.'

(4) **Economic Laws are positive:** Economic laws are positive laws. Economic laws state how men will behave under given circumstances or how they are likely to behave. Unlike statutory, moral and social laws, economic laws do not state how a man must behave. **Economic Laws are Hypothetical:** In the words of **Seligman**, "Economic laws are essentially hypothetical." In logic, hypothetical proposition, is the proposition which becomes valid only if certain conditions are fulfilled. Economic laws are also valid only 'if certain assumptions hold good'. Economic laws are hypothetical because they too assume the *ceteris paribus* clause (i.e. 'other things being equal'). Law of demand states, other things being equal, rise in price leads to contraction of demand. It is so because economics deals with human behaviour that varies from individual to individual.

(5) **Economic Laws are Abstract:** Real life is very complex. Every economic phenomenon is influenced by several factors, like, price of the good, income, fashion, substitutes, time, place etc. It is pretty difficult to study the effect of these factors simultaneously. So the economists study the causal relationship between some important variables and assume other less important variables to be constant. For instance, the law of demand expresses the causal relationship between the price of a thing and its demand. It assumes that there is no change in income, fashion, taste or habit of the consumer; whereas

in real life these factors do change. So, the law of demand and other economic laws do not depict reality fully; they depict only some important variables. That is the reason they are called abstract.

(7) **Economic Laws are relative:** Economic laws are valid under given conditions. When these conditions undergo a change, there is a change in economic laws as well. For instance, law of demand states that increase in income leads to increase in demand. But this is true in case of demand for 'normal goods'. In case, the goods are inferior, then increase in income may lead to fall in their demand. Thus due to change in the type of goods (normal or inferior) there is a change in the effect of the law of demand. we can say with certainty that all solid things expand due to heat or that all things thrown up fall to the ground due to the force of gravitation. These are the laws of Physics and quite certain. But economic laws are not that certain and true. Economic laws express the probabilities. In the words of E.H.Brown, "Economic laws are inexact because they deal not with a constant, uniform and inert matter but with the changing and thinking human being."

(9) **Economic Laws are Axiomatic:** There are some economic laws which do not require any proof to establish their veracity. For example, higher profits are preferred to lower profits.

(10) **Some Economic Laws are Universal:** Some economic laws have universal validity. For example, law of diminishing returns and laws of demand and supply are universal laws, as they apply everywhere.

(11) **More exact than the Laws of other Social Sciences:** Compared to the laws of other social sciences, laws of economics are more exact, true and perfect. It is so, because economists have a measuring-rod, in the form of money, to measure economic activities of the man. Other social sciences lack such a measure. According to Marshall, "Just as the chemist's fine balance has made chemistry more exact than other physical sciences, so economist's balance, rough and imperfect, as it is, has made economics more exact than any other branch of social sciences".

(12) **Economic Laws are qualitative:** Economic laws do not express the phenomenon in quantitative terms, rather they tell about the direction of their change. For instance, the law of demand does not state how much demand will extend with a given fall in its price. It simply states the likely direction of change (extension or contraction) in demand as a result of change in price. According to Wagh, "We describe the characteristics of economic laws by saying that they are qualitative rather than quantitative, they tell the kind or direction of change that is expected rather than the amount of change". In the words of Samuelson, "Economic Laws are probability laws, not exact relationships."

3. Difference between Economic Laws and the Laws of Physical Sciences

Economic laws and laws of physical sciences have the following differences:

(1) **Economic Laws are less exact:** According to Peterson, "Economic laws are less exact than the laws of physics and biology." For instance, there is a law of chemistry explaining that when two parts of hydrogen and one part of oxygen are mixed at a certain pressure and temperature, the result will be water. Economic laws are not so exact. For example, law of demand cannot assert categorically that if price of a commodity is doubled its demand must contract by one-half.

(2) **Economic Laws are not so permanent:** Economic laws change with change in time and conditions. Most economic laws are fickle. For example, during the period of Adam Smith, theory of

free-trade was in vogue. But Frederic List of Germany recommended the theory of protection which is the anti-thesis of free-trade. Laws of natural sciences are of permanent nature. For example, Law of Gravitation was as much valid at the time of Newton as it is today. In the words of **Stalin**, "One of the distinguishing features of Political Economy is that its laws unlike those of natural sciences are impermanent."

In short, laws of economics are not as exact as that of natural sciences. But it must be accepted that laws of economics are as much scientific as the laws of natural sciences. These laws are more exact than the laws of other social sciences.

4. Laws of Economics are to be compared with the Laws of Tides

Or

Causes of less exact nature of Economic Laws

In the words of **Marshall**, "The laws of economics are to be compared with the laws of tides rather than with the simple and exact law of gravitation." This statement of Marshall is very significant. It explains the nature of economic laws in the right perspective. The law of tides states that at a full-moon, the tide is the strongest. As the size of the moon grows smaller, the tide also grows weaker. Thus, viewing the size of the moon it can be predicted when the tide will be the strongest. But one cannot make such a forecast with hundred percent accuracy. Due to excessive rain or storm there can be a change in the rise or fall in the level of sea (tide). Thus the laws of tides are simple statements of tendencies. In the same way, it cannot be asserted with any amount of certainty as to what will be the economic behaviour of a man under particular conditions. One can only express probability with regard to economic behaviour. This probability may or may not be accurate. For example, according to law of demand, when the price of a commodity rises, its demand is likely to contract. But there are several instances where the law does not operate. In India, the price of scooters has been rising, yet the demand for scooters instead of contracting is ever extending. Thus, like the law of tides, economic laws are not exact and precise. On the other hand, law of gravitation is exact and inexorable. According to it "Things coming from above must fall to the ground". Economic laws are not invested with that much of certainty. Thus the laws of both economics and of tides are not exact. Following are the main reasons for it:

(1) **Study of Man:** Economics studies the behaviour of man. Every man behaves according to the dictates of his will. He cannot be forced to do anything contrary to his desire. It is, therefore, not possible to make any prediction with certainty regarding the economic behaviour of the man.

(2) **Defective Measuring Rod:** Economist measures the economic activity of the man with money as the measuring rod. But measuring-rod of money is defective. It is imperfect and unreliable. It is so because the value of money often fluctuates. Thus the measuring-rod of money in economics cannot measure economic activities with same exactitude as the balance of a chemist.

(3) **Less Possibility of Experiments:** An economist does not have any facility of experimentation as a natural scientist has. Man is the subject of study in economics. In natural sciences the subject of study is lifeless matter. Experiments can be conducted in respect of lifeless matter in laboratories but man cannot be subjected to any laboratory test. He has his own discretion to react to a particular situation.

(4) **Influence of different tendencies:** Economics is a social science studying different types of individuals. These individuals are influenced by social, political, religious and several other tendencies. It is therefore very difficult to say how an individual will react under given circumstances. That is why Economic Laws are mere statements of tendencies.

(5) **Change in Time:** According to **Marshall** it takes some time for the causes to show their effects. In the mean while, the circumstances or conditions may change resulting into change in the expected effects. With the passage of time, man's taste, nature, habits, attitudes etc. also undergo change, it therefore becomes difficult to say how a man will behave under different circumstances or conditions.

(6) **Effects of Unknown Factors:** In the words of **Durbin**, "The true determinants of economic events are not adequately discovered". Every economic event is influenced by several unknown factors. As such, predictions based on known factors may prove wrong due to the influence of unknown factors.

(7) **Other things being equal:** Economic laws are valid only if "other things are equal," but in real life 'other things' or 'assumptions' never remain equal. These 'other things' are subject to change. Since the assumptions of economic laws are not fulfilled, the predictions made on the basis of these laws often prove untrue.

In short, keeping in view the imperfections of economic laws, **Marshall** has aptly said, "The laws of economics are to be compared with the laws of tides rather than with the simple and exact laws of gravitation".

QUESTIONS

1. Explain the term 'Economic Law' and discuss the nature of economic laws.
2. "The Laws of Economics may be compared with the law of tides rather than with the simple and exact law of gravitation": - Marshall.
3. Discuss and point out the difference between economic laws and laws of physical sciences. For advancement of knowledge in economics, the laws of economics should be compared with the laws of physical sciences?
4. Explain the nature of Economic Law. Why cannot the laws of economics be compared into two distinct categories?

4

RELATION BETWEEN SCIENCE, ENGINEERING, TECHNOLOGY AND ECONOMIC DEVELOPMENT

□ 1. Introduction

Economic development is the primary objective of the majority of world's nations. To raise the income, well being and economic capabilities of people everywhere is easily the most crucial task facing us to day. The knowledge of science, application of engineering and advanced technology are the preconditions of economic development. There is an intimate causal relationship between science engineering, technology and economic development. Economic development represents an improved productive capacity in an economy. It allows more goods to be produced and in greater diversity. In an economy with many goods produced efficiently, competitively and economically, and by many different production techniques, the relation between science, engineering and technology becomes quite apparent.

The noble prize winner economist **Prof. Simon Kuznets** is of the view that "A country's economic development is a long term rise in capacity to supply/increase... diverse economic goods to its population, operating capacity based on advanced technology and the institutional and ideological adjustments that is ever exten... It is now well known that we live in a world in which advances in science, engineering and law of gravity have emerged as a major determinant of the economic development. Human knowledge is ground". Eng at a pace which was unthinkable even two decades ago. This development has profound implications for the management of the future patterns of social and economic growth. Before analysing the relationship between science, engineering, technology and economic development, it will be beneficial to have a clear understanding of these terms.

□ 2. Meaning of Science?

The word **Science** comes from the Latin word Scientia, which means knowledge. Whatever may be the field of work, all scientists want to explore and gain the knowledge of the working of the universe. A theory developed by a scientist can be accepted as a part of scientific knowledge, only when repeatedly tested experiences by other scientists also find it to be correct. Broadly speaking, science, may be divided into the following four major groups: (i) Mathematical Sciences, (ii) Physical Sciences, and (iii) Life Sciences, and (iv) Social Sciences. Here the term Science means Physical Science like Physics and Chemistry. In this sense — Science may be broadly defined as the development and systematization of positive knowledge about physical universe. It is a knowledge gained through experience and verified through experiments. It is characterised by the use of scientific method. The modern view of scientific method is that both experience and reason play an important role in science. Reason or imagination provides speculative hypothesis, experience helps weed out those which are false. Scientific laws can be verified by experimentation. Experiments leads to research which may result in inventions of new goods or new

processes. Science has grown because man by nature is curious and experimental. His curiosity causes him to enquire into things because they attract his attention even though they may not be immediately relevant to his practical problems. And his desire to experiment is also greatly stimulated by the practical tasks in hand and the problems they pose for solution. Science provides the basis of modern technology—the tools, materials, techniques and sources of power that stimulates economic development. There is a close relationship between science, society and its well being. **Pt. Nehru** realised this fact quite early when he wrote "It is science alone that could solve these problems of hunger and poverty, of insanitation and illiteracy, of superstition and deadening customs and traditions of vast resources running to waste of a rich country inhabited by starving people."

□ 2.1 Role of Science in Economic Development

The famous economist **Simon Kuznets** is of the view that the most distinctive driving force of modern economic growth is the extended application of science to the problems of economic production. The role of science in economic development has been to divide the process of growth in three stages. Firstly the formulation of scientific principles. Secondly, the application of these principles to given technical problems and the development of technical inventions to the point where they are ready for commercial exploitation. All these stages ultimately leads to improvements in the art of production which results in economic development. In fact improvement in productive capacity results from a combination of research, invention, development and innovation. Research and invention are the activities which, create knowledge, and development and innovation are the activities which apply new knowledge to the task of production.

Prof. Schumpeter, identified (1) Invention, (2) Innovation and (3) Diffusion as the main causes of economic development.

(1) Invention:

Invention is the creation of a new idea. It is a scientific discovery. It is simply the discovery of a new technique or combination of resources. Invention is performed by the inventor. For invention to occur, it is necessary that a feed back from pure sciences be available. So the advancement of pure science is a precondition to the emergence of invention. Inventions may be classified into two categories (i) Process Invention: An invention which leads to a new technique for producing an existing good is referred to as process invention. (ii) Product Invention: An invention which changes the form of existing goods or generates totally new goods is referred to as a product invention. For a capitalist economy **Meir and Baldwin** suggest that the economic inducements to invention could be classified as

- A desire to share in widening markets. As the market widened, the pressure of increasing demand necessitated expansion of output. It was thus that a number of inventions leading to the adoption of mass production, techniques occurred.
- A desire to solve practical problems.
- The desire to take advantage of change in relative factor prices. Invention are also stimulated due to changes in relative factor prices. When the relative factor prices undergo change there are economic inducements to minimise the use of expensive factor. For example if the supply of capital is increasing at a rate of greater than that of labour, there would be inducement to bring about labour saving and capital using inventions.

(2) Innovations: Innovation is the practical application of an invention. It is the incorporation of an idea into production process. Thus invention is a scientific discovery; innovation its economic application. Innovations are performed by the entrepreneurs. **Schumpeter** thought that innovations would take five major forms: (i) The introduction of a new good or quality of good (ii) the introduction of a new process for producing an existing good, or quality of good. (iii) The opening up of a new market; (iv) the development of a new source of supply (v) Improved organisation of production.

There are several sources of innovations. One source of innovation is by chance discovery of a useful idea. A second source of innovation is that during the process of production possible improvements become apparent. This is the process of learning by doing. The third way in which innovations come about is as a result of deliberate search. Such activity is called research and development (R and D) involving finding an idea and making it operational.

Innovations affects economic development by encouraging profits and there by increasing the rate of capital formation which results in economic development. Innovations produces a number of following significant affects. (i) change in combination of factors, (ii) Increase in productivity (iii) Causes external economies (iv) Transformation of industrial organisation and (v) Increasing Urbanisation. All these effects of innovation are conducive to economic development.

(3) The Economics of Diffusion: The economics of diffusion is concerned with the speed of an innovation. The diffusion of an innovation will not be instantaneous. The speed of diffusion and the final level of its utilisation depends on several factors. For example new technologies allow cheaper production than old. Thus at prevailing prices they are more profitable, which is desirable, but they are more risky, which is undesirable. When technologies are first introduced risk is highest and this reduces as more experience is gained. Thus in the early high risk phase only the most aggressive firms use the innovation and diffusion is slow. Once the teething troubles have been ironed out imitating firms find the risk acceptable and the period of rapid diffusion commences. Higher expected profits or lower perceived risk will lead to faster diffusion and higher utilization.

In short, we can conclude that science, through innovation stimulate the process of development. It is because of this that **Chow - En-Lai** the architect of China also realised, the necessity of science when he said, "We must catch with the advanced level of world science. Only by marketing the most advanced science, we can be ensured of a powerful and up-to-date, economy. Economic development is impossible in the absence of inventions and innovations — development of new products and processes, discovery of new ideas or new ways of doing things as also actually getting the new methods adopted in effective ways."

□ 3. Meaning of Engineering?

Engineering is the profession that deals with design and building of machines, devices and structures. It is among the oldest of profession, although until perhaps the 18th century it was rarely distinguished from that of a Scientist, the inventor, or the builder. In fact the histories of technology of science, and Engineering were intertwined for many centuries — technology being in a sense the product of engineering and science often being based on the empirical evidence supplied by the builders of machines. In the words of **Accreditation Board for Engineering and Technology**, "Engineering is the profession in which a knowledge of the mathematical and natural sciences gained by study, experience and practice is applied with judgement to develop ways to utilize economically the materials and forces of nature for the benefit of mankind."

3.1 Role of Engineering in Economic Development

Engineering plays an important role in economic development by facilitating the mechanisation of production process and helping the development of economic infrastructure.

(1) Mechanisation of Production Process: Mechanisation means that operations of the production are done with the help of machine. Engineering facilitates the construction of machines for

different sectors involved in production. Industrial production is more or less completely based on the use of machines. The machines may be simple or sophisticated. These may be manually operated or fully automatic. The use of machines in agricultural sector is also increasing in almost all the underdeveloped countries. The introduction of machines results in large scale production, save time, and efforts. The per unit production cast is reduced. Many complicated and complex operations could be performed only by machines. Thus mechanisation leads to economic development by increasing productive capacity of the economy.

(2) Development of Infrastructure: Engineering is extensively used in the construction of various means of infrastructure like means of transport, means of energy, and communications. Engineering is used in the construction of roads, bridges, railway tracks, railway engineers, coaches and wagons. The power stations are installed by engineers. Engineering is required to build up a ship or an aeroplane. It has been mentioned in **World Development Report** that, "The adequacy of infrastructure helps determine one country's success to another country's failure in diversifying production, expending trade, coping with population growth, reducing poverty and improving environmental conditions." Infrastructure of a country are the necessary precondition for economic growth of a country. Application of Engineering has made it possible to construct various components of infrastructure efficiently, economically and rapidly. Good infrastructure raises productivity and lowers production costs. It should not only be develop rapidly and adequately rather its development should precede the development of other sectors. **World Bank** has concluded that there is a direct and proportional relation between infrastructure and production. As a result of one percent increase in infrastructure, there is one percent increase in production.

In short, engineering by creating machines and constructing various components of infrastructure stimulates the process of economic development. In recent decade advances in engineering have made: Space travel possible, transformed our transportation systems, revolutionised agricultural and industrial operations and miniaturized electronic circuits so that a computer can be placed on a semi-conductor chip. The list of achievements seems almost endless. The utilization of engineering knowledge for economic development of a country is achieved through the design of things we use such as machines, structures, products and services.

□ 4. Meaning of Technology

During the past two centuries technology has brought immense changes in the world, raising the standard of living and improving the quality of goods consumed. In the words of **Francis Stewart**, "Technology means skills, knowledge and procedures for making, using and doing useful things." The term technology is often identified with the hardware of production that is knowledge about machines and processes. Definitions of technology, varies with authors depending on the purpose at hand. Some of the definitions of technology are as follows:

- Schmookler** defines technology as, "Social pool of knowledge of industrial arts."
- According to **Edwin Mansfield**, "Technology is made up of knowledge concerning physical and social phenomena, knowledge regarding the application of basic principles to work in the relevant fields or professions and knowledge of the rules of thumb of practitioners and craftsmen."
- Northern Rosenberg** says, "Technology refers to man's capacity to control and to manipulate the natural environment in the fulfillment of human goals, and to make the environment more responsible to human needs."

In the definitions above, technology is a type of knowledge, the know how, necessary for the creation of goods and services demanded by economic activity.

Technology is mainly classified into four categories: (1) **Labour Intensive Technology** is that technology in which more of labour and less of capital are used per unit of output. It is more appropriate for underdeveloped countries where labour is abundant and capital is scarce. (2) **Capital Intensive Technology** is that technology in which more of capital and less of labour are used per unit of output. It is more suitable for advanced countries where capital is abundant and labour is clear. (3) **Neutral Technique**: is that technique which is neither capital saving nor labour saving. It is neutral in its effects in the sense that neither of the two factors become more or less important at the margin. (4) **Intermediate Technology**: Prof. E.F. Schumpeter in his book, "Small is Beautiful", suggests intermediate technique for underdeveloped countries of the world. Intermediate technology is that technology which involves around £70 to £100 equipment per average of work place.

A productive process involves the transformation of inputs into outputs. The relationship may be described as a production function where output (Q) depends on input of capital (K) and labour (L) as well as technology (t). In other words $Q = F(K, L, t)$.

The above production function shows that an increase in the productive capacity of the economy can come about from two sources. First from increased supplies of capital or labour. Second, from using these inputs more productively by using better technology. The technological progress implies that either (1) More output can be produced given the same quantities of the inputs or the same amount of output can be generated by smaller quantities of one or more of the inputs. Or (2) existing outputs undergo qualitative improvement or (3) Total new products are produced.

□ 4.1 Role of Technology in Economic Development

A higher degree of technology is a precondition for rapid economic development. Level of technology is an important determinant of economic development of a country. Technological change is the prime mover in the course of economic development. The growth of real income in developed countries has taken place at rates which cannot be explained in terms of capital alone. A large part of this is due to increased productivity which has been the result of technological change. Robert Solow estimated that technical change accounted for about 2/3 of growth of U.S. economy, after allowing for growth in the labour force and capital stock. Economic development is impossible in the absence of technological progress. Development consists primarily in employing technology to production process. It uses existing resources in a different way. It results in doing new things with them irrespective whether those resources increase or not. Most economists agree that technological change is an important source of economic growth. As noted by A.K. Cairncross, "Development as an ongoing process rests on the constant injection of new technology and on the capacity to generate and absorb technical change." The rapid economic progress of the western countries and Japan bring out clearly the importance of technology as a factor promoting rapid economic development. Technology has led to greater output, shorter working hours, the creation of a host of skilled jobs in design, maintenance and engineering, safer working conditions, production of new and better goods of standardised quality with more efficient use of raw materials, decline of superstition and traditionalism. In the words of Dr. Manmohan Singh, "Comparative advantage of a nation will be more and more influenced by its capacity to generate, absorb, adapt and assimilate new technologies into production processes."

The main contribution of technology to economic development is that it enables the production of higher output with the same quantity and combinations of factor inputs. In other words technical improvement means an increase in technical efficiency, defined as producing more with the same inputs or producing the same quantity of output with fewer inputs. In fact technical progress was the most important factor in determining the rate of growth of the economy. The impact of technological change on production can be illustrated with the help of following diagrams. Mansfield has correctly remarked that "Without question, technology is one of the most important determinants of economic development. Technology has improved working conditions permitted the reduction of working hours, provided an increased flow of products and added many new dimensions to our way of life."

We can show the effect of technical progress on agricultural production and industrial production with the help of the following production possibility curves. We assume that Rice represents agricultural production and Radios to represent industrial production.

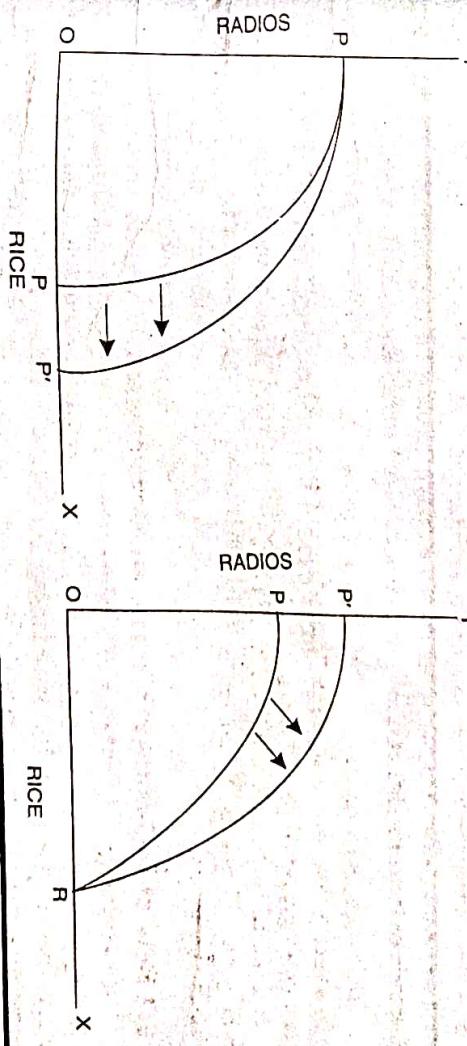


Figure 1

In Fig. 1 agricultural production (Rice) is shown on OX-axis and Radios is on OY-axis. Fig 1(A) shows the effect of technological progress on agricultural sector. The production possibility curve PP has shifted upwards to $P'P'$ showing more yield of agricultural product and the same amount of industrial output. On the other hand Fig. 1(B) shows the effect of technological progress on industrial sector. The RP curve has shifted upwards to $R'R'$ showing increase the output of Radios while the output of rice remains the same.

□ Conclusion

The above discussion clearly proves and there is an intimate relation between science, engineering technology and economic development. We may sum up the discussion with Todaro who says, "The sources of economic development can be traced to a variety of factors but by and large, investments that improve the quality of existing physical and human resources, increase the quantity of the same productive resources and that raise the productivity of all or specific resources through invention, innovation and technical progress have been and will continue to be primary factors in stimulating economic growth in any society."

QUESTIONS

1. Examine the Relation between science, engineering, technology and economic development.
 2. Discuss the role of science in economic development. Examine the nature of inventions and innovations in this context.
 3. What is the role of engineering in economic development?
 4. Explain the contribution of technology in economic development.

BASIC CONCEPTS

2

■ 1. Introduction

According to Prof. R.A. Salter, "Every science is incomplete without its specific terminology. Many words which are used in the common day-to-day language, have specific meanings in Economics." In Economics, many words, such as, economic activities, goods, wealth, utility, price, etc., are used in a special sense. The meanings of these words in economics are totally different from their meanings in the day-to-day language. These words are the **basic concepts** of Economics. Some major basic concepts used in economics are as follow :

□ 2. What is Micro Economics and Macro Economics?

Economics has been classified into Micro Economics and Macro Economics. This classification was first made in 1933 by **Professor Ragnar Frisch** of **Oslo University (Norway)**. Micro economics studies economic problems at individual level, for instance, the problem of consumption of an individual consumer or the problem of price determination by a firm. It is also called **Price Theory**. Macro Economics studies economic problems at the aggregate level, for instance, aggregate consumption, general price-level, aggregate employment, aggregate investment, national income etc. of the entire economy. It is also called **Theory of Income and Employment**.

2.1 Micro Economics

2.1 Micro Economics

The term Micro has been borrowed from the Greek word, 'Mikros' meaning small. But it may not be misunderstood that micro-economics refers to small or insignificant economics. As a matter of fact micro economics is as much important as macro-economics. According to **Bilas**, "The term micro in economics means division into small parts of such economic variables as consumption, investment, saving etc." Under micro-economics, we study individual units, like, a consumer, a firm, an industry, price determination of a particular commodity etc. We also study 'group' in it. For example, market demand curve, which is the aggregate of individual demand curves, is also a subject of study of micro-economics, but we do not study in it large or national-level groups. Composition and allocation of total production fall under the scope of micro-economics study, whereas under macro-economics we study level of aggregate production.

□ 2.2 Definitions

Definitions

(i) Watson says, "Micro economics is the theory of the small, of the behaviour of the consumers, producers and markets."

sources and markets.

(ii) In the words of **Shapiro**, 'Micro economics deals with small parts of the economy.'

(iii) According to **Leftwitch**, "Micro economics is concerned with the economic activities of economic units - **households, resource owners and business firms.**"

(iv) According to Boulding, "Micro-economics is the study of particular firm, particular household individual price, wage, income, industry and particular commodity."

□ 2.3 Scope of Micro Economics

Micro economics deals with the allocation of resources for the achievement of different ends. discusses following problems:

(1) **Theory of Demand:** It studies how the demand for a commodity is determined and what the law of demand. Theory of Demand refers to the demand of the consumer and his maximum satisfaction. It studies how a consumer distributes his limited income on the purchase of different goods at different prices so as to get maximum satisfaction.

(2) **Theory of Production:** It also studies the theory relating to production of goods. A firm carries out production with the help of factors of production. Under Theory of Production one studies production function and the laws governing production of goods.

(3) **Theory of Price Determination:** Micro-economics also deals with the theory of price determination. Besides analysing the conditions of demand and supply, theory of price determination seeks to explain how the price of goods produced under different market conditions, such as, perfect market, monopoly etc. is determined. Condition of demand and supply are also studied in this theory.

(4) **Theory of Factor Pricing:** Income received by the sale of goods produced with the help of different factors of production, is distributed among these very factors in the form of factor-price, viz., rent, wages, interest and profit. How the price (remuneration) of each factor of production is determined is a problem that deals with distribution of income and so is studied under micro-economics.

(5) **Optimum Allocation of Resources:** Micro-economics is also concerned with the optimum allocation of resources, that is, how efficiently resources are distributed among the consumers and producers. A consumer or a firm is in equilibrium when there is optimum allocation of resources.

(6) **Welfare Economics:** Micro-economics also studies welfare economics. Welfare economics spells out an ideal economy. It deals with the welfare of the people as consumers and producers.

□ 2.4 Importance of Micro-Economics

Importance of the study of economics lies in the following:

(1) **Operation of an Economy:** Micro-economics explains the functioning of an economy. It tells whether different constituents of the economy, namely, consumers, firms etc. are functioning efficiently or not. According to Watson, "Micro-economics has many uses. The greatest of these is the understanding of the operation of the economy."

(2) **Prediction:** Predictions are made on the basis of the theories of micro-economics. Predictions are always based on certain conditions, e.g. if a cause occurs then a set of results will follow. For instance, if demand increases prices are also likely to rise.

(3) **Economic Policies:** Study of micro-economics helps in the formulation of economic policies

We can analyse those policies which influence an economy. We can also find out the effect of government policies on the allocation of resources.

(4) Economic Welfare: It informs us of the conditions of economic welfare. It is the main subject of normative economics. Study of micro-economics suggests how the ideal of economic welfare can be achieved.

□ 2.5 Limitations of Micro-Economics

Following are the main limitations of micro-economics:

(1) **Static:** In the study of micro-economics, mostly static analysis is made use of. In it many economic variables are assumed to be constant. This part of economics is, therefore, unrealistic to a large extent.

(2) **Wrong Conclusions:** The conclusions drawn from the study of micro-economics are in many cases not valid from the point of view of macro-economics. For instance, in micro-economics, we say that saving is a virtue so far as an individual is concerned but if it is viewed from macro angle, that is, if the entire population begins to save more than before, then there will be fall in aggregate demand for consumption goods leading to fall in production and employment. In other words, it will cause misery in the economy. Thus, what is individually a virtue may become socially a vice.

(3) **Unrealistic Assumptions:** This economic analysis is based on many unrealistic assumptions like prevalence of full employment and perfect competition in the economy. In real life these assumptions are not found.

(4) **Limited Scope:** Micro-economics has limited scope, study of many important economic policies and problems like, fiscal policy, monetary policy, inflation, unemployment etc. is outside its scope.

In short, Bilas has rightly said, "While price theory is useful, one should not be blinded by the theory. It is simply a tool of analysis for the economists to go along with other tools such as history, statistical methods and mathematics."

□ 3. Macro Economics

The term 'Macro' as used in English language has its origin in the Greek word **Makros**, meaning large. Hence, in macro-economics, economic problems are studied from the point of view of the entire economy, for example, aggregate consumption, aggregate employment, national income, general price level etc.

□ 3.1 Definitions

(i) In the words of Boulding, "Macro economic theory is that part of economics which studies the overall averages and aggregates of the system."

(ii) According to Shapiro, "Macro economics deals with the functioning of the economy as a whole."

(iii) In the words of Ackley Gardner, "Macro economics concerns with such variables as the aggregate volume of the output of an economy, with the extent to which its resources are employed, with the size of national income and with the general price level!"

□ 3.2 Scope

Macro-economics deals with the full utilization of national resources. These resources have complete impact on national income, employment, effective demand, aggregate demand, aggregate supply, total

saving, total investment, price-level, economic development etc. Its scope can be divided into the following parts:

(i) **Theory of National Income:** Macro economic studies the concept of national income.

Different elements, methods of its measurement and social accounting.

(ii) **Theory of Employment:** It studies the problems of employment and unemployment. Different factors determining employment, such as, effective demand, aggregate supply, aggregate demand, total consumption, total investment, total saving, multiplier etc. are studied under this theory.

(iii) **Theory of Money:** Changes in the demand for and supply of money have a great bearing on the level of employment. Thus under macro-economics, functions of money and theories relating thereto are studied. Banks and other financial institutions are also studied under it.

(iv) **Theory of General Price Level:** Problems concerning inflation and deflation are part of the study of macro-economics.

(v) **Theory of Economic Growth:** One studies problems concerning economic development or increase in per capita real income. Economic development of under-developed countries is also subject of study of macro-economics, besides the study of governments' fiscal and monetary policies.

(vi) **Theory of International Trade:** It also studies principles determining trade among different countries. Tariffs, protection and free-trade policies fall under foreign trade.

(vii) **Macro Theory of Distribution:** It studies macro theory of distribution, that is, how the share of different factors of production is determined in the national income. In other words, how much is given to labourers and how much to land-lords and entrepreneurs. It also deals with unequal distribution of income.

(viii) **Theory of Business Fluctuations:** It also deals with the fluctuations in the level of employment, total expenditure, general price-level etc. and how these business fluctuations can be checked or controlled.

3.3 Uses of Macro-Economics

After the publication of Keynes' famous book, "Employment, interest and general theory of Money", (1936) study of macro-economics has assumed great importance. Its main uses are as under:

(1) **Helpful in understanding the functioning of an Economy:** Modern economy is very complex. Many economic variables which are inter-dependent operate in it. In order to understand the functioning and organisation of the economy, knowledge of the functioning of the individual units alone (micro-study) is not enough. It needs the study of the entire economy.

(2) **Formulation of Economic Policy:** Study of macro-economics is essential to formulate economic policies. Almost all modern governments depend upon the aggregates of economic variable such as, national income, total employment, total investment, total saving, general price-level etc. in order to formulate economic policies. From the view point of economic policy, macro economics is most important because economic policies of the government are concerned not with individuals, but with groups of individuals.

(3) **Control over Trade Cycles:** Trade cycles or economic fluctuations constitute an important economic problem. Economic changes occur rapidly in a capitalist economy. These changes have adverse affect on the economy. Their control becomes very essential. These economic changes depend

on aggregates like, total production, total saving, aggregate demand, aggregate supply etc. Hence, to trace the cause of trade cycles and methods to control them, study of macro-economics is essential.

(4) **Change in the General Price-level:** Value of money or, what is called general price-level, has been undergoing wide fluctuations during the twentieth century. Fall in the value of money or rise in price-level is called **Inflation** and rise in the value of money or fall in price-level is called **Deflation**. Economists have to seek the help of macro economy in order to control these changes in the value of money.

(5) **Study of National Income:** In modern times, almost in every country, it is through the study of national income that the economic situation of different countries is known. It is essential for every country to have full knowledge of its national income in order to formulate its policies concerning planning, welfare, war etc. Knowledge of national income is possible through macro analysis alone.

(6) **Helpful in Economic Planning:** Under-developed countries lay great stress on the importance of economic planning. Macro-economic analysis alone makes it possible to formulate and adopt proper policies and techniques concerning economic planning and then to enforce the same.

(7) **Helpful in the study of Micro Economics:** Macro economics has great role in framing the theories and laws of micro-economics. For instance, law of diminishing marginal utility could be framed only after analysing the behaviour of the groups of the people. It is on the basis of this analysis that a conclusion is drawn, that when the quantity of consumption of a commodity is increased its marginal utility goes on diminishing. As a matter of fact, no law of micro-economics can be framed without the study of relevant aggregates.

(8) **Helpful in Understanding Macro-economic Paradoxes:** It is a matter of common experience that many economic activities which are proper for an individual prove to be undesirable when applied to the entire society. **Boulding** calls it "Economic paradoxes" and **Samuelson** calls it "The Fallacy of Composition." For example, when an individual saves, it will be of help to him but if all people begin to save then the aggregate demand will go down. Fall in aggregate demand means fall in total output and consequently fall in national income and level of employment. Thus saving which is a virtue for an individual becomes a vice for the society. Study of macro-economics helps in understanding these paradoxes.

3.4 Limitations of Macro-Economics

Main limitations of macro economics are as under:

(1) **Dependence on Individual Units:** Several conclusions of macro economics are based on the sum total of individual units. In fact, it is not correct, because what is true for individuals may not necessarily be true for the whole economy. For instance, an individual may save in terms of money but if everybody starts saving, the aggregate demand will fall causing reduction in national income. It will result into fall and not rise in aggregate saving.

(2) **Heterogeneous Units:** Under macro economics, heterogeneous units are studied. These units are measured in different ways. It is not possible to express these units in uniform numbers or homogeneous measure.

(3) **The Composition of Structure of the Aggregate is More Important than the Aggregate itself:** Macro economics studies aggregate but as a matter of fact, it is the composition of the



structure of the aggregate which influences an economy more than the aggregate itself. Thus, for a proper study of an economy, knowledge of the composition of the structure of the aggregate is as much essential as the aggregate itself.

(4) **Different Effects of Aggregates:** Another difficulty in the study of macro economics is that it does not study the different effects of an aggregate on different sectors of an economy. Macro economic tendency has not a uniform effect on all sectors of an economy. For example, rise in price-level benefit the traders and the industrialists but the wage-earners are the losers.

(5) **Limited Application:** Another limitation of macro economics is that most of the models relating to it have only theoretical significance. They have very little use in practical life. Moreover, it is very difficult to measure various aggregates of macro economics.

(6) **It ignores the contribution of Individual Units:** Macro economic analysis throws light only on the functioning of the aggregates. However, in real life, the economic activities and decisions taken by individual units on private-level have their effects on the economy as a whole. Such effects are not known by the study of macro economics alone.

□ 3.5 Difference between Micro and Macro Economics

Main differences between micro and macro economics are:

(1) **Difference in the degree of aggregation:** Degree of aggregation of economic variables differs in micro and macro-economics. Micro economics deals with the study of the economic problems of a single economic unit, like, a firm, a consumer or a small group of economic units, like an industry.

On the other hand, in macro economics, one studies the economic problems of all the firms in an economy. Micro economics studies tiny units of economic variables, whereas macro economics undertakes the study of important aggregates of economic variables.

(2) **Objectives:** Objective of micro economics is to study the principles, problems and policies dealing with the optimum allocation of resources. On the other hand, the aim of macro economics is to study the principles, problems and policies dealing with full employment and development of economic resources.

(3) **Core Differences:** According to Prof. G. Thirumaya, the main difference between macro and micro economics is that the main determinant of the problems of micro economics is price whereas the main determinant of the problems of macro economics is income. In case of micro-economics economic variables, like consumer, producer, factors of production etc. take their decision on the basis of price. On the other hand, in macro economics decision regarding total consumption, total investment etc. are taken on the basis of income.

(4) **Methods of Study:** While formulating the laws of micro economics, we assume 'other things being equal', meaning thereby, that we study only the main variables dealing with an economic activity. For instance, in the law of demand we simply study the relationship between price and demand. The effect of such factors on demand as change in income, taste and habit of the consumer, or change in the price of related goods etc., is assumed to be constant. This method of analysis is called partial equilibrium

analysis. In case of macro economics, economic variables are divided into large important aggregates, such as, aggregate demand, aggregate supply, total consumption, total investment. The mutual dependence of these variables is studied. Change in one economic variable causes change in others also. This technique of analysis is called general equilibrium analysis.

(5) **Paradoxes:** Sometimes there are paradoxes seen in micro and macro activities. No doubt, society is composed of individuals, but some activities that are beneficial to an individual prove harmful to the society as a whole, such types of activities are called paradoxical, e.g., (i) if one depositor withdraws all his money from the bank, it hardly makes any adverse affect on the balances of the bank; but if all the depositors withdraw their deposits from the banks, then the banks will fail. (ii) One labourer by lowering his wage-rate may succeed in finding employment for himself, but if all the labourers lower their wage-rate, then their income will fall, their demand will fall, total production will fall and total employment instead of going up will also fall. These paradoxes underline the difference between micro and macro economics.

(6) **Assumption:** Micro and macro economics have their respective assumptions. In case of micro economics it is assumed that there is full employment in the economy and aggregate output and aggregate expenditure are constant. On the basis of these assumptions, efforts are made to know how to allocate resources among different activities. On the other hand, in macro economics, the allocation of resources is assumed to be constant. What is sought to be known is how to achieve full employment of the resources.

(7) **Analytical Differences:** According to Patinkin and Clower etc., the main difference between micro and macro economics is that, micro economics is a study of the behaviour of economic variables under condition of equilibrium, whereas macro economics is a study of the behaviour of economic variables under condition of disequilibrium.

(8) **Changes:** Some economic activities undergo a change from micro point of view but they remain constant from macro point of view. For example, number of members in some families may increase and in others may decrease, but on an average there is hardly any change in the total population. Prof. Boulding has explained this difference with an example of a tree and forest. According to him, just as a forest is composed of large number of trees similarly, an economy is an aggregate of large number of individuals. The difference between a tree and a forest is (a) tree can wither away but the forest grows; (b) it is difficult to burn a tree but the forest catches fire easily; (c) a tree has no effect on the climate of the area but the forest has. Same analogy holds good in case of micro and macro economics. Many a time, economic activity at micro level is changing but at macro level it remains constant.

To conclude, Prof. Boulding has rightly said that due to differences in micro and macro economics it should not be inferred that these are distinct activities. In reality, these are the different techniques of the study of economic activities.

□ 4. What is Equilibrium ?

The term equilibrium in Economics has been taken from Physics. It refers to 'state of rest'. It is a state where there is no motion or change. The term 'equilibrium' in English language is derived from two Latin words :- *acquus* = equal and *libra* = balance. Literal meaning of the term 'equilibrium' therefore, is 'equal balance'. It is a 'state' in which the forces working in opposite directions are exactly in balance and there is no possibility of any change in that state. The meaning of the term 'equilibrium' in Economics is different from that in Physics. In economics, the term equilibrium refers to that state in which there is movement but the rate of movement remains uniform. In other words, equilibrium in economics refers

to that movement in which there is no tendency to change, while in Physics it refers to a motionless state. It is a state which is characterised by the absence of change or in which there is no tendency to expand or contract. Thus, it is that state in which (i) there is lack of change (ii) economic units get maximum profit or incur minimum loss (iii) it refers to a tendency (iv) it has no relation with morality. For instance, according to eminent economist Lord Keynes, an economy can be in equilibrium even when there is unemployment. Such a state is called under-employment equilibrium.

□ 4.1 Definitions

- (1) In the words of **Prof. J.K. Mehta**, "Equilibrium denotes in economics absence of change in movement, while in physical sciences it denotes absence of movement itself".
- (2) **Stigler** says, "Equilibrium is a position from which there is no tendency to move".
- (3) According to **Leftwitch**, "Equilibrium is the attainment of a position from which there is no incentive nor opportunity to move".

- (4) According to **Penguin Dictionary of Economic Terms**, "Equilibrium is a state in which forces making change in opposite directions are perfectly in balance, so that there is no tendency to change".

□ 4.2 Static and Dynamic Equilibrium

(1) Static Equilibrium: Static equilibrium is concerned with static economy. It refers to that position in which different economic variables (like, consumption, demand, supply etc.) have no tendency to change. They remain stable. As a matter of fact, static equilibrium refers to that position of equilibrium in which a consumer gets maximum satisfaction and a producer earns maximum profit. So neither the consumer nor the producer would have any tendency to change this position.

Prof. Boulding has explained static equilibrium in these words, "A mechanical analogy may be found in a ball rolling at a constant speed, or better still of a forest in equilibrium where tree sprout grows or dies but where the composition of the forest as a whole remains unchanged". In the words of **Prof. J.K. Mehta**, "Static equilibrium is that equilibrium which maintains itself outside the period of time under consideration". Suppose, the equilibrium price of a commodity is determined within the same period of one week. If that equilibrium price continues to prevail even after the expiry of one week, then it will be an example of static equilibrium.

(2) Dynamic Equilibrium: Dynamic equilibrium refers to that position in which different economic variables (like saving, investment, income etc.) undergo change at a constant rate. In the words of **Boulding** "An economic system might be said to be in dynamic equilibrium if its total stock, including both things and people, changes at a constant rate". **Prof. J.K. Mehta** has explained the meaning of dynamic equilibrium a little differently. According to him, "Dynamic equilibrium is that equilibrium which does not maintain itself outside the period of time under consideration". Suppose the equilibrium price of a commodity is determined over a time period of one week. If this price undergoes a change after the expiry of one week, then it will be an instance of dynamic equilibrium.

□ 4.3 Can Equilibrium be actually achieved ?

According to some Economists, position of equilibrium is not obtainable in actual world. They regard it as an imaginary notion with no real significance. On the contrary, some economists hold this notion quite meaningful because of the following reasons :

(i) There is no denying the fact that conditions of real life have a tendency to move towards equilibrium. If there are no changes in economic variables in the long period, then position of equilibrium can be achieved.

(ii) Aggregate demand is equal to aggregate supply at a given price. It is a position of partial equilibrium. This position is short-lived because in actual life forces influencing demand and supply are always changing. But if demand for and supply of a commodity is kept constant then the position of equilibrium can be sustained for a long time.

(iii) Position of equilibrium fixes a target and all economic activities strive to attain it. If a target is not fully achieved then it does not become futile. Many objectives of man's life like perfect truth, perfect beauty, perfect knowledge etc. are not fully achieved, yet these objectives cannot be called useless.

In short, according to **Leftwitch**, "Equilibrium concepts are important, not because equilibrium is ever in fact attained, but because they show us the directions in which economic changes proceed".

□ 4.4 Significance of Equilibrium

The notion of equilibrium has great significance in the study of economics. **Jeuthen** has given Economics the name of Economic Analysis. In Economic Analysis, the significance of Equilibrium is known from the following facts :

(1) Equilibrium is a Goal: Equilibrium is a goal and all economic activities strive to reach it. The notion of equilibrium is called economists' compass. Through its help, an economist finds out how far off economic problems are from the position of equilibrium. As a matter of fact, several problems crop up in the absence of equilibrium.

(2) Price Determination: Under different market conditions (perfect competition, monopoly, imperfect competition etc.) price of a commodity is determined at a point where demand is in equilibrium with supply. It is only under the condition of equilibrium that price remains constant. Under the condition of disequilibrium, changes continue to occur in prices.

(3) Maximum Profits and Satisfaction: Position of equilibrium signifies maximum satisfaction for the consumer and maximum profit for the producer. Every consumer and every producer aims at reaching this position.

(4) Equilibrium in Factor Market: Factor market is that market wherein price of different factors (e.g. rent, wage, interest and profit) is determined. If price determined of each factor is equal to its marginal productivity, then the factor market will be in equilibrium. Full employment of the factors will be possible in the state of equilibrium.

(5) Policy Formation: One of the main aims of the formation of economic policies is to attain the position of equilibrium. Policies concerning saving, investment, production, consumption etc. aim at reaching the position of equilibrium.

(6) Importance of General Equilibrium: Notion of general equilibrium provides information about the state of the entire economy. Inter-dependence of such aggregate economic variables as aggregate consumption, aggregate expenditure, aggregate investment, aggregate saving etc. is known with the help of general equilibrium. Input-output Analysis put forward by Prof. Leontif is made increasing use of in the formation of plans these days.

□ 5. Stock and Flow :

Capital, income, money, savings, investment, interest are the widely used terms in economics. Some of these are stock concepts while others are flow concepts. In order to distinguish between the stock and flow, let us understand their meaning.

(1) **Meaning of Stock :** A stock is a quantity measurable at a particular point of time. There may be Rs. 100 in your bank account on March 1, 1999. On January 1, 1999, there may be 5000 yards of cloth lying in your shop. In economics, all such quantities are known as 'Stock.' Since these are related to a specific point of time. Capital and quantity of money are notable examples of stock.

(2) **Meaning of Flow :** A flow is a quantity measured over a specified period of time. You may be getting Rs. 30 per month as pocket allowance, you may be spending one rupee every day in the canteen, you may be getting 5% annual interest on your bank-deposits. All these are known as 'Flow.' Investment is a flow because it is an addition to the stock of capital during a given period of time. Similarly, income, expenditure, production, consumption and interest are the flow concepts.

□ 5.1 Examples

The following are the examples of Stock and Flow

Stock	Flow
(1) Wealth	(1) Income
(2) Quantity of Money	(2) Expenditure of Money
(3) Capital	(3) Capital Formation
(4) Quantity / Supply of Money in a Country	(4) Change in the Supply of Money in a Country
(5) Bank Deposits	(5) Interest on Capital

□ 5.2 Relation and Difference between Stock and Flow

Stock	Flow
(1) Stock relates to a point of time e.g. your savings as on 1st January, 1999 are Rs. 1000.	(1) Flow relates to the period of time e.g. your pocket expenses of Rs. 5 per day.
(2) Stock is not Time Dimensional	(2) Flow is Time Dimensional as per hour, per month, per year.
(3) Stock influences the flow. Greater the stock of capital, greater is the flow of goods and services.	(3) Flow influences the stock. For example, monthly increase in the supply of money leads to an increase in the quantity of money.
(4) Some concepts in economics do not have their stock aspect such as imports and exports.	(4) Imports and exports are used only as flow concepts.
(5) There are certain stock variables which have the flow aspect as well. For example, capital at a point of time is a stock but addition to the stock of capital i.e. capital formation during a year is a flow.	

□ 5.3 Mutual Dependence between Stock and Flow :

The above picture clearly indicates the mutual dependence between stocks and flow. To further illustrate this point, if your income during 1998 increases by Rs. 100 per month, and if it is not spent, your savings at the end of the year i.e. on 31st December, would increase by Rs. 1,200. Likewise, change in the stock affects the flow. If the stock of capital increases, it means increase in the productive capacity and accordingly increase in the flow of goods and services. National Income Accounting is essentially concerned with flows in an economy, such as national income, consumption expenditure, capital formation, saving, exports, imports, lending, borrowing, etc. It measures these flows and presents them in the form of statistical statements and accounts.

□ 6. Methods of Economics

The techniques used to formulate economic laws, are called Methods of Economics. According to Peterson, the term method refers to those techniques which are used by the economists to formulate and confirm economic theories.

Like other sciences two methods are used in Economics; namely, (i) Deductive Method and (ii) Inductive Method.

□ 6.1 Deductive Method

Deductive method is an important method relating to the formulation of economic Theory. This method is also called Hypothetical Method, Abstract Method and A priori Method. Prof. Boulding has called it, 'Method of Intellectual Experiment'. This method has been made use of by classical economists, like Adam Smith and Ricardo; neo-classical economists, like Walras, Menger, etc. and modern economists like Robbins, Friedman etc.

○ (1) What is Deductive Method

In this method, inferences are drawn from general cases to establish particular cases. In the words of Prof. Wilson Gee, "By deductive method is meant reasoning from the general to particular or from the universal to individual." For instance, we know that 'other things being equal', rise in price is followed by a contraction in demand for things. Petrol is a thing. So we can say that rise in price of petrol will lead to contraction in its demand. The truthfulness of this general relationship between price and demand can be verified by applying to demand for particular goods. This method of formulating law of demand is called Deductive Method. This method can be explained with the help of the following reasoning:

Man is mortal
Marshall is a man
Marshall is mortal

In the above example we draw a particular inference on the basis of a general statement. It is called Deductive Method.

○ (2) Steps of the Deductive Method

There are three steps of deductive method.

(i) **Assumptions:** To begin with, certain assumptions or postulates are made concerning some important aspects of economic behaviour.

(ii) **Logic:** On the basis of these assumptions of economic behaviour, certain logical conclusions are drawn with the help of mathematics. With the help of mathematical equations, models are framed and conclusions drawn.

(iii) **Verification:** The validity of the logical conclusions so drawn is verified by applying the same to the facts of real life.

○ (3) Merits of Deductive Methods

(1) **Simple Method:** It is a very simple method because it does not give rise to such problems as collection of facts and their classification or analysis. Under this method we do not face any difficulty in drawing inference from general theories.

(2) **Certain and clear conclusions:** The conclusions drawn by the use of deductive method are certain, clear, pure and reliable. It is so because on the basis of "known" it becomes very easy to know about the "unknown" with the help of mathematics and moreover, this method is based on logic.

(3) **Impartial:** This method does not necessitate the collection of facts or data, so the opinion of those verifying the conclusions does not matter.

(4) **Universality:** The conclusions drawn under this method are applicable to all persons, at all times and at all places.

(5) **More importance in spheres where experiments are difficult:** This method is very useful to social sciences like economics where experiments in laboratories are not possible.

(6) **Complementary to Inductive Method:** The veracity of inferences drawn through inductive method can be verified by deductive method. It therefore serves as a touchstone.

(7) **Aid to understand Economic Facts:** In case of several economic facts it becomes difficult to separate cause from effect. Deductive method helps in studying such facts.

(8) **Forecast:** On the basis of this method, other things being equal, forecast can be made in respect of specific economic behaviour.

○ (4) Demerits of Deductive Method

Scholars of German Historical School have criticised this method as under:

(1) **Lack of Actual Facts:** Correct inferences cannot be drawn due to lack of actual facts under this method. The assumptions, on whose basis conclusions are drawn, are not always true in real life.

(2) **Difficulty in verifying the conclusions:** It is not so easy to verify the conclusions drawn in the words of Nicholson, "The great danger of the deductive method lies in the natural aversion to the labour of verification."

(3) **Unrealistic Assumptions:** The assumptions of this method are not always true. They change continuously with change in time and place. So the conclusions drawn from these assumptions will be dubious.

(4) **Static Approach:** Another defect of this method is that it studies a fact by isolating it from other facts. Other facts are assumed to be constant. But in actual life, changes in facts do interact with each other and so our approach should be dynamic, whereas approach of this method is static.

(5) **Less possibility of the development of Economics:** All economic problems cannot be studied with the help of deductive approach. If this method alone is taken into account then all-round development of economics would not be possible.

□ 6.2 Inductive Method

Inductive methods is also another important and popular method of formulating economic theories. It is also called (i) Experimental Method, (ii) Historical Method, (iii) Analytical Method (iv) Statistical Method (v) Postpriori method.

○ (1) What is Inductive Method?

It is an ascending process which proceeds from particular to general. In the words of Wilson Gee, "Inductive Method is the process of reasoning from particular to general or from individual to the universal." When due to fall in the price of milk and other goods we observe that these goods are being demanded in larger quantity than before, than a theory can be formulated that "fall in price is likely to extend the demand." Dr. Engels' Law of Consumption, Malthus' Theory of Population etc. are based on this method. It can be explained with the help of following reasoning:

Marshall is man and mortal

Robbins is man and mortal

Keynes is man and mortal

.....
Hence, Man is mortal.

In the above example, on the basis of some particular facts we have made out a general case. This approach is called Inductive Method.

○ (2) Steps of Inductive Method

Prof. Clark has given three steps of Inductive Method as under:

(1) **Observation of Facts:** In this approach, first of all, facts pertaining to an economic behaviour are collected. Facts are collected in two ways (a) Experiment and (b) Statistics. There is less possibility of experiment in economics, as such, increasing use is made of Statistics in collecting facts. Econometrics is the subject which analyses the quantitative relations of economic events with the help of statistics. Many modern Economists make use of the technique of (i) Input-output Analysis and (ii) Linear Programming in order to collect facts.

(2) **Formulation of Hypothesis:** After collecting the facts, hypotheses are formulated on their basis. Hypothesis is the probable explanation of a problem. Based on it, conclusions are drawn logically.

(3) **Verification:** Finally, the validity of the conclusions is verified by applying the same to real life.

○ (3) Merits of Inductive Method

It has the following merits:

(1) **More Realistic:** The inferences drawn through this method are more realistic and near to human life, as this approach studies intensively the effects of changing circumstances on human life.

(2) **Possibility of Verification:** It is also called experimental method because it is possible to verify the inferences through experiments.

(3) **Proper Attention to Complexities:** Keeping in view the complexities of economic variables, attempts are made to verify the same carefully.

(4) **Complementary to Deductive:** It has verified the conclusions of deductive method and also expressed their merits.

(5) **Dynamic Approach:** This approach keeps in mind the ever changing character of economic facts. It does not assume the facts to be constant. Consequently, its approach is dynamic.

○(4) Demerits of Inductive Method

Main demerits of this method are as follows:

(1) **Limited Scope of Verification:** If the conclusions are drawn on the basis of experiments on few people, then their universal validity can be doubted. The theories formulated through this method can be valid only if the scope of their verification is wide.

(2) **Limited use in the field of Economics:** It is more useful in natural sciences where experiments are conducted on lifeless-matter. In the field of Economics, where complex problems of human-being are faced, its use is very much restricted. It is so because human beings cannot be subjected to laboratory-test, as lifeless matter.

(3) **Difficult Method:** It is a complex method. An ordinary person cannot make use of this method. It is beyond the competence of an ordinary individual to collect facts, study them and draw inferences. Moreover, this approach is costly.

(4) **Partiality:** The conclusions drawn by this method bear the imprint of the thoughts of the investigator. It is therefore very much possible that the conclusions so drawn may be far from impartial.

(5) **Inadequate for the Development of Economics:** This approach is not enough to develop the subject of Economics. Study of many economic problems is conducted on the basis of generalizations. According to Devons, although observation and inductive method are the basis of exact-sciences, yet it is not through their use alone that conclusions in respect of modern sciences can be drawn.

□ 6.3 Controversy about Two Methods

Having analysed both the methods, we arrive at the conclusion that they are complementary to each other. Any one method is not adequate for the study of economics. If we want to study economics in the true sense, then use of both methods is very essential. To verify the laws of deductive method, we need inductive method. Inductive method is necessary because the study of economics will be foolproof only if it is based on facts and informations. At the same time deductive method is also indispensable, as has been said by Durbin, "Facts do not speak for themselves. It is only by analysis, comparison, hypothesis and prophecy that they can be made to speak at all." Deductive method is most suitable for the study of consumption, price theory and inductive method is most appropriate for the study of trade cycles, production, public finance etc.

In confirmation of this opinion, Marshall has referred to the statement of Schmoller that says "Inductive and deductive are both needed for scientific thought as the right and left foot are needed for walking." In the same strain Prof. Wagner says, "The true solution of the contest about methods is not to be found in the selection between deduction or induction, but in the acceptance of both, deduction and induction." No method can be complete in itself unless it assimilates the essential elements of the other. Eric Roll has rightly said, "Both these methods are integrated into one another; they cannot be separated". Modern economists use both the methods together and such a method is called scientific method as is applied in economic analysis.

To conclude, nobel prize-winner Prof. Samuelson has rightly said, "Properly understood Deduction and Induction cannot be in conflict."

QUESTIONS

1. What is meant by micro economics? Discuss the importance and limitations of micro economics.
2. What is meant by macro economics? Discuss the importance and limitations of macro economics.
3. Distinguish between micro economics and macro economics.
4. What do you mean by the concept of equilibrium in economics? Discuss the concepts of static equilibrium and dynamic equilibrium.
5. What is meant by the concepts of stock and flow? Distinguish between them.
6. What is meant by inductive and deductive methods of economics? Discuss their merits and demerits.
7. Induction and deduction are both needed for scientific thought as the right and left foot are needed for walking? Explain.
8. Write short notes on:
 - (1) Micro economics and its importance.
 - (2) Macro economics and its uses.
 - (3) Distinction between Micro economics and Macro economics.
 - (4) Static and Dynamic equilibrium.
 - (5) Stock and flow.
 - (6) Induction and Deduction.

6

UTILITY ANALYSIS

□ 1. Introduction

Two questions arise with regard to theory of demand. The first one is : why does a consumer demand a good or service ? The answer is that he demands a good because it gives him utility. Want-satisfying capacity of a good is called utility. The second question is : how a consumer should spend his limited income on different goods and services so that he may get maximum satisfaction or that he may be in equilibrium ? Economists have put forward three main theories in this respect—(1) Cardinal Utility Analysis (2) Ordinal Utility Analysis or Indifference Curve Analysis and (3) Revealed Preference Analysis. In this chapter Cardinal Utility Analysis is dealt with.

□ 1.1 Cardinal Utility Analysis

In 19th century, economists from different countries of Europe put forward cardinal utility analysis in order to criticise the thoughts of classical economists like Adam Smith, Ricardo etc. This analysis was developed by Dupuit, Gossen, Walras, Menger and Jevons etc. In twentieth century Marshall further elaborated cardinal utility analysis. According to this analysis utility can be measured in cardinal numbers, like 1, 2, 3, 4 etc. Cardinal numbers are those numbers which can be added or subtracted. Fisher has used the term "Util" as a measure of Utility. Thus in terms of cardinal utility analysis it can be said that one gets from a cup of tea 10 utils, from a cup of coffee 5 utils and from a rasgulla 2 utils worth of utility.

□ 2. Meaning of Utility

The term utility in Economics is used to denote that quality in a commodity or service by virtue of which our wants are satisfied. In other words, want-satisfying power of a good is called utility.

□ 2.1 Definitions

- (1) According to Jevons, "Utility refers to abstract quality whereby an object serves our purpose (2) In the words of Hibdon, "Utility is the quality of a good to satisfy a want."
- (3) According to Mrs. Robinson, "Utility is the quality in commodities that makes individuals want to buy them."

□ 2.2 Features

प्रतिकृति - प्रयोग जी या नन के लक्षण, वर्तना - संतुष्टि,
Utility has the following main features :

- (1) **Utility is Subjective:** Utility is subjective because it deals with the mental satisfaction of man. A thing may have different utility for different persons. Liquor has utility for a drunkard but for person who is teetotaller liquor has no utility. Peasants of Haryana get very little utility from coffee whereas peasants of Kerala derive lot of utility from its consumption. Utility, therefore, is subjective.

A few who never drink alcohol

□ 2.3 Concepts of Utility

On the basis of the consumption of a commodity, there are two concepts of utility (1) Total Utility and (2) Marginal Utility.

(1) Initial Utility: The utility derived from the first unit of a commodity is called initial utility. Utility of the first piece of bread is called initial utility. Thus, initial utility is the utility obtained from the consumption of the first unit of a commodity. It is always positive.

(2) Total Utility: The aggregate of utilities obtained from the consumption of different units of a commodity, is called total utility. It is a function of the quantity of a commodity consumed and is expressed as :

$$TU_x = f(Q_x)$$

(TU_x = Total Utility of 'x' is a function (f) of quantity of commodity 'x'.)

In the words of Leftwich, "Total utility refers to the entire amount of satisfaction obtained from consuming various quantities of a commodity." Supposing you eat 10 Rasgullas at a sitting. The aggregate of the utilities obtained from the consumption of these 10 Rasgullas will be called total utility. Prof. Jevons. It is also called additional utility. The change that takes place in the total utility by the consumption of an additional unit of a commodity is called marginal utility. Supposing, by the consumption of first piece of bread you get 15 units of utility and by the consumption of second piece of bread your total utility goes up to 25 units. It means, the consumption of second piece of bread has added 10 units (25 - 15) of utility to the total utility. Thus, the marginal utility of the second piece is 10 units. In the words of Chapman, "Marginal utility is the addition made to total utility by consuming one more unit of commodity." Prof. Boulding has defined marginal utility in these words, "The marginal utility is the increase in total utility which results from a unit increase in consumption."

Marginal utility can be measured with the help of the following equation:

$$MU_{nth} = T_n - T_{n-1}$$

(MU_{nth} = Marginal Utility of nth unit; T_n = total utility of 'n' units; T_{n-1} = total utility of n-1 units.)

or $MU = \frac{\Delta TU}{\Delta Q}$

or $\Delta TU = \text{Change in total utility}; \Delta Q = \text{change in the quantity of the commodity}.$

Marginal utility can be (i) positive (ii) zero and (iii) negative.

(i) **Positive Marginal Utility:** If by consuming additional units of a commodity, total utility goes on increasing, then the marginal utility of these units will be positive. Suppose you take bread to satiate your hunger. First piece of bread gives you 8, and second 6 units of marginal utility. Thus, from two pieces consumed, the marginal utility derived from each successive unit goes on increasing. But the total utility of bread you get total utility ($8 + 6$) equal to 14 units. Thus, by taking additional units of bread, total utility goes on increasing. Marginal utility derived from the second piece of bread will be called positive marginal utility.

(ii) **Zero Marginal Utility:** If the consumption of an additional unit of a commodity causes no change in the total utility, it means the marginal utility of the additional unit is zero. At this level, consumption total utility will be maximum. So far as the satisfaction of the consumer is concerned, it is at his saturation point. Suppose 4 pieces of bread yield total utility of 20 units. Consumption of 5th piece of bread does not make any change in the total utility. It remains 20 units. It is obvious that marginal utility of the 5th piece is zero.

(iii) **Negative Marginal Utility:** If the consumption of an additional unit of a commodity causes fall in total utility, it means the marginal utility of that unit is negative. After reaching the saturation point, if the above consumer is compelled to take the 6th piece of bread then it may upset his digestive system. Consequently, the total utility of six pieces of bread may come down to 18 units. It means the marginal utility ($18 - 20$) of the sixth piece of bread is -2 units. It is an example of negative utility.

2.4 Relation between Total Utility and Marginal Utility

Jeffery, a neo-classical economist, was the first to highlight the relationship between total utility and marginal utility and the importance of the difference between the two. Total utility is the summation of the marginal utilities of different units of a commodity.

$$TU = \Sigma MU$$

(TU = Total Utility; Σ = summation; MU = Marginal Utility)

i.e. Total Utility = summation of marginal utilities.

$$TU_{5th} = MU_{(1st)} + MU_{(2nd)} + MU_{(3rd)} + MU_{(4th)} + MU_{(5th)}$$

$$= 8 + 6 + 4 + 2 + 0 = 20$$

Relationship of these concepts of utility is explained with the help of Table No. 1 and Fig. No. 1 on the following page:

Table No. 1 Relation between Total Utility & Marginal Utility

Quantity	Total Utility	Marginal Utility	Description
0	0	—	
1	8	8 — 0 = 8	Initial Utility
2	14	14 — 8 = 6	
3	18	18 — 14 = 4	Positive Utility
4	20	20 — 18 = 2	
5	20	20 — 20 = 0	Zero Utility
6	18	18 — 20 = -2	Negative Utility

Table No. 1 shows that

(i) as more and more units of a commodity are consumed, the marginal utility derived from each successive unit goes on diminishing. But the total utility increases upto a limit.

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(iii) marginal utility of the first four units being positive, the total utility goes on increasing. Thus as

(ii) marginal utility of the commodity remains positive, total utility goes on increasing.

(iii) marginal utility of the fifth unit is zero. In this situation total utility (20) will be maximum. This situation represents point of saturation. Consequently,

(iv) marginal utility of the sixth unit is negative.

2): As a result of it, total utility of six units of the commodity falls from 20 to 18 units. When marginal utility is negative, total utility begins to fall. Relationship between total utility and marginal utility can also be expressed diagrammatically. In part 'A' and 'B' of Fig.

units of the commodity are shown on OX-axis and OY-axis. In Fig. 1 (A), curve TU represents total utility. It slopes upwards upto point 'F'. It means total utility has been rising upto the consumption of 4 units. From the point 'F' to point 'G', total utility is instant. It means consumption of 5th unit has not added any addition to the total utility. Both these points signify maximum height of total utility curve. Point 'G' represents maximum total utility at the 5th unit. It is a point of saturation. After point 'G', curve TU slopes downwards, meaning thereby, that at the 6th unit marginal utility becomes negative and total utility begins to fall.

In Fig 1(B) curve MU represents marginal utility. It slopes downwards from left to right. It means marginal utility of successive units goes on diminishing. Upto the fourth unit of the commodity, the marginal utility goes on diminishing but total utility goes on increasing. It proves that upto the fourth unit, the commodity, marginal utility is positive. At the fifth unit where MU curve touches OX-axis, marginal utility is zero. In this situation, total utility is maximum. After the fifth unit MU curve intersects OX-axis and diminishes. It means that sixth unit yields negative marginal utility.

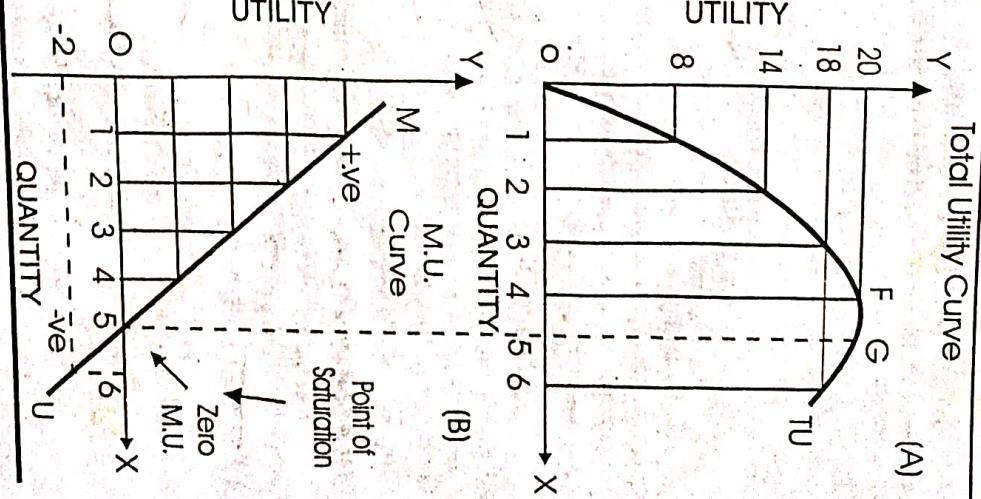


Figure 1

2.5 Significance of the difference between Total and Marginal Utility

The difference between total utility and marginal utility has the following practical significance:

- (1) **Paradox of Value:** Many economists assumed that the price of a commodity was equal to its total utility. Thus goods which give more total utility should have more value, and goods which give less

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total utility should have less value. But it is not so in real life. One obtains more total utility from water than from diamonds, yet the price of water is far less than that of diamonds. This situation is called paradox. **Jevons** has explained this paradox with the help of the difference between marginal utility and total utility. Price of a commodity is determined by its marginal, and not total utility. Water is available in abundance, so its total utility soon reaches the point of saturation. In other words, marginal utility soon becomes almost zero. Consequently, price of water is almost zero. On the other hand, availability of diamonds is very rare, so their total utility never reaches the point of saturation. Consequently, marginal utility of diamonds remains high and positive. That is why price of diamonds is also very high.

(2) Consumer's Surplus: Sometimes a consumer is ready and willing to pay for a commodity much more price than its actual price. The difference between the two prices is called consumer's surplus. The consumer is prepared to pay the price equivalent to the total utility that he obtains from all the units preceding the marginal unit but actually he pays the price equivalent to the marginal utility of the marginal unit. Marginal unit refers to the last unit that the consumer is prepared to buy. All the units preceding the marginal unit would give the consumer more marginal utility than the marginal unit. Aggregate of the marginal utilities of these units is called total utility. But the price being equal to the marginal utility, the amount of money actually paid by the consumer will be equivalent to the marginal utility or price multiplied by the number of units bought. Of course, there will be a difference between the total amount of money paid on the basis of the total utility of a given number of units of commodity and the money actually paid on the basis of the marginal utility of the same number of units of the same commodity. This difference is called consumer's surplus. The concept of consumer's surplus, is therefore based on the difference between total utility and marginal utility.

□ 2.6 Can Utility Be Measured?

Utility is related to the feelings of mind. There is no instrument or standard to measure it. We can measure the weight of a good in kilograms and the length of a cloth in metres, but we cannot say in relation to a breath that its utility is 4 kgs. or 2 metres. The economists have attempted to measure utility indirectly by two methods:

(1) Measurement in terms of Money: In order to measure the utility in terms of money, it is estimated what amount of money a man is willing to pay for a thing. For instance, if Kapil Dev is willing to pay Rs. 100 for a Cricket bat and Ravi Shastri wants to pay only Rs. 50, we can say that Kapil Dev gets double the amount of utility in comparison to that of Ravi Shastri. This is the comparative measurement of utility.

(2) Measurement in terms of Units: Prof. Fisher has used the term, "Util", as a unit of the measurement of utility. In this method, utility is expressed in utils. For example, if you get 10 utils from a cup of tea, it shows that you are getting double the utility than your friend. The numbers which are used, in this method, to measure utility are called **Cardinal Numbers**, for instance, 1, 2, 3, 4, These numbers of a commodity, other things being equal, can be added or subtracted. Marshall, Jevons, Menger etc., had measured utility in terms of cardinal numbers, but **Pareto, Allen and Hicks**, etc., used **Ordinal numbers**, such as, I, II, III, etc., etc., that has been enshrined in law of diminishing marginal utility.

measuring utility. These numbers cannot be added or subtracted. Suppose, you have 50 paise. By measuring utility. These numbers cannot be added or subtracted. Suppose, you have 50 paise. You will like to buy a cup of tea. If you are unable to get the cup of tea, you will purchase a samosa to which you give second preference. This proves that the utility of a cup of tea is greater than that of a samosa. Application of any law of economics is subject to fulfilment of certain conditions. Such conditions are called assumptions of the law. Definition of every law contains the clause "other things being equal".

The above-mentioned methods of measuring utility have been criticized by several economists, such as, Prof. Samuelson, as follows:

(1) The value of money keeps changing. Therefore, utility cannot be measured definitely in terms of money.

□ 2.7 Criticism of the Measurement of Utility

The above-mentioned methods of measuring utility have been criticized by several economists, such as, Prof. Samuelson, as follows:

(1) The value of money keeps changing. Therefore, utility cannot be measured definitely in terms of money.

□ 2.8 Laws of Utility Analysis

Utility analysis has two main laws:

- (1) Law of Diminishing Marginal Utility
- (2) Law of Equi-marginal Utility.

Comprehensive study of these laws can be made as following:

□ 3. Law of Diminishing Marginal Utility

Law of Diminishing Marginal Utility is the foundation stone of utility analysis. All of us experience this law in our daily life. If you are set to buy, say, fountain pens at any given time, then as the number of pens with you goes on increasing, the marginal utility from each successive pen will go on decreasing.

It is the reality of man's life which is referred to in economics as Law of Diminishing Marginal Utility.

This law is attributed to many economists of the nineteenth century, namely **Bentham**, **Gossen**, **Devons**, **Menger** and **Walras**. According to **Jevons**, this law is based on Weber Fechner's Psychological law which states that with increase in the quantity of a commodity, the significance of its additional units goes on diminishing. Neo-classical economist **Marshall** has also given a detailed account of this law. Prof. **Boulding** calls it, "Law of Eventually Diminishing Marginal Utility." It is also called "Gossen's First Law."

□ 3.1 Definitions

(1) According to **Marshall**, "The additional benefit which a person derives from a given stock of a thing diminishes with every increase in the stock that he already has."

(2) According to **Chapman**, "The more we have of a thing, the less we want additional increments of it or the more we want not to have additional increments of it."

(3) In the words of modern economist **Prof. Boulding**, "As a 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."

(4) According to **Samuelson**, "As the amount consumed of a good increases, the marginal utility of the good tends to decrease."

It is clear from the above definitions that at a given time when we go on consuming additional units of a commodity, the marginal utility from each successive unit of that commodity, other things being equal, goes on diminishing in relation to the preceding unit. It is this diminishing tendency of the marginal utility, that has been enshrined in law of diminishing marginal utility.

□ 3.2 Assumptions

Application of any law of economics is subject to fulfilment of certain conditions. Such conditions are called assumptions of the law. Definition of every law contains the clause "other things being equal".

This clause is an epitome of these assumptions. In the absence of these assumptions the law does not apply. Main assumptions of this law are as follows:

(1) Utility can be measured in the cardinal number system.

(2) Marginal Utility of money remains constant.

(3) Marginal Utility of every commodity is independent.

(4) Every unit of the commodity being used is of same quality and size.

(5) There is a continuous consumption of the commodity.

(6) Suitable quantity of the commodity is consumed.

(7) There is no change in the income of the consumer.

(8) There is no change in the price of the commodity and its substitutes.

(9) There is no change in the tastes, character, fashion and habits of the consumer.

3.3 Explanation

This Law can be explained with the help of Table No. 2 and Fig. 2.

Table No. 2 Law of Diminishing Marginal Utility

No. of Ice Cream Cups	Marginal Utility
First	4
Second	3
Third	2
Fourth	1
Fifth	0
Sixth	-1

The above Table shows that first cup of ice cream yields 4 utils of marginal utility. This will satisfy your want to some extent and the intensity of want will mellow down. The second cup of ice cream will yield less marginal utility than the first one, that is 3 utils. Third cup will yield still less marginal utility, say 2 utils, and fourth cup just 1 util of marginal utility. At this stage, your want may be fully satisfied. Thus fifth cup of ice cream may yield zero marginal utility. If you are forced to take the sixth cup of ice cream it may upset your system. In other words, you may get negative utility say, -1 util.

It is evident from the above table that as more and more units of ice cream are consumed, marginal utility from each successive unit goes on diminishing.

In Fig No. 2, units of ice cream (Quantity) are shown on OX-axis and marginal utility on OY-axis. AB is the marginal utility curve. It slopes downward from

left to right (negative slope) indicating that first cup of ice cream yields 4 utils, second 3 utils, third 2 utils and fourth 1 util of marginal utility. Fifth cup of ice-cream yields zero marginal utility. So AB curve touches OX-axis at point 'C' that represents fifth cup of ice cream. Sixth cup of ice-cream yields negative marginal utility and so AB curve goes below OX-axis.

3.4 Exceptions

Some economists point out the following exceptions to the law of diminishing marginal utility. It means that the law does not apply under the following situations. But a thorough study will reveal that the exceptions are more apparent than real.

(1) **Curious and Rare Things:** It is said that the law does not apply to rare and curious things. Those persons who collect old and rare coins, postage stamps, rare portraits etc. derive increasing marginal utility as the stock of these rare articles goes on increasing. They are always keen to obtain more and more units of such things. But this exception is not true. When a stamp collector comes to possess large number of stamps of the same kind then marginal utility definitely diminishes.

(2) **Misers:** It seems as if the law does not apply to misers, who are out to acquire more and more of wealth. Their desire for money seems to be insatiable. But according to Meyers even this exception is also not true. The amount of money that a miser spends on food and clothing, he cannot spend it on gold and silver. It proves that even for a miser, who has large stock of gold and silver, the utility of gold and silver diminishes and that of food and clothing, whose stock is limited, increases.

(3) **Good Book or Poem:** It is said that by reading a good book or listening to a melodious song or beautiful poem again and again, one gets more utility than before. So good books or poems are considered exceptions to this law. But it is also not correct. It is possible that upto a certain limit reading a book or listening to a song again and again may give increasing marginal utility, but reading or listening again and again the same book or the same song, at a given period of time, may become uninteresting and boring. Consequently, their marginal utility may diminish.

(4) **Drunkards:** It can be said that when a drunkard takes liquor as intoxicant, then as he takes more and more pegs of liquor his desire to have more of it goes on increasing. So a drunkard is regarded as an exception to this law. However, even in the case of a drunkard, a stage comes when he loses his senses and starts suffering, pointing to the negative impact of successive drinking. The law thus ultimately holds good.

(5) **Initial Units:** When the initial units of a commodity are used in less than the appropriate quantity, then the marginal utility from the additional units goes on increasing. As cited by Benham, if to heat up a furnace we put coal piecemeal, then the marginal utility of additional quantity of coal will go on increasing, because the furnace requires adequate initial supply of coal. But this exception is also not correct. As we make use of adequate quantity of initial supply of coal, then every additional unit of coal will yield less and less marginal utility.

In short, Prof. Taussig has rightly said that the tendency of law of diminishing marginal utility is so widely prevalent that it would not be wrong to call it an universal law.

Main causes of the application of the law of diminishing marginal utility are as under:

(1) **Commodities are Imperfect Substitutes:** According to Boulding, this law applies because commodities are imperfect substitutes. In other words, one commodity cannot always be used for another

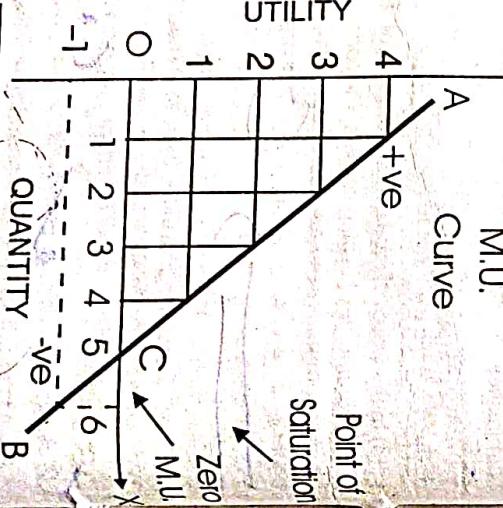


Figure 2

commodity. For example, tea in place of coffee and coffee in place of tea cannot be used to an unlimited extent. The two can be substituted for one another only upto a certain limit. After that limit, if you make use of tea for coffee or coffee for tea, then the marginal utilities derived thereof will go on diminishing. Thus, use of variable quantities of a commodity with the fixed quantity of another good, will cause the marginal utility of the additional units of variable good to diminish.

(2) Satisfiability of Particular Wants: Another cause of its application is that, there is hardly any particular want which cannot be fully satisfied. Having reached the point of satiety, use of one more unit of the commodity will yield zero marginal utility. Thus, before arriving at the point of saturation, total utility increases at a diminishing rate and at saturation point there is no increase in it. Total utility increases at a diminishing rate only when marginal utility diminishes.

(3) Alternative Uses: Each commodity has many alternative uses. Some uses are more important while others are less. According to Baumol, this law applies because every consumer gives first priority to the most important use. If we have little quantity of milk, it will be used for feeding the infant only, but if we have large quantity of milk then after feeding the infant the rest will be used for tea for the elders or for making curd etc. It is evident therefore, that as the quantity of a good goes on increasing, it is put to less and less important uses.

3.6 Importance of the Law

Law of diminishing marginal utility has great theoretical and practical importance. Its main benefits are as under:

(1) Basis of the Laws of Consumption: Law of diminishing marginal utility is the basis of all laws of consumption. There are three laws of consumption—(1) Law of equi-marginal utility, (2) Law of demand and (3) Concept of Consumer's Surplus. According to law of equi-marginal utility a consumer does not spend all his income on one commodity. It is so because the consumer knows that if he buys more and more units of the same commodity then the marginal utility of each successive unit will go on diminishing. Hence, to get the maximum satisfaction the consumer spends his income in such a way that the last unit of money spent on different commodities yields equal marginal utility. According to law of demand, a consumer will demand more units of a commodity at low price. It is so because more units yield diminishing marginal utility. The consumer will therefore buy more units only if their price also goes down. It also explains why demand curve slopes downward. The concept of consumer's surplus is also based on the above law. According to this concept, units prior to the marginal unit yield more utility. This surplus utility is called consumer's surplus.

(2) Variety in Production and Consumption: It is because of the operation of law of diminishing marginal utility that variety in production and consumption is found. Continuous consumption of one commodity will yield less and less marginal utility to the consumer. So every prudent consumer stops the consumption of that good after a particular limit and shifts to some other commodity. So the producers will have to produce different varieties of goods. According to Prof. Tausig, "Diminishing utility and increasing variety of goods explain the ever increasing complexity of production and consumption."

(3) Difference between Value-in-Use and Value-in-Exchange: Eminent economists Adam Smith, could not precisely explain why the value of diamond is more than that of water although the utility of diamond is far less than that of water. To explain this paradox he divided value into two parts—(1) Value-in-Use and (2) Value-in-Exchange. According to him, goods having more value-in-use, command low price and those having more value-in-exchange command high price. But he would not give any reason for it. Neo-classical economists explained this paradox on the basis of diminishing marginal utility. According to them, there is abundant supply of water, air etc. and the same are used in large quantity. Consequently, their marginal utility falls rapidly and so also their price. Thus goods having more value-in-use have less marginal utility. On the contrary, expensive goods like gold, silver, diamonds etc. having more value-in-exchange are available in short supply and so their marginal utility falls slowly. Consequently, prices of such articles remain very high.

(4) Price Determination: Price of every commodity is determined by its demand and supply. Demand for a commodity depends upon its marginal utility. If a seller wants to sell more units of a commodity, he will have to reduce the price per unit of that commodity. It is so because more units yield less marginal utility. The consumer, therefore, buys more units only when price per unit falls. On the other hand, if more price is fixed for a commodity then less units of it will be demanded.

(5) Basis of Progressive Taxation: At the time of levying progressive taxation, a finance minister keeps in mind the application of this law. Progressive taxation refers to that system of taxation, under which rate of taxation increases as the income of a person increases. It is so, because with increase in income marginal utility of money goes on diminishing. If persons with more income are taxed at higher rate, then they will have to make the same sacrifice as persons with less income who are taxed at lower rate have to make. The reason being that marginal utility of money to the poor is more than to the rich.

(6) Advantage to the Consumers: The law is of great significance to every consumer. According to this law, in order to get maximum satisfaction from the consumption of a good, a consumer should buy only that many units of it whose marginal utility is equal to its price.

(7) Basis of Re-distribution: The law serves as the fundamental basis of re-distribution of income and wealth in capitalist economies characterised by pronounced inequalities. The reason being that marginal utility of money to the rich is less than to the poor. So that, in accordance with the law, if wealth is re-distributed in favour of the poor, total welfare of the society would increase.

3.7 Derivation of Demand Curve with the help of Law of Diminishing Marginal Utility

The price that a consumer pays for a commodity is equal to its marginal utility. According to law of diminishing marginal utility, as a consumer goes on purchasing more and more units of a commodity, its marginal utility goes on diminishing. As such, a consumer will buy more units of a commodity only when its price goes down. When marginal utility is expressed in terms of money, in that case, positive part of marginal utility curve will be the demand curve. When marginal utility is shown on OY-axis then the curve obtained will be called marginal utility curve. In case, price is shown on OY-axis, then the curve obtained

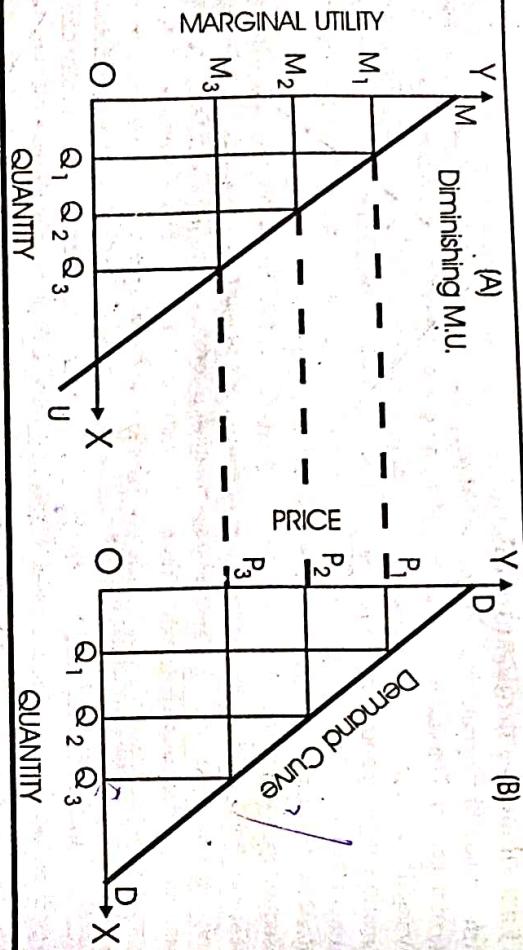


Figure 3

Fig. 3 (A) represents marginal utility curve and Fig. 3 (B) demand curve. This DD demand curve has been drawn with the help of MU (marginal utility curve).

3.8 Criticisms

Law of diminishing marginal utility has been criticised as follows:

(1) **Cardinal measurement of utility is not possible:** The assumption of the law that marginal utility can be measured in cardinal numbers is not correct. In the absence of cardinal measurement, it cannot calculate diminishing marginal utility.

(2) **Marginal Utility of Money is not Constant:** According to law of diminishing marginal utility, money is taken as the measure of utility. But the marginal utility of money itself never remains constant. As such, money cannot be a reliable and certain measure of marginal utility.

(3) **Every Commodity is not an Independent Commodity:** Another assumption of the law of diminishing marginal utility, that marginal utility of one commodity has no effect on the consumption of other commodities, is also not correct. As a matter of fact, no commodity is independent of the others these days. Marginal utility of every commodity is certainly affected by the consumption of other commodities. Consequently, it is very difficult to make precise estimate of marginal utility.

(4) **Marginal Utility cannot be estimated in all conditions:** Utility analysis is based on concept of marginal utility. Marginal utility of only those commodities can be ascertained which are divisible, but in real life many commodities are not divisible. One purchases a single unit of such commodity, e.g. one T.V. set, one refrigerator etc. Marginal utility of second unit of such commodities will be very small. If the price of a commodity depends upon its marginal utility then price of the second unit of the above commodities should be very little, but it is not so in real life.

(5) **Unrealistic Assumptions:** This law is based on many unrealistic assumptions. It is applicable only when the tastes, habits, fashion, income etc. of the consumer remain constant. But in actual life these are ever-changing. Due to their change, application of the law becomes impossible.

4. Law of Equi-marginal Utility

Law of equi-marginal utility is the second important law of utility analysis. This law points out how consumer can get maximum satisfaction out of his given expenditure on different goods. This law concerning the expenditure of a consumer was first propounded in 19th century by a French engineer Gossen. It is therefore also known as "Second Law of Gossen". Dr. Marshall has called it "Law of Equi-marginal Utility". The law states that in order to get maximum satisfaction, a consumer should spend his limited income on different commodities in such a way that the last rupee spent on each commodity yields him equal marginal utility. Economists have given different names to this law. Leftwich refers to it as, "The general principle for maximisation of consumer's satisfaction." In simple words, it is called, "Law of Maximum Satisfaction." Because by spending his income in accordance with this law a consumer can get maximum satisfaction. Prof. Hibdon has called it, "Law of Rational Consumer." A rational consumer is one who is keen to get maximum satisfaction, so he will spend his income strictly in terms of this law. It is also called "Law of Substitution." A consumer will go on substituting the good yielding higher marginal utility for the good yielding lower marginal utility till such time as the marginal utility of both the goods becomes equal. Lord Robbins called it "Law of Economics", as it applied to all sections of the study of economics, namely, production, consumption, exchange, distribution and public finance.

4.1 Definitions

(1) According to Dr. Marshall, "If a person has a thing which he can put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility in all."

(2) In the words of R.J. Branes, "The law of equi-marginal utility states that a consumer will dispose of his income that the marginal utility from a unit of income spent on each line of consumption is equal."

(3) According to Prof. Lipsey, "The household maximising utility will so allocate its expenditure between commodities that the last penny spent on each is equal."

(4) According to Samuelson, "A consumer gets maximum satisfaction when the ratio of marginal utilities of all commodities and their price is equal.

$$\frac{MU_1}{P_1} = \frac{MU_2}{P_2} = \frac{MU_3}{P_3}$$

If prices of the commodities are equal, then maximum satisfaction to the consumer can be indicated in the following equation:

$$MU_1 = MU_2 = MU_3$$

In the above equation MU_1 , MU_2 , MU_3 , refer to the marginal utility of first, second and third commodity and P_1 , P_2 and P_3 refer to the price of first, second and third commodity.

The law is based on the following assumptions:

- (1) Cardinal measurement of utility is possible.
- (2) Consumer is rational, that is, he wants maximum satisfaction from his income.
- (3) Income of the consumer remains constant. In other words, income of the consumer is fixed and constant.

- (4) Marginal Utility of money remains constant.
 (5) Prices of the commodities remain constant.
 (6) Commodity is divisible into small units. It means that the consumer can spend his income in small units of money, say, one rupee.

- (7) Consumption takes place at a given time period.

4.3 Explanation

The law can be explained with the help of Table 3 and Fig. 4. Suppose the income of a person is Rs. 5.00 only. He wants to spend it on two goods, say, mangoes and milk. Let us suppose that price of both the goods is Re. 1 per kg./ltr. Marginal utilities of different units of mangoes and milk are shown in table 3.

Table 3. Law of Equi-marginal Utility

Rupee Spent	M.U. of Mangoes	M.U. of Milk
1st	12 (1)	10 (2)
2nd	10 (2)	8 (2)
3rd	8 (3)	6 (3)
4th	6 (4)	4 (4)
5th	4 (5)	2 (5)

Suppose, the consumer spends his income in terms of one-rupee unit. The first rupee spent on mangoes yields him 12 utils worth of marginal utility and the first rupee spent on milk yields him 10 utils worth of marginal utility. He will, therefore, spend first rupee on mangoes. Out of the second and third rupee, he will spend one on milk and the other on mangoes. Thus to get maximum satisfaction out of his income of Rs. 5.00, the consumer will spend Rs. 3.00 on mangoes and Rs. 2.00 on milk. Third rupee spent on mangoes yields him 8 utils worth of marginal utility and second rupee spent on milk also yields him 8 utils worth of marginal utility. Thus, the last unit of money spent on both commodities gives the consumer equal marginal utility. This mode of distribution of his income will yield the consumer maximum satisfaction. Utility from mangoes = $12 + 10 + 8 = 30$ utils. Utility from milk = $10 + 8 = 18$ utils. Total utility = 48 utils. In case the consumer spends his income in any other manner, then he will get less total

Suppose the consumer spends one rupee more, i.e. Rs. 4.00 on mangoes, and one rupee less, i.e., Re. 1.00 only on milk. By spending one rupee more on mangoes the consumer will gain 6 utils of utility, but by spending one rupee less on milk, he will lose 8 utils of utility.

In this mode of distribution of income, the consumer by spending Rs. 4.00 on mangoes, gets $12 + 10 + 8 + 6 = 36$ utils of utility and by spending Re. 1.00 only on milk, he gets 10 utils of utility. Expenditure of Rs. 5.00 in this manner, will get the consumer total utility of $36 + 10 = 46$ utils. This total utility is less by 2 utils as compared to the total utility (48) derived from the earlier distribution of income. Thus, no other distribution of income will yield the consumer as much satisfaction as the one in which the last unit of rupee spent on different commodities gives equal marginal utility.

Fig 4

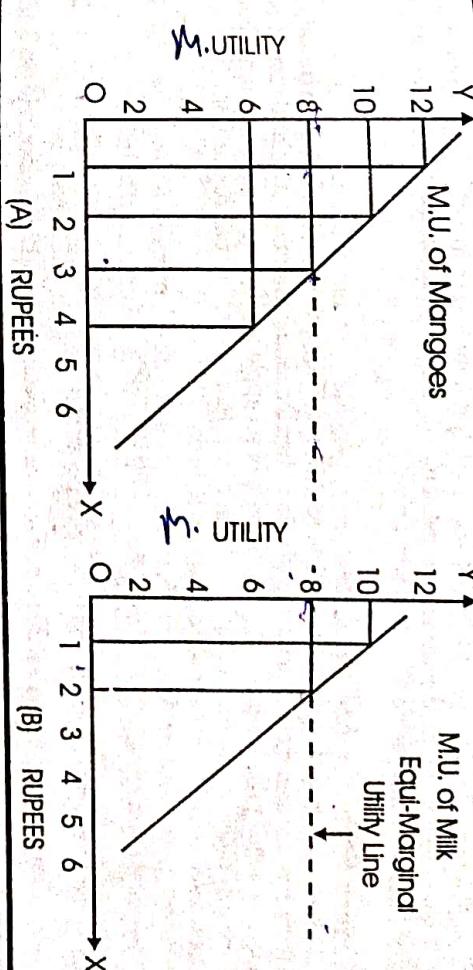


Figure 4

In Fig. 4 (A) and (B) above, units of rupees are shown on OX-axis and marginal utility on OY-axis. In fig. 4 (A) is shown marginal utility of mangoes and in fig. 4 (B) that of milk. The figure indicates that if the income of the consumer is Rs. 5.00, he will spend Rs. 3 on mangoes and Rs. 2.00 on milk, because third rupee spent on mangoes and second rupee spent on milk yield him equal marginal utility i.e. 8 utils. Dotted line in the figure represents equal marginal utility derived from the last unit of rupee spent on both the goods. By distributing his income on mangoes and milk in this manner the consumer gets total utility of 48 utils. It will be the maximum total utility derived by the consumer out of his expenditure of Rs. 5.00. It is by spending his income in this manner that the consumer will get maximum satisfaction.

If the consumer spends his income on mangoes and milk in any other manner, then his total utility will be less than the maximum; as is shown in Fig. 5.

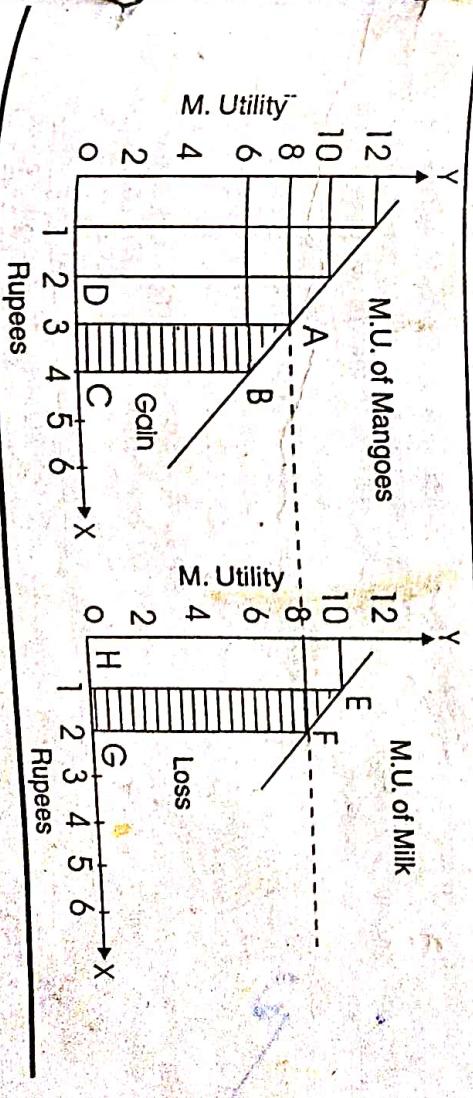


Figure 5

The law can be explained with the help of diagrams as shown in Fig. 4 on the following page:

It is evident from Fig. 5 that by spending one rupee more on mangoes the consumer gains 6 utils of marginal utility as shown by ABCD area. Similarly by spending one rupee less on milk, the consumer loses 8 utils of marginal utility as shown by EFGH area. By this distribution of income the consumer will get 2 utils of total utility less. The consumer now gets only 46 utils of total utility while in the earlier distribution of income he was getting 48 utils of total utility.

4.4 Modern Statement of the Law

Modern economists have given a new name to this law. They call it **Law of Proportionality**. According to them a consumer gets maximum satisfaction when the ratio of marginal utilities derived from different goods and their price is equal. Suppose the price of an apple is .50 paise and a consumer buys 10 apples. He gets 6 utils of marginal utility from tenth apple. Marginal utility per rupee from the tenth apple can be worked out with the help of the following formula:

$$\frac{MU_a}{P_a} = \frac{6}{0.50} = 12 \text{ utils per rupee}$$

(MU_a = marginal utility of apples and P_a = price per apple)

Similarly, if the price of banana is 0.25 paise per piece, a consumer buys 12 bananas. He gets 3 utils of marginal utility from the twelfth banana. Marginal utility per rupee from the twelfth banana can be worked out with the help of the following formula:

$$\frac{MU_b}{P_b} = \frac{3}{0.25} = 12 \text{ utils per rupee}$$

(MU_b = marginal utility of bananas and P_b = price per banana)

In the above example the consumer gets equal marginal utility per rupee from both the goods. As such, he will not stand to gain, if he spends a little more on one goods, and a little less on the other. In other words, he would not like to make any change in his expenditure. It can, therefore, be said that a consumer will be in equilibrium (state of maximum satisfaction) under the following situation:

$$\frac{MU_a}{P_a} = \frac{MU_b}{P_b} \text{ or } \frac{MU_a}{P_a} = \frac{P_b}{P_a}$$

In short, the consumer will buy so much quantity of different goods, that will make the ratio of their marginal utilities and price equal. By so spending his income a consumer will get maximum satisfaction. If a consumer is to buy 'n' commodities, then by the use of the following formula he will be getting maximum satisfaction out of his expenditure:

$$\frac{MU_a}{P_a} = \frac{MU_b}{P_b} = \frac{MU_c}{P_c} = \dots = \frac{MU_n}{P_n}$$

4.5 Importance of the Law

The law is of great importance in Economics. Robbins regards it as the basis of Economics. In the words of Robbins, "The application of the principle of equi-marginal utility extends to almost every field of economic enquiry." For instance:

(1) **Consumption:** Every consumer wants to get maximum satisfaction from his limited means. If a consumer spends his income, as suggested by this law, on different commodities in such a way that the last unit of money spent on them yields him equal marginal utility, then he will be getting maximum satisfaction out of his income.

(2) **Production:** Every producer aims at earning maximum profit. To achieve this objective he just utilize different factors of production, i.e., land, labour, capital etc. in such a way that the marginal productivity of each factor is equal. A producer must go on substituting one factor for the other till such productivity of each factor is equal. It is by this adjustment of limited resources, that producer can succeed in his aim of getting maximum profit.

(3) **Exchange:** Exchange implies replacing of goods giving less utility with goods giving more utility. Acting upon the law of equi-marginal utility, every person will go on substituting goods giving more utility for the ones giving less utility, till the marginal utility of all becomes equal. Exchange will stop at that point. Money should also be exchanged for other goods or services upto the point where the marginal utilities of goods or services are equal to the marginal utility of the money to be spent on them.

(4) **Distribution:** It refers to the distribution of national income among the factors of production,

land, labour, capital etc. Distribution is done in such a way that in the long-run every factor gets its share out of national income according to its marginal productivity. To have such a distribution, factors are to be mutually substituted in a manner that the marginal productivity of each factor is equal to its remuneration, and the marginal productivity of different factors becomes equal to each other.

(5) **Public Finance:** The law also has importance in the sphere of public finance, that is, revenue and expenditure of the state. At the time of levying taxes, finance minister, takes its help. He levies taxes such a manner that the marginal sacrifice of each tax-payer is equal. Then only it will have the least burden on all the tax-payers. To achieve this objective, a finance minister may substitute one tax for the other. Likewise, at the time of spending public funds, it is ensured that the marginal benefit of each type of expenditure should be equal. A country will enjoy maximum social advantage only when the marginal social sacrifice made by the people in the form of payment of taxes is equal to marginal social benefit.

(6) **Distribution of Income between Saving and Consumption:** According to this law, some should be so distributed between consumption and saving, that the last unit of money spent on present consumption should yield the same utility as the last unit of money kept in the form of saving. Such a distribution is called optimum allocation.—

(7) **Optimum Distribution of Commodities:** In a free market economy, optimum distribution of commodities can be made possible with the help of this law. Optimum distribution of commodities refers that distribution, a slight change whereof may diminish the total utility enjoyed by the society as a whole. If a commodity is distributed among different persons in such a way that the marginal utility derived by each person becomes equal.

(8) **Distribution of Assets:** This law helps people distribute their assets in different forms. Suppose a person has cash assets worth rupees one lakh. He wants to invest it in different forms, such as, bank deposit, bonds, stocks, shares, housing etc. According to this law, investment should be made in different forms of assets in such a way that last unit of money invested in each form should yield equal utility. Thus, he will derive almost equal psychological benefit from all forms of assets and thereby by maximum satisfaction.

4.6 Criticism of the Law

The law has been subjected to the following criticism:

- (1) **Consumers are not fully rational:** The assumption that consumers are fully rational is correct. Some consumers are idle by nature, and so to satisfy their habits and customs, they sometimes buy goods yielding less utility. Consequently, they do not get maximum satisfaction.

• (2) **Consumer is not Calculating:** The law is based on the wrong assumption that while spending his income a consumer constantly calculates the utility derived by him out of each rupee spent. Another wrong assumption of the law is that the consumer goes on comparing the marginal utilities of last rupee spent on different commodities. In actual life one hardly comes across such a calculating consumer. So the application of the law is practically difficult.

• (3) **Shortage of Goods:** If goods giving more utility are not available in the market, the consumer will have to consume goods yielding less utility. For instance, if cooking gas is not available one has to use either coal or kerosene oil. If the utility of the latter is less than that of cooking-gas, one will not get maximum satisfaction.

- (4) **Influence of Fashion, Customs and Habits:** Actual expenditure of every consumer influenced by fashion, customs and habits. Under their influence, many a time consumer buys more such goods which give less utility. Consequently, he buys less of those goods which give more utility. Hence he fails to spend his income according to this law.

• (5) **Ignorance of the Consumer:** Consumer is ignorant about many things concerning consumption. Many a time, he is ignorant about the right price of the goods. He is ignorant about the less expensive substitutes of the goods. He is ignorant about the different uses of the goods. On account of this ignorance the consumer fails to spend his income in a manner that may yield him maximum satisfaction.

• (6) **Indivisibility of Goods:** The law does not apply to those goods which cannot be divided into small parts. We have to buy at least one unit of, say car, T.V. set, scooter, etc. In order to equalize the marginal utility of different goods, if we are supposed to buy more than one unit of the above goods, it may not be possible for us to buy the additional unit. Consequently, the law does not apply to indivisible goods.

• (7) **Constant Income and Price:** According to Leftwich, an important limitation of the law that the income of the consumer and the price of the goods should remain constant. Income of the consumer is limited, as such he cannot increase his satisfaction beyond a particular limit. Likewise, price being constant, he will get only as much of satisfaction as the amount of goods that he can buy with his limited income. He cannot extend his satisfaction beyond this limit.

(8) **Indefinite Budget Period:** Another limitation of the law is that the budget period of the consumer is not definite. Budget period refers to that period in which a consumer has to spend his income on different uses. It may be a month or a year. Some goods like, T.V. set, refrigerator etc. are bought for one budget period, but they continue to yield utility over many budget periods. Marginal utility of such goods cannot be compared with the marginal utility of those goods which are bought and consumed the same budget period.

• (9) **Cardinal Measurement of Utility is not possible:** The assumption that utility can be measured in cardinal numbers is also not correct. Measurement of utility is not possible. How can consumer say that he would get 12 utils of utility from first mango and 10 utils of utility from the second? Unless marginal utility is estimated, application of the law will remain dubious.

(10) **Change in the Marginal Utility of Money:** The assumption that marginal utility of money remains constant is also unrealistic. In actual life, marginal utility of money may increase or decrease. What

a consumer buys more of the goods, he is left with less amount of money. Smaller the amount of money higher is its marginal utility. Due to increase in the marginal utility of money, a consumer will have to re-arrange his expenditure on different goods. As a result of it, application of the law will become pretty difficult.

(11) **Complementary Goods:** The law does not apply to complementary goods. It is so because complementary goods are used in a fixed proportion. By using less of one commodity, use of the other cannot be increased. For example, film alongwith camera, and cassette alongwith VCR will have to be purchased.

In short, Chapman has rightly said about this law, "We are not, of course, compelled to distribute our income according to the Law of Substitution or Equi-marginal expenditure, as a stone thrown in air is compelled to, in a sense, fall back to the earth but as a matter of fact, we do so in a certain rough fashion because we are reasonable."

6. Derivation of Demand Curve with the help of the Law of Equi-marginal Utility

Demand curve can also be derived with the help of the law of equi-marginal utility. Suppose a consumer buys two commodities 'A' and 'B'. MU_A and MU_B are their respective marginal utilities and P_A and P_B are their respective prices. A consumer will be in equilibrium when he spends his income on different goods in such a manner that the ratio of marginal utility and price of each commodity is equal.

$$\frac{MU_A}{P_A} = \frac{MU_B}{P_B} \text{ or } \frac{P_A}{P_B} = \frac{MU_A}{MU_B}$$

The position of consumer's equilibrium can be explained through table 7. Suppose a consumer has Rs. 5.00 to be spent on potatoes and peas. Price of each vegetable is Re. 1.00 per kg.

Table 7. Derivation of Demand Curve

Quantity in kg.	M.U. of Peas	M.U. of Potatoes
1	12	10
2	10	8
3	8	6
4	6	4
5	4	2

It is clear from table No. 7 that the Consumer will spend Rs. 3.00 on Peas and Rs. 2.00 on Potatoes. In other words, at a price of Re. 1.00 per kg, he will buy 3 kg. of peas. The last unit of money so spent will give equal marginal utility to the consumer, i.e., 8 utils, and he will be in equilibrium. He will fulfil the following condition of equilibrium.

$$\frac{MU \text{ of Peas (8)}}{\text{Price of Peas (Re. 1)}} = \frac{MU \text{ of Potatoes (8)}}{\text{Price of Potatoes (Re. 1)}}$$

$$\text{or } \frac{8}{1} = \frac{8}{1} = 8 \text{ utils.}$$

Supposing the price of peas rises to Rs. 2.00 per kg. while the income of the consumer and the price of potatoes remains constant. The consumer will so change the quantities demanded of the two things that marginal utility per rupee from each commodity is equal.

$$\frac{\text{MU of Peas (12)}}{\text{Price of Peas (Rs.2)}} = \frac{\text{MU of Potatoes (6)}}{\text{Price of Potatoes (Rs.1)}}$$

or $\frac{12}{2} = \frac{6}{1} = 6$ utils.

At a price of Rs. 2.00 per kg. of peas, the consumer will buy 1 kg of it.

Thus, at a price of Rs. 2.00 per kg. of peas he will buy 1 kg. and at a price of Re. 1.00 per kg. he will buy 3 kg. of it. On the basis of this information, following demand schedule and curve are drawn.

Table 8. Demand Schedule of Peas

Price (in Rs.)	Demand for Peas (in kg.)
1	3
2	1

If Fig. 6, quantity of peas is shown on OX-axis and price on OY-axis. When price of peas is Rs. 1 per kg., then demand is for 3 kg. as shown by point 'A' of Price axis. As the price rises to Rs. 2.00 per kg., demand contracts to 1 kg. as shown by point 'B'. By joining points 'A' and 'B' one gets DD demand curve. This is how demand curve is derived.

□ 7. Criticism of Utility Analysis

Economists like **Edgeworth**, **Pareto**, **Hicks**, **Allen**, **Samuelson** etc. have criticised utility analysis on the following grounds:

(1) Utility is Subjective:

Utility is a subjective concept. It relates to man's psychology. It is not possible to be objective about it. But the analysis of consumer's demand based on it is objective.

(2) Cardinal measurement of utility is not possible: Utility cannot be measured in cardinal numbers like 1, 2, 3, 4 etc. As such, utility derived from different quantities of the goods can neither be added nor subtracted. **Marshall** sought to measure marginal utility indirectly in terms of money. But according to **Pigou** it is not possible to measure marginal utility indirectly in terms of money, because money can, at the best, measure the intensity of demand for a good. It cannot measure the actual satisfaction.

(3) Every commodity is not an independent commodity: The analysis is based on the assumption that every commodity is an independent commodity. In real life, we find that utility of a commodity is very much dependent upon the utility of other commodities. No commodity is an independent commodity. Consumer's behaviour cannot therefore be precisely measured through utility analysis.

(4) Marginal utility cannot be estimated in all conditions: Utility analysis is based on the concept of marginal utility. Marginal utility of only those commodities can be measured which are divisible. But it has already been pointed out that division of some commodities like T.V. set, refrigerator etc. is not possible, and as such their marginal utility cannot be measured.

(5) Marginal utility of money does not remain constant: The other assumption of utility analysis is that marginal utility of money remains constant. This assumption is also not real. As the quantity

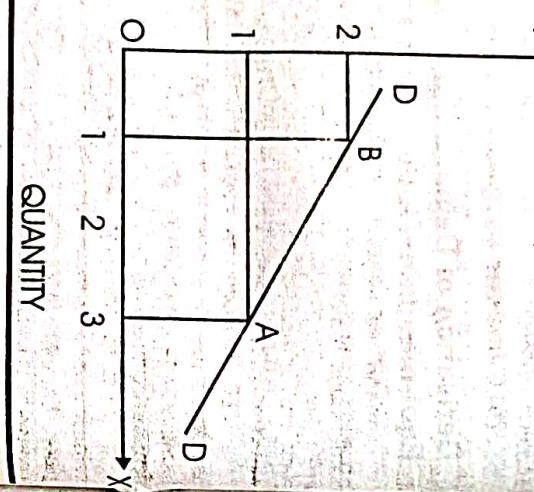


Figure 6

of money with a person increases, its marginal utility diminishes and as the quantity of money decreases, its marginal utility increases.

(6) Too many assumptions: Practicability of any theory is based on its assumptions. Cardinal utility analysis is hemmed with too many assumptions. Many of its assumptions, like cardinal measurement of utility, independent commodities etc. are unrealistic and impracticable. Indifference curve analysis gives a more comprehensive explanation of consumer's equilibrium without all these assumptions.

(7) No division of Price effect between Income Effect and Substitution Effect: Utility analysis does not divide price effect into income effect and substitution effect. It does not indicate that when as a result of change in price, demand changes, how much of this changed demand is due to change in real income (income effect), and how much due to substitution of cheap good for the expensive one (substitution effect).

(8) Consumer is regarded as a computer: It considers consumer as a computer. According to this analysis while spending his money, a consumer always compares the amount of gain he will have by way of utility of the commodity purchased with the loss that he will have to suffer by way of sacrifice of the money spent. But in real life none of us is so calculating.

(9) Utility analysis breaks down in an Under-developed Planned Economy: Utility analysis is based on the assumption that the taste of the consumer remains unchanged. It may be so for a short period only, but in a long period, consumer's taste undergoes a change. In a planned economy long-term plans are formulated keeping in view the fact, that in the long-run demand of the consumer will change with change in his taste. Utility analysis has failed to comprehend this reality.

(10) It does not explain Giffen's Paradox: Cardinal utility analysis does not explain Giffen's paradox. It has no answer to explain as to why the demand curve of many inferior goods slopes upward (positive slope) from left to right. In other words, why does demand extend with rise in price and why does demand contract with fall in price?

In short, although utility analysis is based on many unrealistic and impractical assumptions, yet being the first Theory seeking to determine consumer's equilibrium, it will continue to occupy an important place. It is worth mentioning that indifference curve analysis and revealed preference analysis have their genesis in the scathing criticism of cardinal utility analysis.

QUESTIONS

- Define the term utility. Distinguish between total utility and marginal utility and show that the concept of consumer's surplus is based on this distinction.
 - What is consumer's equilibrium? Explain its determination with the help of utility analysis.
 - Explain the Law of Diminishing Marginal Utility. Discuss the importance and limitations of this law.
 - Define the Law of Maximum Satisfaction. How it determines our scheme of expenditure?
- Or**
- Explain the Law of Equi-marginal Utility. Also give its importance and limitations.
 - Explain the Law of Maximum Utility. How is this law applicable to each and every field of economics?
 - What is meant by utility analysis? Give its main criticisms.

$D \propto \frac{1}{P}$

7

THEORY OF DEMAND

□ 1. Meaning of Demand

The term 'demand' is used in economics in a special sense. Ordinarily, we use the terms 'desire' and 'demand' to convey the same meaning. But in Economics all the three terms have separate meanings. Desire is just a wishful thinking. If you desire to buy colour T.V. but do not have enough money, then this desire will remain to be a wishful thinking. It will not be called 'Demand'. Likewise, you have enough money but you are not willing to spend it on colour T.V. then this desire will, at the best, be called 'Want' but not 'Demand'. This desire will become demand when you are ready to buy colour T.V. at a given price and at a given point of time. Demand therefore is expressed with reference to a particular time and a given time. Demand is defined as the quantities of a product which a consumer is not only desirous to purchase and able to purchase but is also ready to purchase at given prices at a given point of time. In other words, it refers to the relationship between price and demand. It indicates how much quantity of a commodity will be demanded at its different prices. It may be pointed out that economists distinguish between demand and quantity demanded. Demand is the quantities that buyers are willing and able to buy at alternative prices during a given period of time. Whereas the quantity demanded is a specific amount that buyers are willing and able to buy at one price.

For example, the consumer's ability and willingness to buy 4 ice creams at the price of Re. 1 per ice cream is an instance of quantity demanded. Whereas the ability and willingness of consumer to buy 4 ice creams at Re. 1, 3 ice creams at Rs. 2 and 2 ice creams at Rs. 3 per ice cream is an instance of demand.

□ 2 Definitions of Demand

(1) In the words of Ferguson, "Demand refers to the quantities of a commodity that the consumers are able and willing to buy at each possible price during a given period of time, other things being equal."

(2) B.R. Schiller is of the view that, "Demand is the ability and willingness to buy specific quantities of a good at alternative prices in a given time period, ceteris paribus."

An individual's demand for a commodity may be defined as the quantities of that commodity that the individual is willing, able and ready to buy at each possible price during a given time period. While the market demand for a commodity is the sum of quantities demanded by individuals at each possible price.

It is apparent from the above definitions of demand that there are five constituents of demand:

(1) Desire for a thing (2) Money to satisfy the desire (3) Willingness to spend the money (4) Relationship of the price and the quantity of the commodity demanded and (5) Relationship of time and the quantity of the commodity demanded.

□ 3 Law of Demand

Law of demand has been defined by some eminent economists as under:

(1) In the words of Bilas, "The law of demand states that, other things being equal, the quantity demanded per unit of time will be greater the lower the price and smaller the higher the price."

(2) According to Samuelson, "Law of Demand states that people will buy more at lower prices and buy less at higher prices, ceteris paribus, or other things remaining the same."

(3) "The Law of demand states that amount demanded increases with a fall in price and diminishes and buy less at higher prices, other things being equal," says Marshall.

□ 3.1 Assumptions

Law of demand holds good when "other things remain the same." It means factors influencing demand, other than price, are assumed to be constant. These may be explained with the help of following assumptions of the law of demand other than the P_x remain unchanged. In detail these are that:

$$D_x = f(P_x, P_t, Y, T, E)$$

Here, D_x = Demand for commodity X; P_x = Price of commodity X; P_t = Price of other (related) goods; Y = Income of the consumer; T = Tastes; E = Expectation of the consumer.

Assumptions of the law of demand are that all the determinants of demand other than the P_x remain unchanged. In detail these are that:

- (1) There should be no change in the price of related goods. (\bar{P}_t)
- (2) There should be no change in the income of the consumer. (\bar{Y})
- (3) There should be no change in the tastes and preferences of consumer. (\bar{T})
- (4) The consumer does not expect any change in the price of the commodity in the near future. (\bar{E})

□ 3.2 Explanation of Law of Demand.

According to law of demand there is an inverse relationship between price and demand for a commodity. However, this relation is not proportional, meaning thereby that it is not necessary that when price falls by one-half demand for goods will be doubled. Law of demand simply indicates the direction of change in demand as a result of change in price. The law is explained with the help of demand schedule and demand curve.

□ 3.3 Demand Schedule

In the words of McConnell, "Demand Schedule is a table that shows different prices of a good and the quantity of that good demanded at each of these prices." In other words demand schedule is that schedule which shows various amounts of a commodity that the consumer is ready to buy at different possible prices of that commodity at a given time. It has two aspects, (1) Individual Demand Schedule and (2) Market Demand Schedule.

(1) Individual Demand Schedule

Individual demand schedule is defined as the table which shows quantities of a commodity which an individual consumer will buy at all possible prices at a given time. It indicates different quantities of Ice Cream that are demanded by a consumer at different prices:

Table 1 Individual Demand Schedule

Price per unit (in Rs.)	Quantity Demanded (Units)
1	4
2	3
3	2
4	1

It is evident from the above schedule that as the price of ice cream increases, its demand tends to contract. When price of ice cream is Re. 1.00 demand is for 4 units and when price goes up to Rs. 4 demand contracts to 1 unit only.

(2) Market Demand Schedule

In the words of Liebhafsky, "Market demand schedule is defined as the quantities given commodity which all consumers will buy at all possible prices at a given moment in time." In every market there are many consumers of a commodity, e.g., sugar. The schedule indicates the quantity demanded by all the consumers of a commodity collectively at its different prices in a market demand schedule. In other words, it shows the aggregate demand of all consumers at different prices of one particular commodity at a given time. Table 2 represents market demand schedule. By aggregating their individual demand, the market demand schedule has been constructed.

Table 2. Market Demand Schedule

Price of Commodity 'X' (in Rs.)	Demand of A	Demand of B	Market Demand (Units)
1	4	5	4+5=9
2	3	4	3+4=7
3	2	3	2+3=5
4	1	2	1+2=3

Above schedule indicates that when price of 'X' is Re 1.00 per unit, demand of 'A' is for 4 units and of 'B' is for 5 units. Thus the market demand is for 9 units. As the price rises to Rs. 2.00 per unit, market demand comes down to 7 units; and so on.

3.5 Demand Curve

The demand curve is a graphic presentation of a demand schedule. In the words of Leibhafsky, "The demand curve represents the maximum quantities per unit of time that consumers will take at

prices". Lipsey, has defined it in these terms: "The curve, which showss the relation between the price of a commodity and the amount of the commodity that the consumer wishes to purchase, is called demand curve." Like demand schedule, demand curve can be: (1) Individual Demand Curve and (2) Market Demand Curve.

(1) Individual Demand Curve: Individual

demand curve is a curve that shows different quantities of a commodity demanded by an individual consumer, say, 'A', at different prices. Fig. 1 indicates individual demand curve. On OX-axis is shown quantity demanded and on OY-axis, the price. DD is the (Rs.) demand curve. Each point on the demand curve expresses the relation between price and demand. At a price of Rs. 4 per unit, demand is for 1 unit and at a price of Re 1 per unit, demand is for 4 units. The demand curve slopes downwards from left to right, meaning thereby that when price is high demand is low and when price is low demand is high.

(2) Market Demand Curve: Market de-

mand curve is a curve that represents the aggregate demand of all the consumers in the market at different prices of a particular commodity. It is horizontal summation of individual demand curves. Fig. 2 shows market demand curve as based on Table 2.

In fig. 2, quantity demanded is shown on OX-axis and price on OY-axis. In Fig. (i) demand curve of 'A'; in Fig. (ii) demand curve of 'B' and in Fig. (iii) market demand curve, are shown. When price is Rs. 4.00 per unit, 'A' demands 1 unit and 'B' demands 2 units. If they are the only two consumers in the market, then the market demand will be $1+2 = 3$ units. By horizontal summation of individual demand curves one gets market demand curve. Its slope is also negative.

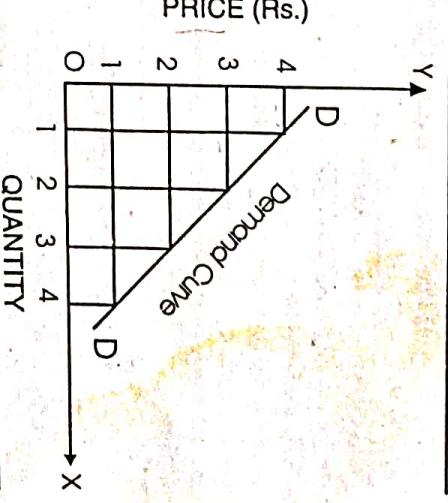


Figure 1

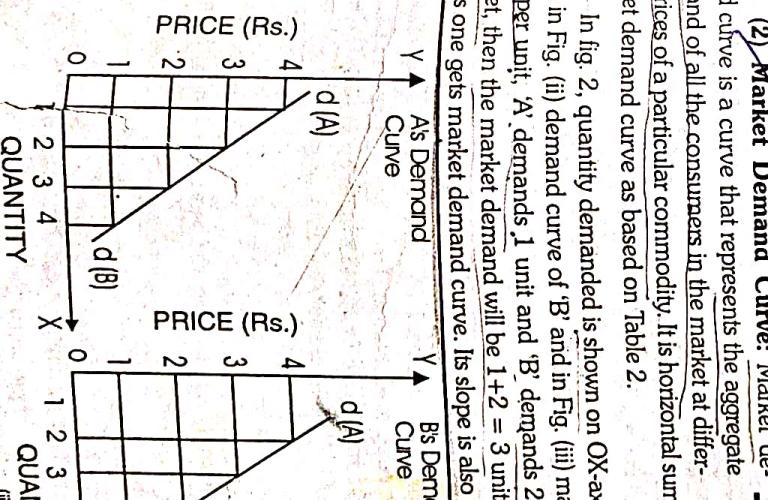


Figure 2

Q3.6 Why does Demand Curve slope downwards?

As is evident from the above Figs: demand curve slopes downward (negative) from left to right. It means, demand extends when price falls and contracts when price rises. Downward sloping of demand curve which is a graphic presentation of law of demand is due to the following reasons:

(1) **Law of Diminishing Marginal Utility**: A consumer demands a commodity because it has utility. As he consumes more and more units of a commodity, in a given time, the utility derived from each successive unit goes on diminishing. In other words, law of diminishing marginal utility applies to his consumption. Law of diminishing marginal utility refers to the phenomenon whereby the marginal utility of any good diminishes as more and more of that good is purchased. Marginal utility is the addition made to total utility by consuming one more unit of commodity. Obviously, a consumer will buy an additional unit of a commodity only if he has to pay less price for it compared to the previous unit. A consumer will stop his purchase at that point where the marginal utility of the commodity is equal to the price paid for it. Thus,

$$\text{Price} = \text{Marginal Utility}$$

Relationship between the law of demand and law of diminishing marginal utility is explained with the help of following schedule:

Utility Schedule		
Units of Ice cream	Total	Marginal Utility (Measured in terms of Rupees)
1	8	8
2	14	6
3	18	4
4	20	2

If price of ice-cream is Rs. 4 per unit, the consumer will buy 3 units corresponding to the equality between 'marginal utility' and 'price'. Likewise, if the price becomes Rs. 6 per unit, 2 units of ice cream will be purchased so that marginal utility and price are equal to each other. Thus corresponding to rise in the price from Rs. 4 to Rs. 6 per unit, demand for ice cream contracts from 3 to 2 units, establishing an inverse relationship between price of the commodity and its quantity demanded. Law of diminishing marginal utility thus is the basis of the law of demand.

Algebraic Explanation

With a view to maximising his satisfaction from a given income, the consumer spends his income across different goods in accordance with the following equation:

$$\frac{MU_1}{P_1} = \frac{MU_2}{P_2} = \dots = \frac{MU_n}{P_n}$$

MU_1/P_1 refers to marginal utility of commodity-1 per unit of the money spent on this commodity.

Likewise MU_2/P_2 refers to marginal utility of commodity-2 per unit of the money spent on this commodity. Let us consider following equation of consumer's equilibrium:

$$\frac{20}{4} = \frac{10}{2} \text{ referring to } \frac{MU_1}{P_1} \text{ and } \frac{MU_2}{P_2} \text{ respectively.}$$

If price of commodity-1 increases to Rs. 5, marginal utility per unit of money spent on this commodity will reduce. Accordingly the equality between $\frac{MU_1}{P_1}$ and $\frac{MU_2}{P_2}$ will be disturbed. In order that the equality is re-established (and the consumer continues to be in a state of equilibrium) MU_1 must increase. This is possible only when the consumption of commodity -1 is reduced in accordance with the law of diminishing marginal utility. The equation of equilibrium now should be as under:

$$\frac{25}{5} = \frac{10}{2} \text{ so that again }$$

$$\frac{MU_1}{P_1} = \frac{MU_2}{P_2}$$

This establishes the fact that following a rise in the price of the commodity, its demand tends to contract, and vice-versa.

(2) Income Effect: Income effect is the effect that a change in a person's real income caused by change in the price of a commodity has on the quantity of that commodity.

Real income is that income which is measured in terms of goods and services that a consumer can buy with his given money income. When the relative price of a good decreases, less of a person's income would need to be spent to purchase exactly the same amount of the good; therefore it is possible to purchase more because of this rise in purchasing power or real income.

Suppose your income is Rs. 15.00 per day. You want to buy apples whose price is Rs. 5.00 per kg. It means with your fixed income of Rs. 15.00 you can buy three kgs. of apples. In case, the price of apples comes down to Rs. 3 per kg. then after buying 3 kgs of apples you will be left with Rs. 6. It means your real income (in terms of apples) increases. This increased real income (Rs. 6 saved on apples) may be spent on buying two more kgs i.e., 5 kgs of apples. Thus fall in price causes increase in real income and so extension in demand. On the contrary, rise in price causes decrease in real income and so contraction in demand.

(3) Substitution Effect: The substitution effect is the effect that a change in relative prices of substitute goods has on the quantity demanded. Substitutes are goods that can be used in place of each other.

For example, tea and coffee, coca-cola and pepsi-cola are substitutes. In order to get maximum satisfaction with a fixed income, a consumer will substitute a lower priced good for higher priced one. In other words, when the price of one good changes relative to another, the relatively less expensive good is substituted for the more expensive one. The demand for the former, therefore, extends. On the contrary, when the price of one of the substitutes increases, its demand in comparison to the other good contracts due to substitution effect.

Tea and coffee are substitutes of each other. If price of tea goes down, the consumers may substitute tea for coffee, although price of coffee remains the same. Thus demand for tea extends due to its becoming less expensive because of a fall in its price. Contrary to it, if the price of tea goes up, the consumer will substitute relatively less expensive coffee for tea which is now relatively more expensive. Consequently the demand for tea contracts. To get maximum satisfaction, a consumer will buy more units of that

commodity whose price, in relation to its substitute, has gone down. In other words the consumer substitutes cheaper good for the good whose price has not altered. The demand for the former, therefore, extends On the contrary, when price of one of the substitutes increases, its demand vis-a-vis the other good contracts due to substitution effect.

Modern view is that change in the quantity demanded of a commodity due to change in its price is the sum of income effect and substitution effect.

(4) **Different Uses:** Some goods have more than one use. Milk, for example, may be used for drinking and for making curd and cheese. At its very high price, an individual consumer may buy milk only for drinking, but at the reduced price more milk may be bought for making curd and cheese as well. Thus the demand for commodities with alternative uses tends to extend consequent upon the fall in their prices.

(5) **Size of Consumer Group:** When the price of a commodity falls, then many consumers, who are unable to buy that commodity at its previous price, come forward to buy it. Consequently, the total number of consumers or total market demand goes up. For example, when the price of apples is Rs. 30.00 per kg, then a handful of consumers buy it. The demand is limited. As the price comes down to Rs. 15.00 per kg, then many consumers are willing to buy apples at this new favourable price. Consequently, the total demand for apples goes up. On the contrary, if the price of apples rises to Rs. 40.00 per kg, many consumers will withdraw from the market and in this way total demand for apples will go down. Change in price causes change in the size of consumer-group affecting change in total demand.

□ 3.7 Exceptions of the Law of Demand or Exceptional-Demand Curve

There are some exceptions to the law of demand. It means there are some commodities whose demand extends when price rises and contracts when price falls. Demand Curve of such commodities slopes upwards from left to right, as shown by curve DD in Fig. 3. It is called positive slope.

(1) Article of Distinction or Veblen

goods: Veblen goods (named after American economist T. Veblen) are articles of distinction or luxury goods like jewellery, original works of Art by great artists. Articles of distinction according to Veblen, command more demand when their prices are high. Diamonds, gems and costly carpets etc. will have more demand when their prices are high. Diamonds and gems are considered articles of distinction in the society and so are more in demand despite high price. In case, their price goes down they no longer remain articles of distinction and so have less demand. In the words of Watson, "If the consumers measure the desirability of a commodity entirely by its price, and nothing else influences consumers, then they will buy less of the commodity at a low price and more at higher price."

(2) **Ignorance:** Many a time, consumers buy of sheer ignorance or poor judgement consider commodity to be of low quality if its price is low and of high quality if its price is high. Benham gave an

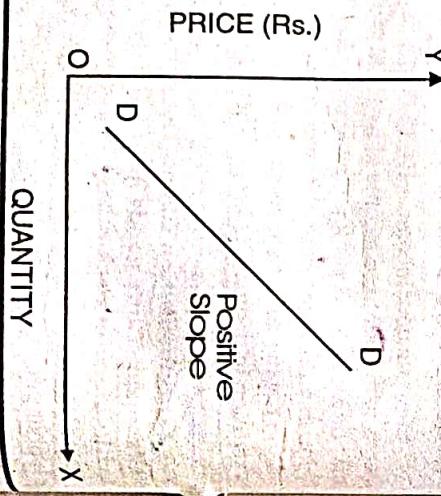


Figure 3

Demand of a consumer for a particular commodity at any given time is determined by the following factors :

- (1) Price of the commodity (P_x)
- (2) Prices of the related goods (P_r)
- (3) Income of the consumer (Y)
- (4) Tastes and preferences of the consumer. (T)
- (5) Expectation of price change of the commodity (E)

In addition to the above, the market demand is also determined by the following factors:

- (6) Size and composition of population
- (7) Distribution of Income

Of course, in the case of market demand function, we shall consider income, tastes and expectations of all the consumers in the market for a particular commodity. Market demand function may be expressed thus:

$$D_x = (P_x, P_r, Y, T, E, P, Y_d)$$

(Here, D_x = Demand for the commodity X ; P_x = Price of the commodity X ; P_r = Prices of other (related) goods; Y = Income of all the consumers in the market for a commodity; T = Tastes of consumers; E = Expectations of consumers; P = Size and composition of population; Y_d = Distribution of income.)

interesting example to substantiate this point. Before world war II an illustrated book was published in U.K. and priced at 10s. 6d per copy. But it could not attract many buyers. Another edition of the same book was published after world war II and this time it was priced £ 3 and ten shillings. The book was sold like hot cakes. High price of the book enhanced its quality in the minds of the people and so also its demand.

(3) Giffen Goods:

Giffen goods (named after the nineteenth century economist Sir Robert Giffen,) are those inferior goods whose demand falls even when their price falls, so that the law of demand does not hold good. For example, 'Bajra' is an inferior good for a consumer ordinarily. As the price of 'Bajra' falls, real income of the consumer rises. With increased real income a consumer may demand more of 'wheat' and thus his demand for 'Bajra' may fall. In this way, fall in the price of inferior goods is accompanied by fall in their demand and vice versa. However, it is to be noted that the law of demand need not necessarily fail in the case of all inferior goods. And, only those inferior goods in the case of which law of demand fails are called Giffen goods.

(4) **Expectation of Rise or Fall in Price in Future:** If prices are likely to rise more in the future then even at the existing higher price people may demand more units of the commodity in the present. Contrarily, if prices are likely to fall further in the future then even at the existing lower price people may demand less units of the commodity in the present, in the hope of buying more in the future. This situation renders the slope of demand curve positive. However, this exception to the law of demand holds good only if it has earlier not been specified as assumption of the law.

□ 4. Determinants of Demand or Demand Function

Various determinants of the market demand for a commodity are discussed as under:

Q(1) Price of Commodity

Ordinarily, the demand for a good is governed by its price. Other determinants remaining constant, or *ceteris paribus*, change in the price of a good causes an inverse change in its demand as well. Normally, a rise in price is accompanied by contraction in demand and fall in price is accompanied by extension of demand. This relationship between price and demand is called law of demand. This is illustrated in Fig. 4.



Fig. 4 shows extension of demand from OQ_1 to OQ_2 corresponding to a fall in price of the commodity from OP to OP_2 , and contraction of demand from OQ to OQ_1 following a rise in price from OP to OP_1 ; establishing an inverse relationship between price of the commodity and its quantity demanded.

Q(2) Prices of Related Goods

Demand for a commodity depends not only on its own price, but also upon the prices of related goods. Related goods are broadly classified as substitute goods and complementary goods.

(i) Substitute Goods: Substitute goods are those goods which can be substituted for each other, such as tea and coffee, or lime and coke.

Demand for coke is related to the price of lime. If price of lime is raised people may shift to coke, and vice-versa. In other words, in case of substitute the quantity demanded of one good is positively related to the price of the other good. If the price of one good for example, pepsi increases then demand for its substitute coke will also increase. Contrary to it, if the price of pepsi decreases, the demand for its substitute coke will also decrease. Fig. 5 illustrates this relationship. Fig. 5 shows that following a rise in the price of pepsi from OP to OP_1 demand for coke increases from OQ to OQ_1 .

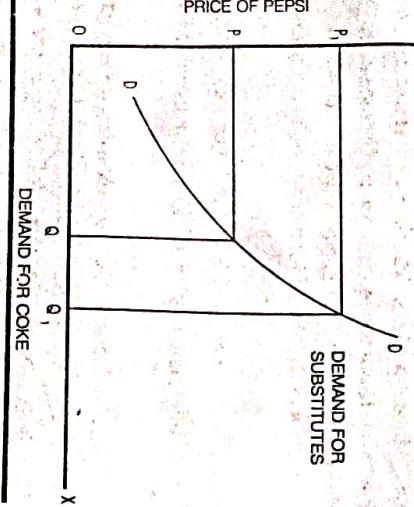


Figure 5

(ii) Complementary Goods: Complementary Goods are those goods which complete the demand for each other, such as car and petrol or pen and ink.

There is an inverse or negative relationship between the demand for first good and price of the second which happens to be complementary to the first. Thus, following increase in the price of pens, demand for ink is likely to go down (of course along with the demand for pens). Contrary to it, if the price for pens decreases, the demand for its complementary good increases. In other words, if two commodities are complements and the price of one

Demand for Complementary Goods

increases, the demand for the other commodity will decline. Contrary to it, if the price of one decreases, the demand for the complement commodity will increase. Fig. 6 illustrates this situation:

Fig. 6 shows that following increase in the price of pens, from OP to OP_1 demand for ink reduces from OQ to OQ_1 .

Thus in case of substitute goods, demand curve happens to be positively sloped, in the case of complementary goods, it is negatively sloped.

Q(3) Income of the Consumer

Experience shows that numerically there is a positive relationship between income of the consumer and his demand for a good. In other words, an increase in income would cause an increase in demand and economists therefore call such goods as normal goods. Normal good is a good for which an increase in consumer's income results in an increase in demand. There are some goods, however which are called inferior goods. Inferior goods is a good for which an increase in consumer's income results in a decrease in its demand. Thus relationship between income of the consumer and demand for a commodity is discussed with reference to:

(i) Normal goods, (ii) Inferior goods

(iii) Necessaries of Life and Inexpensive Goods.

Figure 6

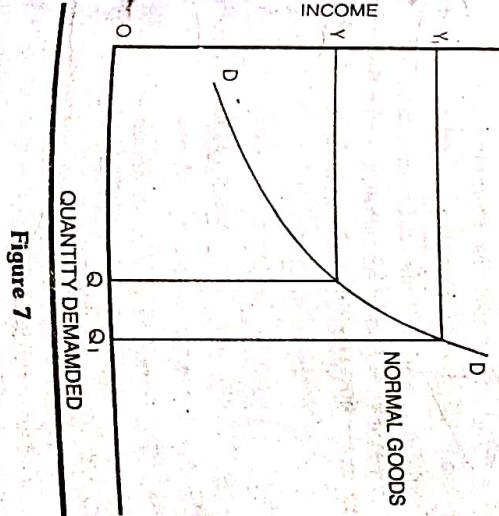
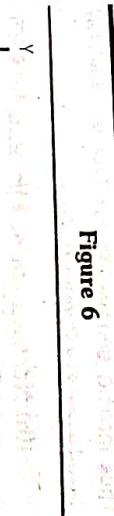


Figure 7

Fig. 7 illustrates that following increase in consumer's income, and tends to increase following decrease in his income. So, there is a positive relationship between consumer's income and quantity demanded, as illustrated in the following Fig. 7.

This Fig. shows that corresponding to a rise in consumer's income from OY to OY_1 , demand for commodity-X tends to increase from OQ to OQ_1 . Income Demand curve DD, sloping upwards, indicates positive relationship between income and quantity demanded of a commodity.

(iii) **Inferior Goods:** Inferior goods are those goods the demand for which tends to decline following a rise in consumer's income, and tends to increase following a fall in his income.

So, there is an inverse relationship between income of the consumer and demand for a commodity. Fig. 8 illustrates this situation:

This Fig. shows that following a rise in consumer's income from OY to OY_1 , quantity demanded of commodity X (which happens to be an inferior good) reduces from OQ_0 to OQ_1 . This occurs because, with the rise in his income, the consumer tends to shift from inferior to the superior goods.

Thus income demand curve DD is negatively sloped in case of inferior goods.

(iii) **Necessaries of Life and Inexpensive goods:** One may also study the relationship between income of the consumer and his demand for the necessities of life and inexpensive goods. So its effect on the present demand. There is generally a direct relationship between the expectation of future rise in income leads to increase in demand and fear of future fall in income leads to decrease in demand.

Fig. 9 shows a moderate stretch in demand slightly stretch in the initial stages of a rise in consumer's income. The situation is illustrated in Fig. 9.

In case of such goods, as salt and match box, for example, the demand remains almost constant irrespective of the level of income, though it may

slightly stretch in the initial stages of a rise in consumer's income. The situation is illustrated in Fig. 9.

Fig. 10 shows the income demand curves for normal goods, inferior goods and inexpensive goods.

i)

The curve DD represents demand curve for normal goods. Demand rises continuously with income.

ii)

The curve II represents demand curve for inferior goods. At low levels of income, it is rising upwards since the people will demand larger amounts of these products. But as their incomes rise, people buy less of these products. Thus at higher income the demand curve has bent backward.

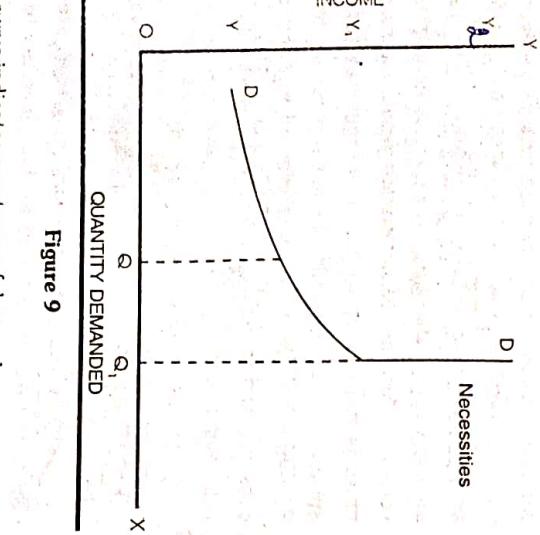


Figure 8

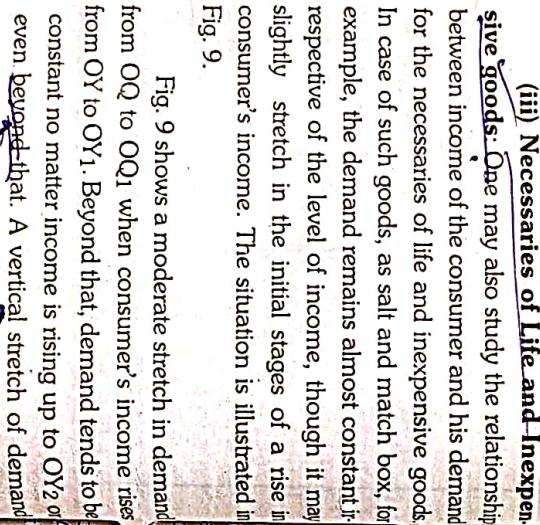


Figure 9

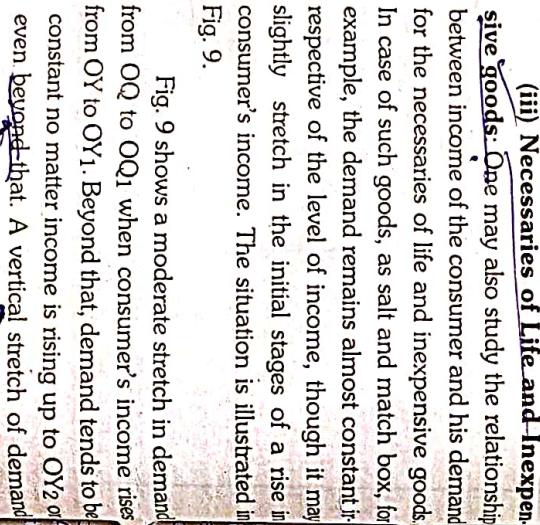


Figure 10

(iii) **MN curve:** MN curve represents demand curve for necessities of life like salt and other inexpensive goods. It is parallel to OY -axis which shows that the demand tends to remain constant.

Q(4) Taste and Preference

The demand for any goods and service depends on individual's tastes and preferences. These terms are used in broad sense. They include fashion, habit, custom etc. Tastes and preferences of the consumers are influenced by advertisement, change in fashion, climate, new inventions etc. Other things being equal, demand for those goods increases for which consumers develop tastes and preferences. Contrary to it, an unfavourable change in consumer preferences and tastes for a product will cause demand to decrease.

Q(5) Expectations

Change in consumer's expectations about such things as product prices, product availability and future income is another determinant of demand. If the consumer expects that price will rise in future, he will buy more goods in the present even when price is high. In case, he expects that prices will fall in future, he will either buy less in the present or will postpone his demand. Thus, future rise or fall in income has its effect on the present demand. There is generally a direct relationship between the expectation of future rise in income leads to increase in demand and fear of future fall in income leads to decrease in demand.

Q(7) Distribution of Income
Market demand is influenced by the distribution of income in the society. If there is unequal distribution of income, in a country, there will be more demand for 'luxury' goods like Colour Television, Automatic Washing Machines, Video Cameras etc. On the other hand, if the income is evenly distributed, here will be less demand for luxury goods and more demand for necessities and comforts.

5. Change in Quantity Demanded and Change in Demand

Or

Movement Along Demand Curve and Shift of the Demand Curve

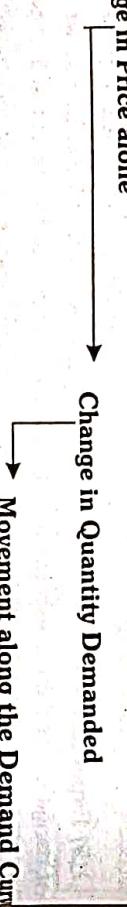
Economists usually mean something different when they talk about a "Change in the quantity demanded" than when they talk about "Change in Demand". A change in quantity demanded shows the effect of a change in the price of the commodity on its demand while other determinants of demand like income, tastes and prices of related goods remain constant. Since the quantity demanded at a given price is shown by a point on demand curve, change in quantity demanded is reflected in a "movement

along demand curve." "A change in demand", on the other hand, is not caused by the change in price of that good. It shows the effect of change in income, tastes, price of related goods etc. on demand of a consumer for a commodity. A change in demand is reflected in a shift in the entire demand curve to the left or to the right. The distinction between two kinds of demand change is very important.

Movement along the demand curve represents consumer adjustment to changes in the market price. In demand by contrast represents adjustment to outside factors (income, tastes, price of related goods) which leads in turn to change in the equilibrium price and quantity.

O (1) Change in Quantity Demanded or Movement Along the Demand Curve.

Other things remaining the same when the quantity demanded changes consequent upon change in price only, then this change is shown by different points along the same demand curve. If price is followed by extension of demand and rise in price is followed by contraction of demand, movements along a demand curve are in response to price changes for that good. Such movements assume that determinants of demand are unchanged. Movements along a given demand curve in response to price changes of that good are reflected by changes in quantity demanded. In short,



Changes in quantity demanded may be of two types.

(1) **Extension of Demand:** Extension of demand refers to a rise in quantity demanded as a result of fall in price, other things remaining the same. As shown in the following table, when price of apples falls from Rs. 5.00 per kg. to Re. 1.00 per kg. demand extends to 5 kg. of apples, when it falls to Re. 1.00 per kg. demand extends to 5 kg. of apples.

Extension of Demand		
Price. (Rs.)	Quantity Demanded	Description
5.00	1 kg.	Fall in Price
1.00	5 kgs:	Extension of Demand

Extension of demand can also be illustrated with the help of Fig 11.

In the Fig. AB is the demand curve of apples. When price of apples is Rs. 5.00 per kg. demand is for one kg. The consumer is at point 'A' of the demand curve. As the price of apples falls to Re. 1.00 per kg. demand extends to five kgs; and the consumer moves to point 'B' of the demand curve. Movement

along the demand curve from higher point (A) to lower point (B) is called extension of demand.

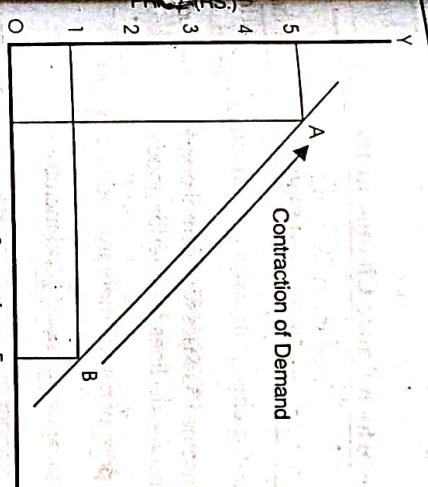


Figure 12

Contraction of Demand		
Price (Rs.)	Quantity Demanded	Description
1.00	5 kgs:	Rise in Price
5.00	1 kg.	Contraction of Demand

Contraction of demand can also be illustrated

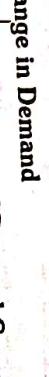
with the help of Fig. 12.

In the above Fig. AB is the demand curve of apples. When price is Re. 1.00 per kg. demand is for 5 kg. of apples. The consumer is at point 'B' of the demand curve. As the price of apples rises to Rs. 5.00 per kg. demand contracts to one kg. and the consumer moves to point 'A' of the demand curve.

O (2) Change in Demand or Shift in Demand Curve

A change in any determinant of the demand other than price will shift the entire demand curve to the right or to the left. An increase in demand is shown as rightward shift. A decrease in demand is a leftward shift of the entire demand curve. Economists call this as a change in demand. Changes in income, preference, or price of other goods may cause such a change in demand. In short,

Change in Income, Tastes, or Other Prices



The rightward shift of the demand curve shows increase in demand while a leftward shift of the demand curve shows the decrease in demand.

The main causes of decrease in demand or leftward shift in the demand curve may be summarised as follows:

- (1) Decrease in Income
- (2) Fall in the Price of Substitute Good (Tea, Coffee)
- (3) Rise in the Price of Complementary Good (Petrol, Car)
- (4) Unfavourable Change in Tastes and Preferences
- (5) Expectation of Fall in Price
- (6) Decrease in Population

Figure 11

along the demand curve from higher point (A) to lower point (B) is called extension of demand.

Likewise the causes of **increase in demand or rightward shift in demand curve are :**

- (1) Increase in Income ✓
- (2) Rise in Price of Substitute Good ✓
- (3) Fall in the Price of Complementary Good
- (4) Favourable Change in Tastes and Preferences
- (5) Expectation of Rise in Price
- (6) Increase in Population ✓

Causes of shift in Demand Curve Or Factors which Cause Change in Demand

Decrease in Demand or Leftward Shift	Increase in Demand or Rightward Shift
(1) A negative change in tastes and preferences	(1) A positive change in tastes and preferences
(2) (a) Income falls, for normal goods (b) Income rises, for inferior goods.	(2) (a) Income increases for normal goods (b) Income declines for inferior goods
(3) The price of complementary good increases	(3) The price of complementary good decreases
(4) The price of substitute good decreases	(4) The price of substitute good increases
(5) The number of buyers decreases	(5) The number of buyers increases
(6) Income or price expectation decreases	(6) Income or price expectation increases

(1) Increase in Demand: Increase in demand means rise in demand in response to change in determinants of demand other than the price of the product. Increase in demand refers to an outward shift in demand curve. Thus demand may increase in two ways:

If price of ice cream is Rs. 3 per unit, demand is for 3 units. If price remains the same, i.e., Rs. 3 per unit but demand goes up to 4 units, then it will be an instance of increase in demand.

(ii) More Price same Demand: When price of ice cream is Rs. 3 per unit, demand is for 3 units. If price rises to Rs. 4 per unit but demand remains the same, that is, 3 units, then it will also be an instance of increase in demand.

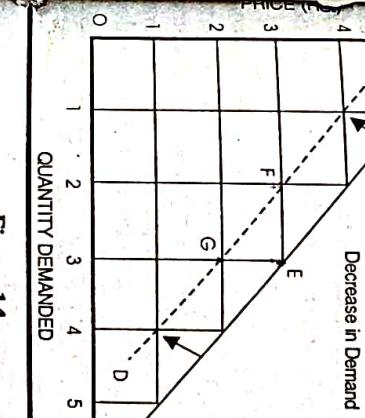
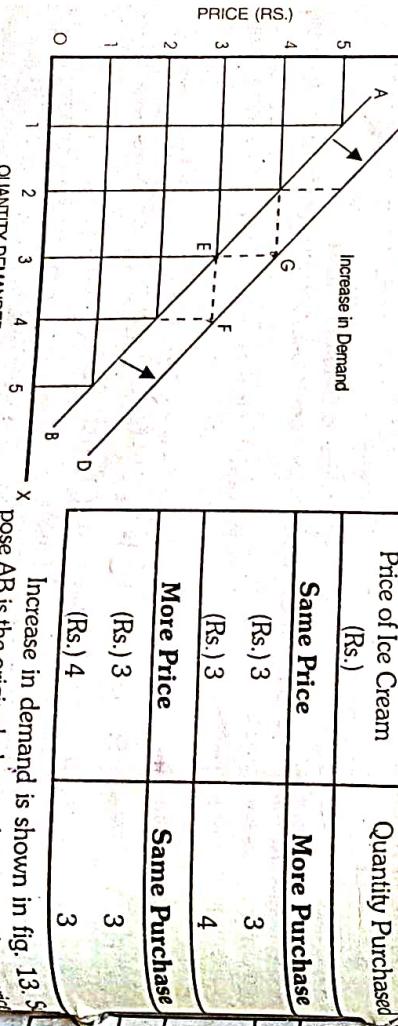


Figure 14

Suppose AB is the original demand curve. When price of ice cream is Rs. 3.00 purchase is for 3 units of ice-cream and the consumer is at point 'E' on AB demand curve. Due to change in factors other than price, demand curve shifts to the left as shown by new demand curve CD which represents decrease in demand. Point 'F' on the new demand curve CD indicates that at the same price of Rs. 3 the purchase goes down to 2 units of ice cream. Likewise, point 'G' on the new demand curve CD indicates that even when price falls from Rs. 3 to Rs. 2 the purchase remains for 3 units of ice cream. Thus the new demand curve CD represents decrease in demand.



Pose AB is the original demand curve. When price of ice cream is Rs. 3 purchase is for 3 units of ice cream. When price falls to Rs. 2 purchase remains for 3 units of ice cream.

mand means fall in demand in response to change in determinants of demand other than the price of the commodity. A decrease in demand refers to an inward or leftward shift in the demand curve. Thus demand may decrease in two ways.

(i) Same Price Less Purchase: At a price of Rs. 3.00, purchase is for 3 units of ice-cream. If price remains the same, i.e., Rs. 3 per unit but purchase goes down to 2 units, then it will be an example of decrease in demand.

(ii) Less Price Same Purchase: At a price of Rs. 3.00, purchase is for 3 units of ice-cream. If price falls to Rs. 2.00 per unit but purchase remains the same, that is, 3 units, then it will be an example of decrease in demand. Decrease in demand is shown by Fig. 14.

Suppose AB is the original demand curve. When price of ice cream is Rs. 3.00 purchase is for 3 units of ice-cream and the consumer is at point 'E' on AB demand curve. Due to change in factors other than price, demand curve shifts to the left as shown by new demand curve CD which represents decrease in demand. Point 'F' on the new demand curve CD indicates that at the same price of Rs. 3 the purchase goes down to 2 units of ice cream. Likewise, point 'G' on the new demand curve CD indicates that even when price falls from Rs. 3 to Rs. 2 the purchase remains for 3 units of ice cream. Thus the new demand curve CD represents decrease in demand.

Price of Ice Cream (Rs.)	Quantity Purchased	Price of Ice Cream (Rs.)	Quantity Purchased
Same Price	More Purchase	Same Price	Less Purchase
(Rs.) 3	3	(Rs.) 3	3
More Price	Same Purchase	(Rs.) 3	2
(Rs.) 4	3	(Rs.) 3	3

Figure 13

In short, when the price of a good changes, other things remaining the same, there is a movement along the demand curve and a change in quantity demanded. A rise in quantity demand is called as 'extension' and a fall as 'contraction.' On the other hand, when the price of the good remains constant,

but some other determinants of demand change, there is a shift in the demand curve or change in demand. A rightward shift of the demand curve or rise in demand is called increase in demand while a leftward shift of the demand curve or a fall in demand is called decrease in demand.

5.1 Distinction between Extension and Increase in Demand

Extension in demand

means rise in demand in response to fall in the price of a commodity, other things being equal. It is expressed by the movement from a higher point to a lower point along the same demand curve.

On the other hand, **Increase in demand** refers to rise in demand in response to change in the determinants of demand (like tastes, income of the consumer, price of substitutes) other than the price.

It is expressed by the upward shift of the entire demand curve. Fig 15 shows the distinction between extension in demand and increase in demand. DD is the initial Demand Curve. The figure shows that from the point 'A' of demand curve DD two quite different rises in demand are possible. One is a rise in the quantity demanded from OQ to OQ₁, moving along the same curve from 'A' to 'B'. Such a rise in quantity demanded results from consumer's adjustment to a reduction in price from OP to OP₁. It is called extension in demand.

The second is the shift in the entire demand curve from DD to D₁D₁. At the initial price OP consumer used to purchase OQ, as shown by point 'A' but now purchases OQ₁ as shown by point 'B'. This change in demand is the response to change in any determinant of the demand, other than the price. This change is called increase in demand.

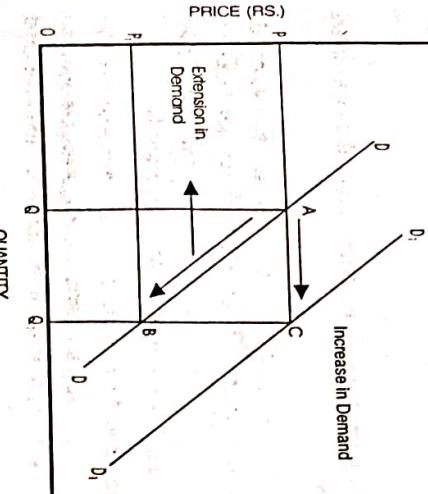


Figure 15

curve from A to B. Such a fall in quantity demanded results from consumer's adjustment to a rise in price from OP to OP₁. It is called contraction in demand.

The second is a downward shift of entire demand curve from DD to D₁D₁. At the initial price OP the consumer used to purchase OQ. But now purchases OQ₁. This shift in demand curve is the response to change in determinants of demand, other than the price. This change in demand is called decrease in demand.

6. Inter-connected Demand

When demand for a commodity depends upon the demand for another commodity then it is called inter-connected demand. It may be of the following types :

(1) **Joint or Complementary Demand** : When to satisfy one want two or more than two goods are demanded together, then such a demand is called joint demand. To take a snap, we need camera and film ; to write a letter, we need paper, pen and ink ; to prepare tea, we demand milk, tea leaves,

sugar, water etc. Goods which are jointly demanded are also known as complementary goods.

(2) **Composite Demand** : Composite demand refers to the demand for one commodity in order to satisfy two or more wants. For example, demand for milk is a composite demand. Some people demand milk to prepare cheese, others to prepare curd and still others to prepare sweetmeats etc. Total demand for milk is called composite demand.

(3) **Direct and Derived Demand** : When a commodity is demanded for its direct consumption it is called direct demand. For example, demand for cold drink when feeling thirsty or demand for woollen blanket when feeling cold. Derived demand refers to the demand for one commodity as a result of demand for another. For example, demand for bricks, cement, lime, timber etc. is derived demand as the same arises out of the demand for a house. Derived demand is another form of joint demand.

(4) **Competitive Demand** : Demand for substitutes is known as competitive demand. An increased demand for one means reduced demand for the other. Substitutes are those goods which can be used for one another. At a given income, change in the price of one leads to change in the demand for the other. For example, Campa and Limca. If price of Campa increases then demand for Limca will rise.

QUESTIONS

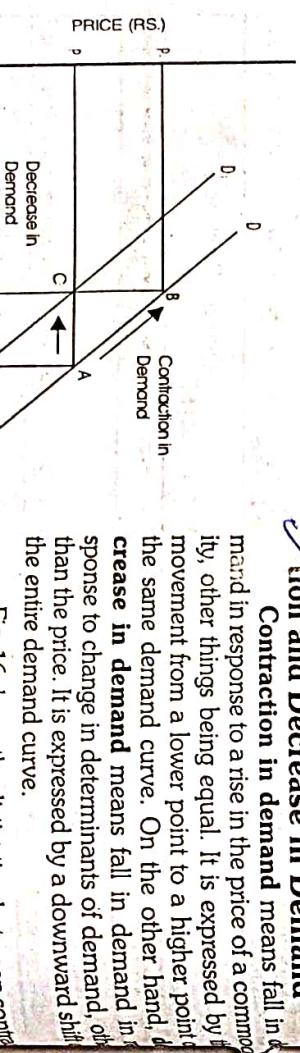


Figure 16

Fig. 16 shows the distinction between contraction and decrease in demand. DD is the initial demand curve. The figure shows that from point 'A' the demand curve DD, two quite different reductions in demand are possible. One is a fall in quantity demanded from OQ to OQ₁ moving along the same curve from 'A' to 'B'. Such a fall in quantity demanded results from change in any determinant of demand, other than the price.

Fig. 16 shows the distinction between contraction and decrease in demand. DD is the initial demand curve. The figure shows that from point 'A' the demand curve DD, two quite different reductions in demand are possible. One is a fall in quantity demanded from OQ to OQ₁ moving along the same curve from 'A' to 'B'. Such a fall in quantity demanded results from change in any determinant of demand, other than the price.

5. Why does a normal demand curve slope downwards ? Also explain the exceptions to this situation.
6. What is the law of demand? Explain the causes of its operation. Also discuss its exceptions.
7. Explain the following with the help of schedules and diagrams.

- (i) Extension and Contraction in demand.
- (ii) Increase and decrease in demand.

Review 8

DEMAND FORECASTING

1. Introduction

Production of Goods and sales planning require forecasts of business conditions and of their relationship to demand. Any forecasting requires managers to predict for future which, by its nature, is unknown. In fact, it is to minimise the 'uncertainties' of unknown future that these forecasts are needed. The more realistic the forecasts, more effective decisions can be taken for tomorrow. Actually, the most important factor which goes into making an effective manager is his sense of predicting future events influencing the firm. Usually, as a first step the firm needs to make a demand or sales forecast and later on to move into other areas of corporate forecasting and planning.

A forecast is a prediction or estimation of a future event which is most likely to happen under given conditions. In a world in which future outcomes are rarely assured, formation of some view, explicit or implicit, about the future is inevitable. This view may be optimistic, pessimistic or based on hunches. Forecasts can be both physical as well as financial in nature, and are used mostly for planning.

2. Meaning of Demand Forecasting

Demand forecasting refers to the prediction of the probable demand for a good or a service on the basis of the past events and the prevailing trends in the present. In other words it tells the expected level of demand at some future date by considering the past and present behaviour pattern of the related events. Thus, demand forecasting means when, how, where and how much will be the demand for a product or service in the near future. Since 'demand forecasting' is also known as 'sales forecasting', therefore some writers have defined sales forecasting.

2.1 Definition

According to **Cundiff and Still**, "Demand forecasting is an estimate of demand during a specified period. Which estimate is tied to a proposed marketing plan and which assumes a particular set of uncontrollable and competitive forces."

Thus, the process of forecasting demand or sales may therefore, be broken into two parts, namely, an analysis of the past conditions and analysis of current conditions with reference to a probable future tendency.

2.2 Features

- (i) It is the basis of planning production programme,
- (ii) It is an estimate of sales in the future,
- (iii) The basis of forecasting is past trends and present economic conditions,
- (iv) Forecasting is done for a particular period,
- (v) It can be in the shape of money or in the shape of a unit of a commodity,
- (vi) It depends on market planning, economic or other factors,
- (vii) It tries to find outlines of profitable investment,

(viii) It helps the firm in planning for trained man-power, (ix) It tries to arrange appropriate promotional efforts such as advertisement, sales campaign etc.

□ 3. Usefulness of Forecasting

The uses of demand forecasting are as under:

- (1) **To Produce the Required Quantity:** Accurate demand forecasting is essential for a firm to enable it to produce the required quantities at the right time and arrange well in advance for the various factors of production namely raw material, equipment, machine accessories, labour, building etc. Some firms may as a policy produce to order but, generally firms produce in anticipation of future demand.
- (2) **To Assess Probable Demand:** Forecasting helps a firm to assess the probable demand for its product and plan its production accordingly. It is an important aid in effective and efficient planning. It can also help management in reducing its dependence on chance.

(3) **Investment and Employment:** Forecasting helps in the planning of long-term investment programme as well as in the stabilization of aggregate employment with a view to satisfying organised labour and to pacifying public opinion.

(4) **Team Work:** A good forecasting calls for team work among such departments as general business research and market research, sales, production, planning, accounting and finance.

(5) **Help to the Government:** At macro level, demand forecast may help government in determining whether imports are necessary to meet any possible deficit in the domestic supply, or in devising appropriate export promotion policies if there is a surplus.

□ 4. Purpose of Forecasting

Forecasting is done both for the long run as well as short run. The purpose of the two, however, differs.

(a) **Purpose of Short-run Forecasting:** Short run forecasting may cover a period of three months, six months or a year, the last being most usual. Which period is chosen depends upon the nature of business. Short-run forecasting can be undertaken by a firm for the following purposes:

- (i) Appropriate production scheduling so as to avoid the problem of over-production and the problem of short supply.
- (ii) Helping the firm in reducing costs of purchasing raw materials and controlling inventories by determining its future resource requirements.
- (iii) Determining appropriate Price Policy to maintain consistent sales.
- (iv) Setting sales targets and establishing controls and incentives with the changing pattern of demand and extent of competition among the firms.
- (v) Evolving a suitable advertising and promotion programme.
- (vi) Forecasting short term financial requirements.

□ 5. Steps involved in Demand Forecasting

For efficient, accurate and meaningful forecast of demand, the following steps are necessary:

(1) **Identification of Objective:** It is necessary to be clear about what does one want to get from the forecast. The purpose of the exercise may be the estimation of one or more than one aspect, like the quantity and composition of demand, price to be quoted, sales planning, inventory control etc. The approach to the problem will accordingly differ.

(2) **Determining the Nature of Goods:** Different category of goods such as consumer and capital goods, durable and non-durable goods, existing goods and new goods etc. have their own distinctive demand patterns. It is, therefore, necessary to determine the class in which the good falls. This will help us in identifying the approach of forecast exercise.

(3) **Selection of Proper Method:** The selection of an appropriate method of forecasting is related to the objective of forecasting, type of data available, availability of trained personnel, period for which the forecast is to be made. Then different methods may be required for short-term and long-term forecasting.

(4) **Interpretation of Results:** Efficiency of a forecast depends, to a large extent, upon the efficiency in the interpretation of its results. Most of the times the forecast results are to be well supported by the background factors (like the government policy, general business environment, international economic, political and social scene etc.) which have not entered the exercise of forecasting. Further, we need to frequently revise the forecast in the light of changing circumstances because forecasts are, in the first instance, made on the assumption of continuation of past events.

□ 6. Determining Scope of Demand Forecasting

Before taking up a forecasting exercise, certain factors have to be taken into consideration. The following consideration need to be taken care of while determining the scope of the forecasting exercise:

- (1) **Period of Forecast:** As a first step one has to decide about the length of period for the forecasting. The time periods are usually divided into (a) short run, (b) the medium term, and (c) the long

20 years depending upon the nature of the industry or nature of the product. The concept of demand forecasting is more relevant to the long run than the short run, because it is easy to predict the immediate future than to predict the distant future. Fluctuations of a larger magnitude may take place in the distant future. The purposes of long-run demand forecasting are as follows:

(i) **Planning of a new unit or expansion of an existing unit:** It requires an analysis of the long term demand potential of the products in question. A multi-product firm must ascertain not only the total demand situation, but also the demand for different items separately.

(ii) **Planning long-term financial requirements:** As planning for raising funds requires considerable advance notice, long-term sales forecasts are quite essential to assess long-term financial requirements.

(iii) **Planning man-power requirements:** Trained and skilled labour and business executives may be required in the long-run due to change in techniques of production.

(iv) **Planning a suitable strategy to produce goods in accordance with the changing needs of the society.**

equipment, raw material, power, transport, finance, labour etc. also influence the decision of the firm in this regard in the short run forecasting.

(b) **Medium term Forecasting:** Medium term generally covers a period between 3 months and one year. In case of medium term forecasts, experience and sound judgement are more important than statistical forecasting. The medium term forecasts can assist in the decision about timing of an activity, advertising, expenditure etc. The main feature of the medium term forecasts is the **direction of trend**, which has important implications for subjects like employee's recruitment and training etc.

(c) **Long run Forecasting:** Long run refers to a period more than 1 year. A long-run forecast one which provides information for major strategic decisions, it is concerned with extending or reducing the limits of resources. It takes into consideration the influence of factors like structural change, socio-economic changes, government's fiscal and monetary policy etc. on consumer's demand. In the long run, the **validity of the trend** must be ascertained. On the basis of long-run forecasting, a firm takes decision in respect of the size of output, sales promotion, expansion of capacity, modernisation etc.

(2) **Levels of Forecasting:** Demand forecasting may be undertaken at any one of the following levels: (a) Macro-economic forecasting, (b) Industry demand forecasting, (c) Firm demand forecasting and (d) Product-line forecasting.

(a) **Macro-economic Forecasting:** It is concerned with business conditions over the whole economy. These business conditions are measured with the help of some appropriate indicators like the relating to national income, industrial production, wholesale prices etc. These indices are provided by official and non-official agencies and these can be treated as basic assumptions on which to base demand forecasts.

(b) **Industry (or Market) Demand Forecasting:** Such forecasts can give indication to a firm regarding the direction in which the whole industry will be moving. For example, **Godrej** will like to know the way refrigerator industry is likely to behave, so as to decide about the way this firm should plan future and in relation to the rest of the industry. Data relating to a trend in a particular industry is provided by trade association to its members. The firms may use such forecasts for its output, sale, capacity expansion etc.

(c) **Firm (or Company) Demand Forecasting:** A big firm, like Tata and Birla, will like to forecasting of its own products independent of the rest of the firms in the industry. Such forecasting assesses the position of firm against its competitors.

(d) **Product-line Forecasting:** It helps the firm to decide which of the product or products should have priority in the allocation of firm's limited resources. For example, Hindustan Lever may know which it should produce more of Surf or Lux or Dalda.

(3) **General Purpose or Specific Purpose Forecasts:** Though a general forecast is useful for a firm, it will be even more helpful if the general forecast is broken down into specific forecasts with respect to commodities, areas of sale, domestic and export market etc.

(4) **Forecasts of Established or New Products:** Problems and methods of forecasting differ in these two cases. For the established products, past sale trends and competitive conditions are known while this is not so for the 'new' product.

(5) **Type of Commodity for which Forecast is to be Undertaken:** Economists broadly classify goods into capital goods, consumer durables and non-durable goods. For each of these categories there would be distinctive pattern of demand, therefore separate demand forecasting is required to ascertain their demand in market.

(6) **Miscellaneous Factors to be Included or Not:** The forecaster has to decide how much the sociological and psychological factors are going to enter into the exercise of forecasting. To be more effective, this exercise must also include the factors like features peculiar to the product and market, nature of competition, impact of uncertainty and risk, change in the composition of population, distribution of money income and the consequent errors in accuracy etc.

7. Determinants of Demand

Goods can be broadly classified into three categories: (a) Capital goods, (b) Durable consumer goods, and (c) Non-durable consumer goods. Economic analysis indicates distinctive patterns of demand for each of these different categories. Factors influencing demand of each of these categories are, therefore, different.

(a) **Capital Goods:** These are those goods which help in the further production of consumer and producer goods. These include factory buildings, machinery equipment, tools etc. Demand for a capital good is a **derived demand**, derived from the demand of consumer goods they produce. The demand for them depends upon the rate of profitability of user industry, level of capacity utilization, level of wage rates and size of the market in the industries using the capital goods. Moreover, demand for a capital good comprises of (i) replacement demand and (ii) new demand.

The data required for estimating demand for capital goods are:

(i) Growth possibilities of the industries using the capital goods.

(ii) The norm of consumption of capital goods per unit of installed capacity. It is assumed that norms of consumption would remain unchanged. However, in practice one finds cases where **shortages** arise, for instance in case of construction of bridges where mild steel is sometimes used when construction steel is not available. In such cases, as the pattern of availability changes, norms of consumption would also change.

(iii) The velocity of their use.

(b) **Durable Consumer Goods:** Those consumer goods which are used again and again over a period of time are called durable consumer goods like residential buildings, car, refrigerators, furniture, ready-made clothes etc. The important consideration in forecasting demand for durable consumer goods are the following:

(i) Whether a consumer will make a choice between (a) using of the goods longer by repairing it or (b) disposing it off and replacing it with a new one depends upon social status, prestige, level of money income, the rate of obsolescence, maintenance cost etc.

(ii) These goods require special facilities for their use e.g. availability of roads and petrol for cars; regular supply of electricity for T.V., refrigerators and air-conditioners. Thus existence and growth of such facilities is an important variable for determining their demand.

(iii) Since most of consumer durables are used by all the family members in common, their demand, therefore, is linked with certain family characteristics like family size, age-sex distribution, income of the family etc.

(iv) Demand for consumer durables is very much influenced by their prices and credit facilities available to buy them. The availability of hire purchase facility or instalment payment tends to push up the demand for consumer durables.

(c) **Non-durable Consumer Goods:** These include those consumer goods which can be used only once e.g. food, milk, cigarettes, fruits, medicines etc. These are also known as 'single-use goods' or 'perishable consumer goods'. Demand for such goods depend upon the following factors:

(i) **Disposable Income:**

Other things being equal, the demand for a commodity depends upon the purchasing power or the disposable income of the household. Disposable income is equal to personal income minus direct taxes and other deductions. Some people suggest to use **discretionary income** in place of disposable income.

(ii) **Price:** The demand for a commodity depends upon its own price and price of its substitute and complements (related goods). The demand for a commodity is negatively related to its own price and price of its complementary goods, while it is positively related to the price of its substitutes. For estimating and forecasting demand for non-durable consumer goods we can take the help of price elasticity and cross elasticity concepts.

(iii) **Population (Demography):** Demand for consumer non-durables is influenced by the size and age-sex composition of population, income group, social status, urban-rural ratios, geographical characteristics, level of education etc. With the help of demographic variables, demand for each market segment can be estimated as different from the total market demand.

□ 8. Methods of Demand Forecasting

There is no easy method or a simple formula which enables the business manager to predict the uncertainties of future and escape the hard process of thinking. There are various forecasting techniques, varying in terms of their accuracy and sophistication. The critical problem is to choose the most efficient technique, given the objective of forecast, nature of information available, finance and expertise. The best way for the business firm is to apply a proper mix of judgement and scientific formulae in order to correctly predict the future demand for a product. The following are commonly available techniques of demand forecasting:

○ (1) Opinion Polling Methods

In these methods of demand forecasting the opinion of the buyers, sales force and experts can be sought to analyse the developing trend in the market demand:

(a) **Consumers' Survey (Or Survey of Buyers' Intentions):** In this method the intentions of the buyers or potential buyers are recorded, by trained reliable and experienced investigators, through personal interviews, mail, or post surveys and telephone interviews. Questionnaires are prepared to example, with regard to their reaction to a price change or a change in some other variable such as advertising, quality, packing etc. The investigators of the firm may go in for **complete enumeration** of for **sample surveys**.

(i) **Complete Enumeration Survey:** Under the complete enumeration survey all potential buyers of the product are contacted. The survey covers all the potential consumers in the market and their interviews are conducted to find out the probable demand. Though this method has a greater degree of accuracy and is more useful yet it is expensive, time consuming, spread over a wide area and qualified and competent investigators are required for it. The consumers too can misguide the investigators.

(ii) **Sample Survey:** In this method, only a few consumers are interviewed and then average demand is calculated on the basis of the consumers interviewed. By multiplying the total number of consumers by this average demand, the aggregate demand for the product is estimated. Although this

method is less time consuming and more reliable yet it is exceptionally costly in both time and money, it can also lead to inaccurate and misleading results and here the chances of errors can increase.

○ (2) Collective Opinion Method (or Sales-force Opinion or Reaction Survey)

Under this method, instead of consumers, the salesmen are contacted to estimate expected sales in their respective areas. It is presumed that salesmen being the closest to the customers, have the most accurate information about their liking, disliking, consumption pattern, consumers' reaction to the firm's product etc. The firm forecasts demand or sales on the basis of the response of the salesmen and the information collected from them. Sometimes the firm may not agree with the opinion of the individual salesmen and may revise the estimates taking into account the optimism and pessimism on the part of salesmen. The revised estimates can further be examined in the light of factors like proposed changes in prices, change in product designs and packing, change in advertisement programmes and changes in the secular factors like purchasing power, income distribution, employment, population etc. Thus, this method takes advantage of the collective wisdom of salesmen, production manager, sales manager, marketing manager etc. and the top executives.

The main **merits** of this method is that (a) it is **simple** and does not involve the use of statistical techniques. (b) The forecasts are based on first-hand knowledge of salesmen. (c) The method may prove quite useful in forecasting sales of new products. Its main **demerits** are (a) It is almost completely subjective. (b) It is only useful for short-term forecasting not for long term production planning. (c) Salesmen may be unaware of the broader economic changes likely to have an impact on the future demand.

○ (3) Experts' Opinion Method

This method is also known as 'Delphi Method' of investigation. In this method, instead of depending upon the opinions of buyers and sellers, firms can obtain views of specialists or experts in their respective fields. These people are dealing in products or have studied market trends and consumers' behaviour, their reactions to the new products, demand for rival products etc. Opinions of these different experts are collected and their identity is kept secret. These opinions are then exchanged among the various experts and their reactions are sought and analysed. The process goes on until some sort of unanimity is arrived at among all the experts. This method is best suited in situations where intractable changes are occurring. It has also the advantages of speed and cheapness.

○ (4) Statistical Methods

Statistical methods have proved to be very useful in forecasting demand. The important statistical methods used in demand forecasting are as follows:

(i) **Trend Projection Method:** In this trend projection method, past data about the dependent variables and other independent variables is used to project the sales in the coming year or years. This method is also called 'Time Series' analysis method. Here we use the pairs of the observations recorded over time in a particular situation. For example, we collect data about the sales of the product in the past five years. The resulting trend is then extrapolated into future periods. The result and indicated sales levels are used as the basis for demand estimation.

(ii) **Graphic Method:** In this method a trend line can be fitted through a series graphically. All the values of output or sales of different areas/years are plotted on a graph and a free hand curve is drawn passing through as many points as possible. The direction of this free hand curve (upward or downward) shows general trend. The main shortcoming of this method is that it may show the trend but not measure

(iii) Least Square Method: This method is based on the assumption that the past rate of change of the variable (e.g. sales) under study will continue in the future. It is a mathematical procedure for fitting a line to a set of observed data points in such a manner that the sum of squared differences between the calculated and observed value is minimised. This technique is used to find a trend line which 'best fit' the available data. This trend is then used to project dependent variables in the future. This method is very popular because it is simple and less expensive.

(iv) Regression Analysis Method: Regression analysis is a statistical technique which is frequently used in demand forecasting. It is a tool to measure or estimate the unknown value of one variable from the given value of another variable. Under this method, a relationship is established between quantity demanded (dependent variable) and one or more independent variables such as income, price of the related good, price of the commodity under consideration, advertisement costs etc. In regression, a quantitative relationship is established between demand which is dependent variable and other independent variables i.e. determinants of demand. Once the relationship is established, we derive regression equation assuming relationship to be linear.

In demand forecasting it is a very useful technique to find out the change in the quantities of the product demanded, when other independent variables such as price, income, tastes etc. changes. Suppose two variables x (say advertising expenditure) and y (Sales) are closely related, we can find out with the help of regression equation the probable value of y (Sales) for a given value of x (advertising expenditure). When the price of the product and its quantity demanded have a functional relationship, we can find out change in the value of y (quantity of the product demanded) for a given change in the value of x (price). For economists, producers and business people, the study of regression is of immense help.

○ Simple Regression and Multiple Regression:

When we consider the relationship between two variables—one dependent variable (e.g. sales) and other independent variable (e.g. price), the relationship is called **simple regression**. Where the relationship is between the dependent variable and a number of independent variables, it is known as **multiple regression**.

Solving regression equations and finding out the values is very complex and requires times. However, with the aid of computer programmer, simple and multiple regressions can be estimated quickly and easily.

○ (5) Economic Barometers Or (Barometric Techniques)

The economic barometers are based on the idea that the future can be predicted from certain events occurring in the present. Here one has not to depend upon the past observations for demand forecasting. Different economic indicators such as population, income, expenditure, investment etc., can be used to predict the market demand. For example, index of farm income can be a good indicator for forecasting demand for agricultural inputs like fertilizers, tractors etc. Similarly personal income can be a good indicator for estimating demand for consumer goods. Data relating to economic indicators is published by specialised organisations.

○ (6) Simulated Market Situation

An artificial market situation is created and participants are selected. These are called **consumers** clinics. Selected participants are given a certain sum of money and asked to spend it in an artificial departmental store. Different prices are set up or different promotional efforts are put up for different groups of participants. They are asked to spend money on competing products. The responses of the participants

to price changes of varied amounts and to different promotional efforts are observed. Accordingly necessary decisions about price and promotional efforts are undertaken.

The main **limitations** of this method are: (i) It is time consuming. (ii) Selection of participants is difficult job. (iii) participants, to show thrifty may buy products whose prices are reduced. (iv) When a person buys with some one else's money, he may behave differently with his own money. (v) It is an expensive method of obtaining data. (vi) The results obtained may not be fully representative of the actual market.

○ (7) Controlled Market Experiments

Under this method, an effort is made to vary separately certain determinants of demand which can be manipulated e.g. price, advertising etc. and conduct the experiments assuming that other factors remain constant. Thus, the effect of demand determinants like price, advertisement, packaging etc., on sales can be estimated by either varying them over different markets or by varying them over different time periods in the same market.

For example, a firm may reduce the price in the actual market and observe buyers' reaction and compare the sales from price reduction, with the sales in the past. It may fix up different prices in different markets and observe the response of buyers. The firm may make an experiment in one of the markets regarding new advertising campaign or other sales promotional schemes. If these responses are positive and satisfactory results are obtained, then it may take the risk of spending huge amount on such campaigns on nation wide basis. Controlled market experiments will help in finding out co-efficients or elasticities of independent variables in the demand function.

Here **precautions** to be taken are that areas selected should have the same characteristics such as income levels, population, social background, tastes and preferences, occupational pattern etc. Secondly, such experiments should be conducted over an extended period of time to observe more than just initial or impact effect of price change or change in some other variable such as advertising, packaging, quality etc.

The main **limitations** of this method are: (i) It is expensive as well as time consuming. (ii) Such experiments are **risky** too because they may lead to unfavourable reactions on dealers, consumers and competitors. (iii) It is also difficult to determine what conditions should be taken as constant and what factors should be regarded as variable so as to segregate and measure their influence on demand. (iv) It is difficult to satisfy the condition of homogeneity of markets. (v) If the experiment is conducted over a very short period, the results obtained may not be reliable. (vi) The rivals firms can nullify such experiments. They can introduce counter changes in their prices or promotional campaigns.

9. General Assessment of Forecasting Techniques

It may be noted that the question of assessing the comparative predictive accuracy of alternative methods of forecasting is very complex. The various method, suggested till now are related with the product concerned. These methods are based on past experience—trying to project the past into the future.

Such projection is not effective where there are economic ups and downs. Particularly, the projection of demand cannot indicate the turning point from slump to recovery or from boom to recession. Therefore, in order to find out these turning points it is necessary to find out the general behaviour of the economy. Besides choice of technique depends on the obvious practical importance of the technique in business decision. Whatever forecasting method is used, some attempt should be made to follow up the

predictions so as to indicate the reasons for poor forecasts. Too little work has been done on this problem by economists to offer any conclusive judgment on the matter. **Perhaps the most important conclusion emerging from this study is the need for improving the specification of the model equation used for forecasting purposes and checking it frequently in the light of predictive accuracy.** In the practical application of forecasting techniques, predictive accuracy is ultimately more important than over concentration on finer points of statistical theory.

□ 10. Criteria of a Good Forecasting Method

As mentioned above, there is a practical difficulty in selecting the appropriate method for demand forecasting. Thus the following criteria can be used for choosing the suitable method of forecasting.

(1) **Accuracy:** It is necessary to check the accuracy of past forecasts against present performance and of present forecasts against future performance. Some comparisons of the model with what actually happens and of the assumptions with what it is borne out in practice are more desirable. The accuracy of the forecast is measured by: (a) the degree of deviations between forecasts and actuals, and (b) the extent of success in forecasting directional changes.

(2) **Simplicity:** Firms must be able to understand and have the confidence in the technique used. Understanding is also needed for the proper interpretation of the results. Elaborate mathematical and econometric procedures may be judged less desirable if firms do not really understand what forecaster is doing and fails to understand the procedure.

(3) **Economy:** Costs must be weighed against the importance of the forecast to the operation of the business. But the question is, how much money and managerial efforts should be allocated by firm to obtain a high level of forecasting accuracy. A firm has to strike a balance between the benefits of increased accuracy and the extra cost of providing the improved forecasting.

(4) **Availability:** The techniques employed should be able to produce meaningful results quite and be readily available and well understood. In fact, it is not the question of results achievable but rather achieved by a forecasting method. For this, the persons making the decisions must fully understand forecasting methods, their assumptions and probabilities.

(5) **Timeliness:** There is a time gap between the occurrence of an event and its forecast—known as 'lead' time. Longer the lead the forecast has before the event, the greater will be its usefulness. One may even sacrifice some accuracy for gaining a 'lead' rather than sacrificing 'lead' for accuracy.

(6) **Effective:** It is quite easy to judge the existing trend. But for a good forecast it is necessary it should also predict deviations and turning points so that forecasts are more effective.

QUESTIONS

1. What is demand forecasting? State its purpose and usefulness.
2. What steps are involved in demand forecasting?
3. What is the determining scope of demand forecasting?
4. What are capital Goods? Give main factors which determine the demand for capital goods

5. What are consumer goods? Give main factors which determine the demand for consumer goods.
6. What are the various methods of demand forecasting?
7. Tell the criteria of a good forecasting method.
8. Explain the statistical methods of demand forecasting.
9. Explain the opinion polling method of demand forecasting.
10. Explain the collective opinion method of demand forecasting. What are its merits and demerits?

9

ELASTICITY OF DEMAND

Law of demand tells us about the direction of change in demand for a good as a result of change in its price. Thus, the law is a mere qualitative statement. It simply states that when price falls demand extends and when price rises demand contracts. But it does not explain how much the demand will change. The concept that explains the proportional change in the amount demanded of a good as a result of change in its price, is called the concept of elasticity of demand. Thus, elasticity of demand refers to the percentage change in the quantity demanded of a commodity as a result of a percentage change in its price. Elasticity of demand is a quantitative statement. Supposing the price of apples rises by 10 percent as a result of which Ram's demand for apples contracts by 50 percent and that of Mohan's demand by 10 percent, then it will be said that Ram's demand for apples is more elastic and Mohan's demand less elastic.

1. Meaning of Elasticity of Demand

J.S. Mill and Cournot were the early economists who referred to elasticity of demand as "Economics". But this concept was actually developed by Dr. Marshall in his famous book "Principles of Economics". Elasticity of demand is a technical concept. Elasticity is a measure of the responsiveness of one variable to change in other.

Demand for a good depends upon its price, income of the consumer and price of related goods. Elasticity of demand, therefore, indicates how much quantity demanded of a good will change with change in its price or income of the consumer or price of related goods. In the words of Dooley, "The elasticity of demand measures the responsiveness of the quantity demanded of a good, to change in its price or of other goods and changes in consumer's income." Accordingly, elasticity of demand is of three types: (1) Price Elasticity of Demand (2) Income Elasticity of Demand and (3) Cross Elasticity of Demand.

2. What is Price Elasticity of Demand?
Dr. Alfred Marshall was the first economist to introduce clearly the concept of Elasticity of demand. Price elasticity of demand is the ratio of the percentage change in the quantity demanded of a commodity to a percentage change in its price. Price elasticity of demand denotes the ratio at which demand contracts with a rise in price and extends with a fall in price. There is an inverse relationship between price and quantity demanded of a good. Accordingly, elasticity of demand is expressed by minus (-) sign.

$$E = \left(- \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in Price}} \right)$$

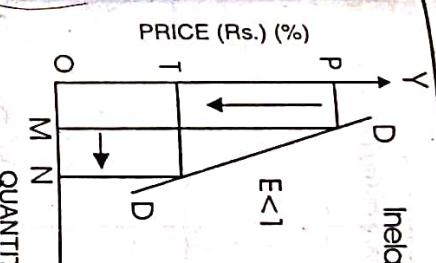


Figure 5

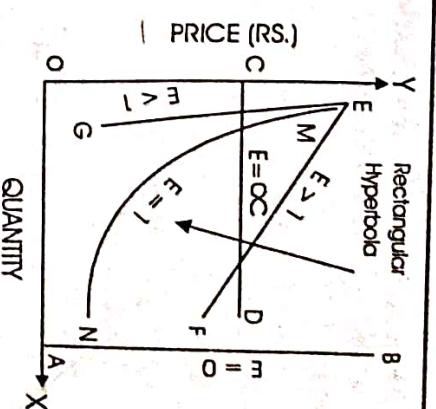


Figure 6

(5) **Less than Unitary Elastic Or Inelastic Demand**: Less than Unitary elastic demand is one in which a given percentage change in price produces relatively less percentage change in demand. When all in price by 4 percent is accompanied by 2 percent extension in demand, then elasticity of demand will be perfectly elastic demand. (3) EG line represents less than unitary elastic demand (4) EF line represents greater than unitary elastic demand (5) MN curve represents unitary elastic demand.
The above account makes it clear that price elasticity of demand may be anything between zero (0) and infinity (∞). It is further clarified with the help of the following table.

Value of Elasticity co-efficients and their description

	Value of Elasticity Co-efficient	Degrees of Elasticity	Description
1	$Ed = 0$	Perfectly Inelastic demand	Change in price causes no change in quantity demanded.
2	$Ed < 1$	Less than unitary elastic demand	Percentage change in demand is less than percentage change in price.
3	$Ed = 1$	Unitary elastic demand	Percentage change in demand is equal to percentage change in price.
4	$Ed > 1$	Greater than unitary elastic demand	Percentage change in demand is more than percentage change in price.
5	$Ed = \infty$	Perfectly elastic demand	Little change in price causes an infinite change in demand.

3. Measurement of Price Elasticity of Demand

Whether price elasticity of demand is (i) Unitary or (ii) Greater than unitary or (iii) Less than unitary is known by its measurement.

There are five methods of measuring price elasticity of demand :

- (1) Total Expenditure Method
- (2) Proportionate Method
- (3) Point Elasticity Method
- (4) Arc Elasticity Method

- (5) Revenue Method
} Graphic Method

(1) Total Expenditure Method

Total expenditure method of measuring elasticity of demand was evolved by Dr. Marshall. According to this method, in order to measure the elasticity of demand it is essential to know how much and in what direction the total expenditure has changed as a result of change in the price of a good.

(i) Elasticity of demand is unity, when due to rise or fall in the price of a good, total expenditure remains unchanged.

(ii) Elasticity of demand is **greater than unity**, when due to fall in price, total expenditure goes up and due to rise in price total expenditure goes down, that is, when total expenditure moves in the same direction compared to change in price.

(iii) Elasticity of demand is less than unity, when due to fall in price, total expenditure goes down and due to rise in price total expenditure goes up, that is, when total expenditure moves in the opposite direction as change in price.

Measurement of elasticity of demand by total outlay (expenditure) method can also be explained with the help of Table No. 1 and 2 below :

Table No. 1 Total Expenditure Method

Elasticity of Demand	Price	Total Expenditure
Greater than Unity	Rise	Up
Unity	Fall	Down
Less than Unity	Rise	Up
Unity	Fall	Down

Table No. 2 shows the effect of change in price on elasticity of demand.

Table No. 2 Total Expenditure Method

Price of Commodity (Rs.)	Quantity (Kilo)	Total Expenditure (Rs.)	Effect on Total Expenditure	Elasticity of Demand
2	4	8	Same Total Expenditure	
4	2	8		
1	8	8		
2	4	8	{ } Less Total Expenditure	Greater than Unity
4	1	4	{ } More Total Expenditure	Less than Unity
1	10	10	{ } Less Total Expenditure	
2	3	6	{ } More Total Expenditure	
4	2	8	{ } Less Total Expenditure	
1	4	4		

Above table signifies the following :

(1) **Unitary Elastic Demand:** First part of table no. 2 indicates that when price of the good is Rs. 2.00, total expenditure on it is Rs. 8.00. When price rises to Rs. 4.00 or falls to Re. 1.00, the total expenditure remains the same, i.e.. Rs. 8.00. In other words, change in price has no effect on total expenditure.

(2) **Greater than Unitary Elasticity :** Second part of table no. 2 shows that when price of the good is Rs. 2.00, total expenditure on it is Rs. 8.00. When price rises to Rs. 4.00, total expenditure goes up from Rs. 4.00 to Rs. 8.00. In other words, change in price results into change in total expenditure in the opposite direction.

(3) **Less than Unitary Elasticity :**

Third part of table no. 2 indicates that when price of the good is Rs. 2.00 total expenditure on it is Rs. 6.00. When price rises to Rs. 4.00, total expenditure goes up to Rs. 8.00 and when price falls to Re. 1.00, total expenditure comes down to Rs. 4.00. In other words, change in price leads to change in total expenditure in the same direction.

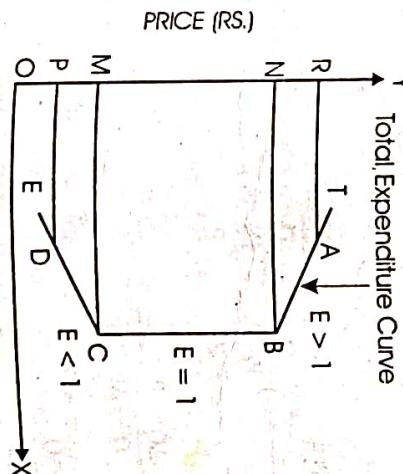


Fig. No. 7 illustrates total outlay method of measuring price elasticity of demand. In this figure, total expenditure is shown on OX-axis and price on OY-axis. Line TE represents total expenditure line. BC part of TE line represents unitary elasticity ($E = 1$). It points out that when price is OM, total expenditure is MC. When price rises to

ON, total expenditure remains the same, i.e., NB (= MC). TB part of TE line represents greater than unitary elasticity of demand ($E > 1$). It signifies that when price rises from ON to OR, total expenditure comes down from NB to RA, i.e., it moves in the opposite direction. EC part of TE line represents less than unitary elasticity of demand ($E < 1$). It signifies that when price falls from OM to OP, then total expenditure also comes down from MC to PD, i.e., it moves in the same direction. **Prof. Leibhatalashy** has made use of the following formula to measure price elasticity of demand by total outlay method:

$$E = 1 - \frac{\Delta EX}{X \Delta P}$$

(Here : E = price elasticity of demand; ΔEX = change in expenditure; X = initial demand of X-goods; ΔP = change in price)

It is explained as under :

Supposing $P = \text{Rs. } 10$; $X = 60,000$; $EX = 10 \times 60,000 = \text{Rs. } 6 \text{ lakh}$;

$P_1 = \text{Rs. } 20$; $X_1 = 50,000$; $EX_1 = 20 \times 50,000 = \text{Rs. } 10 \text{ lakh}$;

$\Delta P = \text{Rs. } 20 - \text{Rs. } 10 = \text{Rs. } 10$, $\Delta EX = \text{Rs. } 10 \text{ lakh} - \text{Rs. } 6 \text{ lakh} = \text{Rs. } 4 \text{ lakh}$

$$E = 1 - \frac{\Delta EX}{X \Delta P} = 1 - \frac{4,00,000}{60,000 \times 10} = 1 - \frac{2}{3} = \frac{1}{2} \quad (\text{Less than unitary})$$

(2) Proportionate or Percentage Method

The second method of measuring price elasticity of demand is called proportionate or percentage method. As per this method proportionate change in demand is divided by proportionate change in price. Its formula is as under :

$$Ed = \frac{\text{Proportionate change in demand for Good - X}}{\text{Proportionate change in price of Good - X}}$$

Or

$$Ed = (-) \frac{\text{Change in quantity demanded}}{\text{Initial demand}} = (-) \frac{Q_1 - Q}{Q} = (-) \frac{DQ}{Q}$$

$$Ed = (-) \frac{\Delta Q}{Q} = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

$$Ed = (-) \frac{P}{Q} \times \frac{\Delta Q}{\Delta P}$$

(Here : Q = Initial quantity demanded ; Q_1 = changed demand; P = Initial price of the good; $\Delta P = P_1 - P$ (change in price) (Δ = change))

Measurement of price elasticity of demand by proportionate method is explained by an example. Supposing, price of ice cream is Rs. 4.00 and demand is for 1 unit of ice-cream. When price of ice cream falls to Rs. 2.00, demand extends to 4 units of ice cream. Thus, $P = \text{Rs. } 4.00$; $P_1 = \text{Rs. } 2.00$; $\Delta P = \text{Rs. } 2.00$ ($\text{Rs. } 4.00 - \text{Rs. } 2.00$) $Q = 1$ unit of ice cream; $Q_1 = 4$ units of ice cream; $\Delta Q = 4 - 1 = 3$ units of ice cream.

$$Ed = \frac{P}{Q} \times \frac{4}{1} \times \frac{3}{2} = 6 \text{ or } (E > 1)$$

It implies that 1 percent change in price leads to 6 percent change in demand. As such, price elasticity of demand is greater than unity.

Proportionate method is used when change in price and consequent change in demand are very small.

Revised Formula

Main defect of measuring price elasticity with the help of this method is that if we interchange the values of initial price and new price, we shall find a difference in elasticity. For example, if we take Rs. 2.00 as the initial price (P) of ice cream and demand for 4 units of ice cream at this price as the initial demand (Q) and likewise if we take Rs. 4.00 as the new price (P_1) of ice cream and demand for 1 unit of ice cream at this price as the new demand (Q_1), then the co-efficient of price elasticity of demand will be as follows:

$$Ed = (-) \frac{P}{Q} \times \frac{\Delta Q}{\Delta P} = (-) \frac{2}{4} \times \frac{-3}{2} = \frac{3}{4} \text{ or } < 1$$

Thus, price elasticity of demand for ice cream will prove greater than unitary according to total expenditure method and first formula of proportionate method and will prove less than unitary according to second formula of proportionate method. To solve this discrepancy, many economists like **Bilas**, **Wider** etc. have suggested that to measure price elasticity of demand by proportionate method, one should divide change in quantity demanded (ΔQ) and change in Price (ΔP), by minimum demand (Q_m) and minimum price (P_m), in place of initial demand (Q) and initial price (P) respectively. Accordingly,

$$E = (-) \frac{P_m}{Q_m} \times \frac{\Delta Q}{\Delta P}$$

(Here P_m = Minimum Price and Q_m = Minimum Demand)

Thus, if $P = \text{Rs. } 4.00$; $P_m = \text{Rs. } 2.00$; $\Delta P = \text{Rs. } 4 - \text{Rs. } 2 = \text{Rs. } 2.00$

$$Q = 4; Q_m = 1; \Delta Q = 1 - 4 = -3$$

$$E = (-) \frac{P_m}{Q_m} \times \frac{\Delta Q}{\Delta P} = (-) \frac{2}{1} \times \frac{-3}{2}, (\text{i.e., } > 1)$$

According to above formula, the measurement of price elasticity of demand by proportionate method and by total outlay method will be identical.

(3) Point Elasticity of Demand

Point elasticity refers to price elasticity of demand at any point on the demand curve. According to **effwitch**, "Elasticity computed at a single point on the curve for an infinitely small change in price, is unit elasticity,"

Price elasticity of demand is different at different points on a given demand curve. Accordingly, price elasticity at every point on a given demand curve is measured separately.

(1) Linear Demand Curve :

In Fig. No. 8 MN is a straight line demand curve. At point 'A' of this demand curve, elasticity of demand will be $\frac{AN}{AM}$ and the same can be known with the help of the following method. As we know,

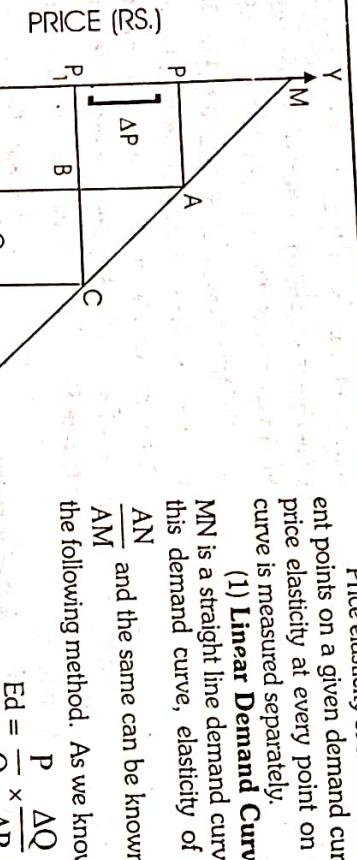


Figure 8

similar triangles, so the ratio of their sides will also be equal.

$$\text{i.e., } \frac{BC}{AB} = \frac{QN}{AQ}$$

By putting $\frac{QN}{AQ}$ in place of $\frac{BC}{AB}$ in equation (i), we have

$$Ed = \frac{QN}{AQ} = \frac{QN}{AP} = \frac{AN}{AM} \quad (AP = OQ)$$

Since ΔAQN and $\Delta AMPA$ are similar triangles, so the ratio of their sides will also be equal.

$$Ed = \frac{QN}{OQ} = \frac{QN}{AP} = \frac{AN}{AM} \quad \text{Lower Portion of demand curve}$$

Price elasticity at different points of a straight line shown in fig no. 9 can also be known, (1) At point P which is located in the middle of demand curve MN, lower segment PN is equal to upper segment PM. Hence $Ed = \frac{PN}{PM} = 1$ (unity). In other words, elasticity at point P will be unity. (2) At point A, which is located above the mid-point P on MN demand curve, lower segment AN is larger than upper segment AM. Hence $Ed = \frac{AN}{AM} > 1$. In other words, elasticity of demand at point A will be greater than unity.

It is clear from Fig. No. 9, that as we move upward from point P, elasticity of demand becomes less than unity and near to OX-axis it advances towards zero elasticity.

(3) At point B, which is located below the mid-point P on MN demand curve, lower segment BN is smaller than upper segment BM. Hence $Ed = \frac{BN}{BM} < 1$. In other words, elasticity of demand at point B will be less than unity.

The stretch between two points A and C on demand curve MN is called arc as shown in fig. 11. Price

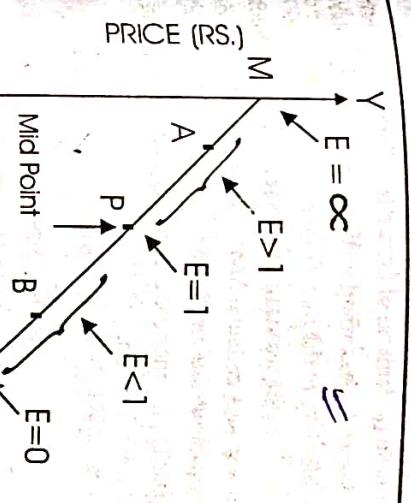


Figure 9

In Fig. No. 10, elasticity of demand at point 'P' on demand curve DD is to be calculated. First of all, we draw a tangent MN on point 'P' of the demand curve. At point 'P', demand curve and tangent MN coincide and their slope is equal. Consequently, at point 'P', elasticity of demand is $\frac{PN}{PM}$.

In Fig. No. 11, price elasticity of demand at point 'A' on demand curve DD is to be measured. Due

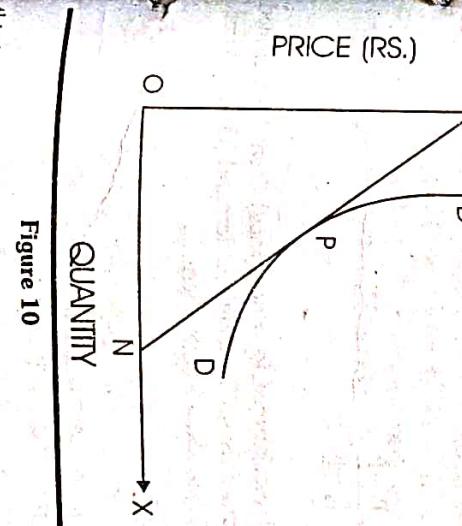


Figure 10

this formula will be of little help.

In Fig. No. 11, price elasticity of demand at point 'A' on demand curve DD is to be measured. Due to change in prices two situations that arise are shown by points B and C. At point 'B' the price falls from initial price OP to OP1 and at point 'C' it further falls to OP2. In the first situation demand extends from OQ to OQ1 and in the second from OQ1 to OQ2. It is obvious that by proportionate method two different price elasticities of demand may be computed at point 'A'. One will relate to point 'B' and other to point 'C'. Under the circumstances, arc method of measuring price elasticity of demand is most appropriate.

downward from point P, elasticity of demand becomes less than unity and near to OX-axis it advances towards zero elasticity.

In short, elasticity of demand at the mid-point on the demand curve is unity, at a point above the mid-point, it is greater than unity and at a point below the mid-point, it is less than unity.

(2) Non-Linear Demand Curve :

When demand curve is non-linear, then to know the elasticity of demand at any point located on it, a tangent is so drawn as to touch this point. Consequently, this point will divide the tangent into two parts. Lower segment of the tangent is then divided by the upper segment. The resultant dividend will indicate price elasticity of demand.

In Fig. No. 11, price elasticity of demand at point 'P' on demand curve DD is to be calculated. First of all, we draw a tangent MN on point 'P' of the demand curve. At point 'P', demand curve and tangent MN coincide and their slope is equal. Consequently, at point 'P', elasticity of demand is $\frac{PN}{PM}$.

The formula of proportionate method given point on the demand curve is relevant if there is an infinitely small change in price and quantity demanded, but if the changes are considerable then

to change in prices two situations that arise are shown by points B and C. At point 'B' the price falls from initial price OP to OP1 and at point 'C' it further falls to OP2. In the first situation demand extends from OQ to OQ1 and in the second from OQ1 to OQ2. It is obvious that by proportionate method two different price elasticities of demand may be computed at point 'A'. One will relate to point 'B' and other to point 'C'. Under the circumstances, arc method of measuring price elasticity of demand is most appropriate. The stretch between two points A and C on demand curve DD is called arc as shown in fig. 11. Price

elasticity of demand of an arc is called arc elasticity. According to Watson, "Arc elasticity is the elasticity at the mid-point of an arc of a demand curve." In the words of Leftwitch, "When elasticity is computed between two separate points on a demand curve, the concept is called Arc elasticity." Arc elasticity of demand is calculated with the help of following formula:

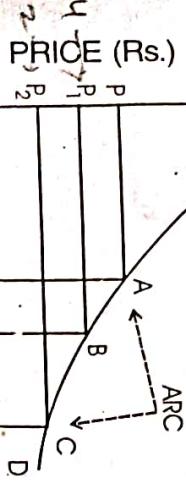


Figure 11



Figure 11

$$E = \left(-\frac{\Delta Q}{\Delta P} \right) \times \frac{\frac{1}{2}(P_1 + P_2)}{\frac{1}{2}(Q_1 + Q_2)} = \left(-\frac{\Delta Q}{\Delta P} \right) \times \frac{\frac{1}{2}(P_1 + P_2)}{\frac{1}{2}(Q_1 + Q_2)}$$

$$\frac{4}{2.5} \times \frac{3}{1} = \frac{9}{2.5}$$

(Here Q = initial demand; Q_1 = new demand; P = initial price; P_1 = new price). It can be explained by an example. Supposing, when price (P) of ice cream is Rs. 4.00 per unit its demand (Q) is of 1 unit. If price (P_1) falls to Rs. 2.00 per unit its demand (Q_1) extends to 4 units, then,

P = Rs. 4.00; P_1 = Rs. 2.00;
 Q = 1; and Q_1 = 4.

$$E = \left(-\frac{Q_1 - Q}{Q_1 + Q} \right) \times \frac{P_1 + P}{P_1 - P} = \left(-\frac{Q_1 - Q}{Q_1 + Q} \right) \times \frac{P_1 + P}{P_1 - P}$$

$$= \left(-\frac{3}{5} \right) \times \frac{6}{2} = \frac{9}{5} = 1 \frac{4}{5} (E > 1)$$

In this case, price elasticity of demand of ice cream is greater than unity. Let us now suppose the initial price of ice cream is Rs. 2.00, and initial demand (Q) is 4 units of ice cream. If the price (P) falls (P_1) to Rs. 4.00, and new demand contracts (Q_1) to 1 unit of ice cream, then P = Rs. 2.00; P_1 = Rs. 4.00; Q = 4; and Q_1 = 1. Price elasticity of demand will be:

$$E = \left(-\frac{Q_1 - Q}{Q_1 + Q} \right) \times \frac{P_1 + P}{P_1 - P} = \left(-\frac{1 - 4}{1 + 4} \right) \times \frac{4 + 2}{4 - 2} = \left(-\frac{3}{5} \right) \times \frac{6}{2} = \left(-\frac{3}{5} \right) \times 3 = -1.8 (E < 1)$$

$$= \frac{9}{5} = 1 \frac{4}{5} (E > 1)$$

Here also price elasticity of demand is exactly the same, i.e., greater than unity.

It is clear from the above instances that according to Arc Elasticity method, if the price of a good rises or falls in the same ratio and consequently demand also contracts and extends in the same ratio, then elasticity of demand will remain the same. But if Point Elasticity method is used, then elasticity of demand in respect of the above instances will be different. In the first instance it will be greater than unity (6) and in the second it will be less than unity ($\frac{3}{5}$). Arc elasticity method is, therefore, more realistic and dependable method than Point elasticity method.

(5) Revenue Method

Fifth method of calculating price elasticity of demand is called Revenue method. Sale proceeds that a firm obtains by selling its products is called its revenue. Supposing by selling 10 metres of cloth, a firm gets Rs. 50.00, then this amount of Rs. 50.00 will be called the total revenue of the firm. When total revenue is divided by the number of units sold we get average revenue or price per unit. In the above case it is $\frac{Rs. 50}{10} = Rs. 5$ per mtr. Thus, average revenue and price are synonymous terms. Addition made to the total revenue by the sale of one more unit of the commodity is called marginal revenue. If by selling 11 metres of cloth total revenue goes up to Rs. 54.00, it means marginal revenue of the 11th metre (one additional metre) of cloth will be $Rs. 54 - Rs. 50 = Rs. 4.00$. Average revenue curve of a firm is also called its Demand Curve. Price elasticity of demand is also measured with the help of average and marginal revenue, as per the following formula :

$$E = \frac{A}{A - M}$$

(Here E = Price elasticity of demand; A = Average Revenue; M = Marginal Revenue)

Diagrammatic representation of this formula is given in fig. no. 12. Revenue has been shown on OY-axis and quantity of good on OX-axis. AB is average revenue or demand curve and AN is marginal revenue curve. At point 'P' on demand (average revenue) curve, elasticity of demand is calculated with the help of following formula,

$$Ep = \frac{\text{Lower Portion}}{\text{Upper Portion}} \text{ or } \frac{PB}{PA}$$

ΔPMB and ΔAEP are similar, so ratio of their

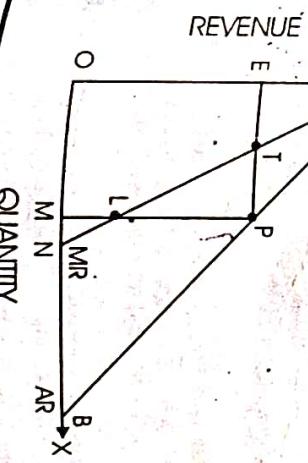


Figure 12

$$Ep = \frac{PB}{PA} = \frac{PM}{AE} \dots (1)$$

ΔAE and ΔTPL are congruent triangles, so $PL = AE$. By putting PL in place of AE in equation

$$(1) \quad E_d = \frac{PM}{PL}$$

Because $PL = PM - LM$

$$\text{Hence } E_d = \frac{PM}{PM - LM}$$

Here $PM = AR$ and $LM = MR$

$$\text{So } E_d = \frac{PM}{PM - LM} = \frac{AR}{AR - MR} \text{ or } \frac{A}{A - M}$$

If by the use of above formula, value of E_d is one, it means price elasticity of demand is unitary. If it is more than one, price elasticity of demand is greater than unity and if it is less than one, price elasticity of demand is less than unity.

24. Factors determining the Price Elasticity of Demand

In real life we find that elasticity of demand for some goods is unitary, for others it is greater than unity (or elastic) and for still others it is less than unity (or inelastic). It is so because price elasticity of demand is influenced by several factors. Main factors determining the price elasticity of demand are under:

(1) **Nature of the commodity:** In Economics, all goods are divided into three categories, i.e.,

(i) Necessaries (ii) Comforts and (iii) Luxuries. Ordinarily, demand for essential goods like, salt, kerosene oil, match-boxes etc. is less than unit elastic or inelastic. It is so because a consumer has to buy a given quantity of these goods, irrespective of the rise or fall in price. Thus, change in their prices has no effect on their demand. On the other hand, price elasticity of demand for luxuries like air-conditioner, cost furniture, gold and diamond jewellery etc. is greater than unity, i.e., elastic. Change in the price of these goods has a great impact on their demand. Price elasticity of demand is unity in case of comforts, i.e., milk, transistor, cooler, fan etc.

(2) **Availability of Substitutes:** Goods having substitutes available at reasonable price such as tea and coffee, pen and ball-pen, milk-shake and Lassi, sandals and chappals, etc. have elastic demand

It is so because if the price of one of the substitutes falls, people buy more of it. For instance, if coffee becomes cheaper than tea, people will substitute coffee for tea as a result of which demand for coffee will increase very much and that of tea will decrease considerably. Commodities that do not have any substitutes, e.g. cigarette, liquor etc. have inelastic demand.

(3) **Goods with different Uses:** Goods that can be put to different uses have elastic demand. For instance, electricity has many uses. It can be used for heating, lighting, cooling etc. When electricity charges are high, it is used for lighting purpose only and so its demand for other less urgent uses will be considerably.

(4) **Postponement of the use:** Goods whose demand can be postponed to a future period have elastic demand. For example, if demand for building houses can be postponed then demand for building-material, such as, bricks, cement, sand, lime, gravel etc. will become elastic. On the other hand, goods whose demand cannot be postponed, e.g. demand for meals when hungry or for drink when feeling-thirsty, have inelastic demand.

(5) **Income of the Consumer:** People having very high or very low income, ordinarily, have inelastic demand. It is so because rise or fall in the prices has very little effect on their demand. On the other hand, demand of middle-income people is elastic. Rise in the prices of goods demanded by these people leads to contraction in their demand.

(6) **Habit of the Consumer:** Demand for those goods is inelastic to which consumers become habituated e.g., cigarette, coffee, etc. Despite rise in their prices people demand such goods in more or less the same quantity.

7 Proportion of income spent on a commodity

Goods on which a consumer spends a very small proportion of his income have inelastic demand, e.g. newspaper, tooth-paste, boot polish etc. Rise in their prices does not contract their demand. On the other hand, goods on which a consumer spends a large proportion of his income have elastic demand, e.g. clothes, nutritive food, desert cooler etc. Rise in their prices causes contraction of their demand.

(8) **Price level:** Very high-priced goods have inelastic demand, e.g. diamonds, jewellery, costly carpets etc. change in the price of these goods causes little change in their demand. Likewise, very low-priced goods have also inelastic demand, e.g. post card, cheap vegetables, match box etc. change in the price of these goods causes little change in their demand. On the contrary, medium priced goods, i.e., neither very expensive nor very cheap, have elastic demand. Fall in their price stimulates relatively more demand.

(9) **Time:** Demand for a good is inelastic in short period and elastic in long period. It is so because a consumer can change his habits in the long-run. Fall in the price of a good, therefore, leads to more extension in its demand in the long-run.

(10) **Joint demand:** Goods demanded jointly have inelastic demand, e.g. car and petrol, pen and ink, camera and film. Rise in the price of petrol may not contract its demand if there is no fall in the demand for cars.

5. Income Elasticity of Demand

Other things, such as price of the given commodity, prices of related goods, taste of the consumer remaining constant, percentage change in the quantity demanded of a thing caused by a given percentage change in income of the consumer is called income elasticity of demand.

5.1 Definitions

(1) In the words of Watson, "Income elasticity of demand means the ratio of the percentage change in the quantity demanded to the percentage change in income."

(2) According to Richard G. Lipsey, "The responsiveness of demand to change in income is known as income elasticity of demand."

5.2 Measurement of Income Elasticity

Income elasticity can be measured by the following formula:

$$E_y = \frac{\text{Proportionate change in Quantity Demanded}}{\text{Proportionate change in Income}}$$

$$E_y = \frac{Q}{\Delta Y} = \frac{\Delta Q}{Q} \times \frac{Y}{\Delta Y} = \frac{Y}{Q} \times \frac{\Delta Q}{\Delta Y}$$

(Here E_y = Income elasticity of demand; ΔQ = change in the quantity demanded; Q = demand; ΔY = change in income; Y = initial income)

Income elasticity of demand can also be explained by an example. When your monthly income (Y) is Rs. 3000, your demand (Q) is for 10 units of ice cream. If your monthly income increases (Y_1) to Rs. 6000, your demand increases (Q_1) to 30 units of ice cream. Income elasticity of demand for ice cream can be measured as follows :

$$E_y = \frac{Y}{Q} \times \frac{\Delta Q}{\Delta Y}$$

(Here, Y = Rs. 3000; Y_1 = Rs. 6000; ΔY = Rs. 6000 — Rs. 3000 = Rs. 3000.

$Q = 10$ units of ice cream; $Q_1 = 30$ units of ice cream;

$\Delta Q = 30 - 10 = 20$ units of cream.)

$$E_y = \frac{3000}{10} \times \frac{20}{3000} = 2 \text{ (Greater than unity)}$$

□ 5.3 Degrees of Income Elasticity of Demand

Income elasticity of demand is of three kinds :

(1) **Positive Income Elasticity of Demand** : Income elasticity of demand for a good is positive when with an increase in the income of a consumer, his demand for the good increases and with a decrease in the income of a consumer, his demand for the good decreases. Income elasticity of demand is positive in case of normal goods. It can be explained with the help of Fig. No. 13. On OX-axis quantity of good and on OY-axis consumer's income are shown.

Dy curve represents positive income elasticity of demand. It slopes upward from left to right significantly that increase in income is accompanied by an increase in demand and decrease in income is followed by decrease in demand.

Positive income elasticity of demand can be of three types :

(i) **Unitary Income Elasticity of Demand**

Positive income elasticity of demand is unitary when a given percentage change in income is followed by equal percentage change in demand. For example, income increases by 100 percent and demand also increases by 100 percent.

Figure 13

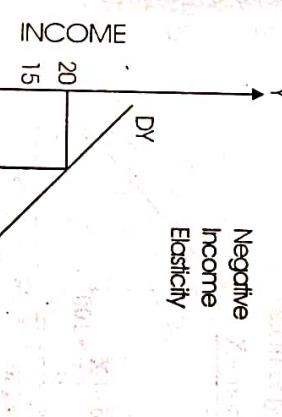
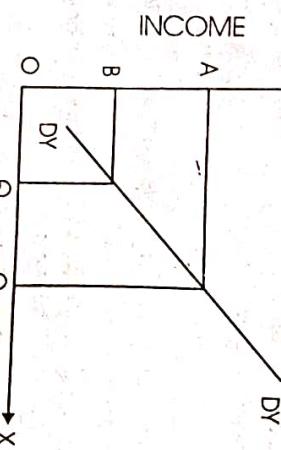


Figure 14

2. units.

$$E_y = \frac{200\%}{100\%} = 2 \text{ (Greater than unity)}$$

(ii) **Less than Unitary Income Elasticity of Demand** : Positive income elasticity of demand is less than unitary when percentage change in demand is less than percentage change in income. For example, if income increases by 100 percent but demand increase by just 50 percent, then

$$E_y = \frac{50\%}{100\%} = \frac{1}{2} \text{ (Less than unity)}$$

(iii) **More than Unitary Income Elasticity of Demand** : Positive income elasticity of demand is more than unitary when percentage change in demand is more than percentage change in income. For instance, if income increases by 100 percent but demand increases by 200 percent, then,

$$E_y = \frac{200\%}{100\%} = 2 \text{ (Greater than unity)}$$

(2) **Negative Income Elasticity of Demand** : Income elasticity of demand is negative when increase in the income of the consumer is accompanied by fall in demand of a good and decrease in income is followed by rise in demand. Negative income elasticity refers to inferior goods, also known as Giffen goods. For example, income elasticity of demand for coarse grains, 'daldha' etc is negative. In Fig. No. 14, Dy demand curve represents negative income elasticity of demand. It slopes downwards from left to right. It points out that when income is Rs. 10.00 demand is for 4 units and when income increases to Rs. 20.00 demand falls to 2 units.

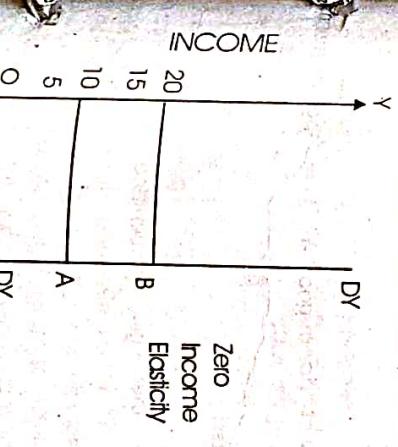
□ 6. Cross Elasticity of Demand

Income elasticity of demand is zero, when change in the income of consumer evokes no change in his demand. It is illustrated in Fig. No. 15. Dy-Dy curve in this figure represents zero income elasticity of demand. It is parallel to OY-axis, signifying that when income increases from Rs. 10 to Rs. 20, demand remains unchanged at 4 units. Demand for necessities like, kerosene oil, salt etc. has zero income elasticity of demand.

There is a mutual relationship between change in price and quantity demanded of two related goods. Change in the price of one good can cause change in the demand for the related good. For

increases by 100 percent.

Figure 15



example, change in the price of tea ordinarily causes change in demand for coffee. Likewise, change in the price of cars causes change in demand for petrol. Mutual relationship between quantity demanded of a good due to change in the price of another good can be measured by cross elasticity of demand.

Cross elasticity of demand is a measure of change in quantity demanded of good-Y, as a result of change in the price of good - X. In the words of Ferguson, "The cross elasticity of demand is proportional change in the quantity of good - X demanded resulting from a given relative change in price of the related good - Y."

According to Leibhafsky, "The cross elasticity of demand is a measure of the responsiveness of purchases of Y to change in the price of X."

6.1 Measurement of Cross Elasticity of Demand

Cross elasticity of demand is measured by the following formula :

$$Ec = \frac{\text{Percentage change in Quantity demanded of Good - X}}{\text{Percentage change in the price of Good - Y}}$$

Or

$$Ec = \frac{\frac{\text{Change in quantity demanded of X}}{\text{Original quantity of X}} \times 100}{\frac{\text{Change in Price of Y}}{\text{Original Price of Y}} \times 100}$$

$$= \frac{\Delta Q_x}{Q_x} = \frac{\Delta Q_x \times P_y}{Q_x \times \Delta P_y}$$

$$Ec = \frac{P_y \Delta Q_x}{Q_x \Delta P_y}$$

(Here P_y = original price of good-Y; ΔP_y = Change in price of good Y; Q_x = Original quantity demanded of X; ΔQ_x = Change in the quantity demanded of X)

6.2 Degrees of Cross Elasticity of Demand

Cross Elasticity of demand can be of three types:

(i) **Positive:** When goods are substitutes of each other, then a given percentage rise in the price of one leads to percentage fall in the demand for the other. In other words, elasticity of demand is positive in case of substitutes.

For example, rise in the price of Coffee will lead to increase in demand for tea, because the two are close substitutes of each other. It can be explained with an example. Supposing, when price of coffee is 50 paise per cup, then demand for tea is 50 cups. If price of coffee rises to 70 paise per cup, then demand for tea goes upto 100 cups. Thus, cross elasticity of demand for tea can be calculated by the above formula.

$$\begin{aligned} Q_x &= 50 \text{ cups}; Qx_1 = 100 \text{ Cups}; \Delta Q_x = 100 - 50 = 50 \text{ Cups of tea. } \\ \Delta P_y &= 70 - 50 = 20 \text{ paise; } \\ Ec &= \frac{50}{50} \times \frac{50}{20} = \frac{5}{2} = 2.5 \quad (Ec > 1) \end{aligned}$$

(Here 'X' stands for tea and 'Y' for coffee)

Thus, cross elasticity of demand for tea is greater than unity.

Cross elasticity of demand in case of substitutes, e.g. tea and coffee, is illustrated in Fig. No. 16. In this diagram quantity of tea is shown on OX-axis and price of coffee on OY-axis. When price of coffee is OP, demand for tea is OQ cups. When price of coffee rises to OP₁, demand for tea increases to OQ₁. DS DS curve represents different quantities of tea demanded as a result of change in price of coffee. This curve slopes upward from left to right. It means rise in price of coffee will lead to increase in demand for tea and fall in the price of coffee will lead to decrease in demand for tea.

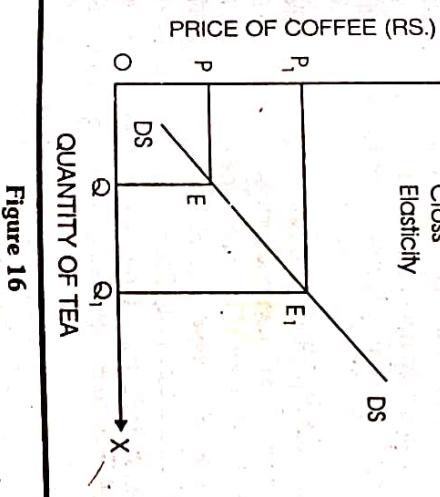


Figure 16

The price of one leads to percentage fall in the demand for the other. Consequently, cross elasticity of demand is negative and the same is indicated by putting a minus (-) sign before the number of cross elasticity of demand. It is explained with the help of an example. Supposing, bread and butter are complementary goods. When price of bread is 80 paise per piece, then demand for butter is 10 kg. With the rise of price of bread to Rs. 1.20, demand for bread falls to 5 kg. In this situation, cross elasticity of demand for butter is calculated as under:

$$\begin{aligned} P_y &= 80 \text{ paise, } P_{y1} = 120 \text{ paise; } \\ \Delta P_y &= 120 - 80 = 40 \text{ paise; } \\ Q_x &= 10 \text{ Kg; } Qx_1 = 5 \text{ kg; } \\ \Delta Q_x &= 5 - 10 = -5 \text{ Kg. } \end{aligned}$$

$$Ec = \frac{P_y \Delta Q_x}{Q_x \Delta P_y} = \frac{80 \times -5}{10 \times 40} = -1$$

(Here, x stands for butter, and y for bread)

Negative Cross elasticity of demand is explained with the help of Fig. No. 17. Quantity of butter is shown on OX-axis and price of bread on OY-axis. Dc Dc curve represents negative Cross elasticity of demand. It slopes downwards from left to right, signifying that rise in price of bread will bring down the demand for butter. Points E and E₁ indicate

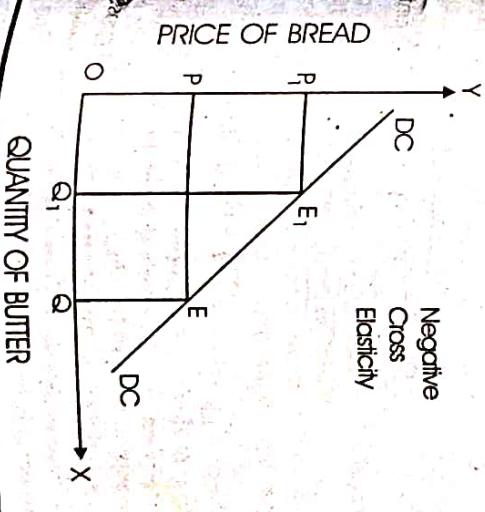


Figure 17

case that at OP price of bread, demand for butter is OQ. When price of bread rises to OP₁ then demand for butter is contracted to OQ₁.

(iii) **Zero Cross Elasticity of demand**: Cross elasticity of demand is zero when two goods are not related to each other. For example, rise in the price of wheat will have no effect on the demand for shoes. Their cross elasticity of demand will be called zero.

7. Importance of Price Elasticity of Demand

Theoretical and practical importance of price elasticity of demand is enumerated below:

(1) **Determination of Price under Monopoly**: A monopolist always takes into consideration the price elasticity of demand of his product while determining its price. (1) If it is elastic, he will fix low price per unit. Low price means large sales and hence large total revenue. (2) If demand is inelastic, production will fix high price per unit. High price with demand remaining more or less constant (being inelastic) means large total revenue.

(2) **Price Discrimination**: When a monopolist sells his products at different prices, it is called price discrimination. A monopolist can practise price discrimination when price elasticity of demand for his products for different uses and for different consumers is different. He will charge more price for demand for those consumers whose demand is elastic and less price from those whose demand is inelastic. If prices of the goods also fall, if demand for electricity for domestic use is inelastic, so Electricity Board charges higher rate accompanied by relatively more increase in their demand. Greater demand will stimulate greater electricity for domestic use. On the other hand, demand for electricity for industrial use is elastic. If rate of electricity are high, an industry can use diesel or coal or oil to run its machines. So lower rates of electricity for industrial use charged for electricity for industrial use.

(3) **Price determination of Joint Supply**: Goods which are produced simultaneously in the same act of production are called joint-supply goods, e.g. cotton and cotton seeds, oil and oil-cakes, etc. Elasticity of demand of such goods is taken into consideration while fixing their price. If demand for cotton is inelastic and that of cotton-seeds elastic, then price for cotton will be fixed more and that of cotton-seeds less.

(4) **Advantage to Finance Minister**: While planning new taxes, a finance minister takes into consideration elasticity of demand. (i) Taxes on goods having elastic demand will yield less revenue. It is because taxes will raise their prices and thus bring down their demand. Less demand means less revenue. (ii) Goods having inelastic demand are taxed at a higher rate. No doubt price of the goods will rise on account of these taxes but there will be little fall in their demand. Accordingly, more tax revenue will accrue to the exchequer.

(5) **Distribution of Burden of Taxation**: The concept of Price elasticity of demand is important in determining the burden of indirect taxes like sales tax, excise duty etc. on producers and consumers.

Good will increase due to the imposition of the tax, but demand being inelastic will not contract. In this situation, burden on the producers will comparatively be less. On the other hand, if the demand is elastic, the burden of indirect tax will comparatively be more on the producers.

(6) **International Trade**: The concept of elasticity of demand is also important in the field of international trade. A country will gain by increasing the price of her exports if their demand in the importing country is inelastic. If their demand in the importing country is elastic, then the exporting country will reduce the price and increase her total exports and thereby stand to gain. A country will be able to import those goods cheaply whose demand is elastic.

(7) **Importance for the Policy of Nationalisation**: A Policy, by virtue of which industries are brought under the ownership, control and management of the government, is called policy of nationalisation. Government nationalizes those enterprises, demand for whose products is inelastic, e.g.

Electricity, supply of water, telephone, railways etc. Prices of these services can be hiked very high. If these enterprises are allowed to be run by the private entrepreneurs then they can exploit the consumers by raising very high the prices of these services. To protect the consumers against such an exploitation, government normally nationalizes these public utility services.

(8) **Wage Determination**: Labour organisations while getting the wages of their members fixed, always take into consideration the elasticity of demand of their services. If the demand for the services of the labourers is elastic, the possibility of getting their wages hiked is remote. If, on the other hand, demand for their services is inelastic, then labour unions succeed in getting their wages increased.

(9) **Paradox of Poverty**: Those connected with agriculture know it very well that despite good harvest of many agricultural products their return in terms of money-income is very low. It means more production instead of yielding more income actually yields less income than before. This situation is referred to as paradox of poverty. The reason for it is that demand for most of the farm products is elastic. When the supply of these products increases and their prices fall, then their demand does not tend correspondingly. As a result, total revenue out of their sales goes down.

(10) **Effect on Employment**: Effect of automatic machines on employment depends on elasticity of demand for the goods produced by such machines. Initially use of such machines causes unemployment of workers. If demand for these goods is more elastic then fall in their prices will be accompanied by relatively more increase in their demand. Greater demand will stimulate greater production and hence more employment. If, on the contrary, demand for goods produced by automatic machines is inelastic, then, despite fall in their price there will be no increase in their demand. Consequently, there will be no need for increasing production and generating employment.

QUESTIONS

1. Define Elasticity of Demand. Explain the factors which determine elasticity of demand.

2. What do you mean by elasticity of demand? Discuss the basic method to measure elasticity of demand?

Or

What are the types of Elasticity of Demand?

3. What is the importance of Elasticity of Demand? Why does it vary with different commodities?
4. What do you understand by 'Elasticity of Demand'? Under what conditions elasticity is equal to: (a) Zero, (b) Unitary, (c) Less than Unitary, (d) More than Unitary.
5. Define Price Elasticity, Income Elasticity and Cross Elasticity of Demand. Explain the various methods of measuring price elasticity.
6. What is price elasticity of demand? How can it be measured? (Explain only three methods.)

10 **PRODUCTION**

Economics is concerned with economic activities. Production is a main economic activity. Without production there can be no consumption. Everybody is confident about the meaning of production, but the term production is used in common parlance is quite ambiguous. It is essential to know the exact meaning of production in economics.

□ What is Production ?

Ordinarily, by the term production we mean manufacturing of a material good. For instance, if you make ice cream, you will say that we have produced ice cream (a material good). But from economic point of view you have not produced any material good in the form of ice cream, rather by changing form of milk, sugar, cream etc. you have created more utility in all these goods. Marshall has rightly said : "Man cannot create material things.... but when he is said to produce material things, he really produces utilities." Eminent philosopher Beacon is also of the view that so far as production is concerned, man can only change the form or the situation of the things. Nature alone can produce a thing. Even the scientists say, "Matter can neither be created nor destroyed." Accordingly by production in Economics meant creation of economic utility by virtue of which its value increases. A man either changes the form of a thing which renders it more useful, e.g. changing milk into ice cream or he keeps it in such a manner that nature makes it more useful e.g. sowing the seeds in the land where with the help of nature it germinates.

Sometimes it is said that a trader does not produce anything. For example, a carpenter alone manufactures furniture whereas the trader dealing in furniture simply sells the goods manufactured by the carpenter. But it is a fallacious argument. Both the carpenter and the trader create utilities. A carpenter does not produce timber. He simply changes the form of timber in such a way that it becomes more useful in a new form, i.e., furniture. Thus he creates utility in it. So also the trader who carries it from carpenter's place the same in his show-room in such a way that place-utility is created in it, making it more useful. (4) **Time Utility**: When by storing a commodity for sometime its utility is increased then it is called time utility. Storing of apples, mangoes, oranges and other fruits in the cold-stores in the off-season to take advantage of rise in their prices is an instance of time utility. Traders do this job and so their activity is also called production.

(5) **Possession Utility**: If the service of a person satisfies the want of another person, then it is called service utility. Teaching in the class by a professor, arguing the case in the law court by an advocate, sewing of a shirt by a tailor are examples of service utility. Accordingly, a professor, an advocate and a tailor etc. are all producers.

(6) **Knowledge Utility**: By giving full information about a commodity, we add to the knowledge of the prospective customers. It is done through the medium of advertisement. For instance, we know

- (3) According to Nicholson, "Production means an increase in the value of a commodity."
- (4) In the words of Prof. M.J. Ulmer, "Production is any activity which adds to the value of a nation's supply of goods and services."
- (5) Robert Awh has given a modern definition of production in these words, "Production may be defined as the process by which inputs may be transformed into output."

□ 3. Difference between Consumption and Production

Ordinarily consumption and production are treated as two different activities. Consumption refers to the use of economic utilities whereas production refers to the creation of economic utilities. Actually, there is no fundamental difference between the two. Both are two aspects of one activity. For instance, when a carpenter manufactures a chair, he creates utility in the timber and thus performs a productive function, but in the same process of production he has destroyed the utility inherent in log of wood and thus consumed it. Thus production and consumption are the two aspects of one activity. According to Prof. Mehta, "When the utility of a thing is used for the direct satisfaction of want, it is called consumption and when it is used for the indirect satisfaction of want, it is called production."

□ 4. Methods of Creation of Utility

Production is possible by creating utility in more than one way. Utility can be created by following methods :

(1) **Form Utility** : When by changing the form of a thing its power to satisfy want is increased it is called form utility. Changing of maida into biscuit or a log of wood into a table are examples of form utility. Accordingly, Dalmia Biscuit Company or Godrej Steel Furniture Company create form utility.

(2) **Place Utility** : If by changing the place of a thing its power to satisfy want is enhanced then it is called place utility. Carrying sand from the river bank to places where houses are under construction or transporting of coal from coal-mines to different parts of the country are examples of place utility. A transport company or railways, shipping and air companies are engaged in creating place utility. So their activities fall under production activities.

(3) **Time Utility** : When by storing a commodity for sometime its utility is increased then it is called time utility. Storing of apples, mangoes, oranges and other fruits in the cold-stores in the off-season to take advantage of rise in their prices is an instance of time utility. Traders do this job and so their activity is also called production.

(4) **Service Utility** : If the service of a person satisfies the want of another person, then it is called service utility. Teaching in the class by a professor, arguing the case in the law court by an advocate, sewing of a shirt by a tailor are examples of service utility. Accordingly, a professor, an advocate and a tailor etc. are all producers.

(5) **Possession Utility** : If by changing the possession of a commodity its utility is increased, then it is called possession utility. A sewing machine has more utility for a tailor than the stockist of machines. So when its possession changes from stockist to the tailor its utility is increased. It is called possession utility. A retailer or a stockist or a trader creates this type of utility. So all the traders and shopkeepers are also called producers.

□ 2. Definitions

- (1) According to Anatol Murad, "Production may be defined as the creation of utilities."
- (2) In the words of A.H. Smith, "Production is the process that creates utility in goods."

about the characteristics of 'Anacin', 'Lux' soap or 'Colgate' tooth paste etc. from their respective advertisements. Such a publicity widens the extent of the market. Thus advertising agencies by creating knowledge utility also do the job of producers.

Accordingly, the work of craftsman, carpenter, blacksmith, goldsmith or a farmer alone does not form part of production rather the work of a trader, bookseller, advertiser, transporter, doctor, lawyer, professor etc. is also included in production. Whether an individual is a producer or not is to be judged from the fact whether his work creates utility or adds to the value of a thing or not. If this work creates any of the utilities mentioned above or adds to the value of the thing, then he will be called producer.

Q5. Factors of Production

If you want to grow wheat, you will need land, labour, tractor, tube-well, seeds, manure etc. All these things are called factors of production or inputs. Their co-operation leads to output. In the words of **Ulmer**, "The sources of services which enter into the process of production are called factors of production. The factors are broadly classified as land, labour, capital, organisation and enterprise." In the words of **Marshall**, "In a sense, nature and man are the only factors of production." Goods which become useful because of human labour are called capital. Thus two fundamental factors are human factor and natural factor i.e. land. But the modern economists divide them into five categories, namely (i) Land (ii) Labour (iii) Capital (iv) Organisation and (v) Enterprise. Of these land is a natural factor. Labour is a human factor. Capital as a factor of production is the outcome of land and labour. Organisation and enterprise are special type of human factors. All the above factors of production are referred to as 'Inputs' or 'Resources' by the modern economists. The same are discussed as under:

(1) **Land**: It is a free-gift of nature. It does not refer to surface alone. It includes all natural resources such as, forests, minerals, mountains, rivers, water-falls, fertility of the soil, etc. It is also called natural resource.

(2) **Labour**: It is an human-factor of production. It includes all those mental and physical activities of man which are undertaken to earn reward. Services of a carpenter, goldsmith, weaver, teacher, lawyer etc. constitute labour.

(3) **Capital**: It is that man-made physical factor of production which is used for further production. Machines, tools, houses, railways, workshops etc. are examples of Capital. That part of wealth which is used for earning income is called capital.

(4) **Organisation**: It is also an human factor of production. It is that factor of production which organises land, labour, capital, etc. to produce things according to a set plan. Its main function is to manage and control production. Services of a General Manager, Supervisor, Business Executive, Administrator etc. fall under the category of organisation.

(5) **Enterprise**: It is yet another and highly Specialised human factor of production. It alone undertakes all the risks of production and gives practical shape to new inventions.

Q6. Agents of Production and their Income

Ordinarily, no distinction is made between factors of production and agents of production. But economics the same are distinguished from one another. Agents of production are the owners of factors of production. They supply the factors of production. Accordingly, there are five agents of production, namely, (i) **Landlord** who is the owner of land. His income is called Rent. (ii) **Labourer** who is the own-

er of labour. His income is called Wages. (iii) **Capitalist** who owns capital. His income is called Interest. (iv) **Organiser** who is the owner of organisation. His income is called Salary or Wages (v) **Entrepreneur** who owns enterprise. His income is called Profit.

Agents of production can be different individuals or a single individual can be the owner of several factors. For instance, a carpenter makes items of furniture at his own shop with his own capital and labour. In this case, he is landlord, labourer, capitalist, organiser and entrepreneur all rolled into one self-employed carpenter.

Q7. Importance of Production

Production is of great importance for every individual and country. Birla and Tata are amongst the richest persons of India because they produce on a large-scale. United States of America and Japan are amongst the richest nations of the world because they produce on a large-scale. Accordingly, economic progress of a country or economic welfare of an individual depends upon the volume of production, composition of production, value of the output and distribution of production. Importance of production is described as under:

(1) **Basis of Consumption**: In order to satisfy our wants we are keen to consume many goods and services like, ice cream, wear shirt, make use of TV-set, ride a scooter etc. All these things can be consumed only if they are first produced in sufficient quantity and at proper price. Thus the main basis of consumption of the people of a country is the volume of production of diverse goods and services in that country.

(2) **Basis of Economic Development**: Rapid economic development of a country is possible only when production of producers' goods, such as, machines, electricity, raw material, chemicals etc., is undertaken on a large-scale. It is the producers' goods which help facilitate the production of consumer goods, like cloth, sugar, scooter, shoes, watches etc. Increased production will generate more employment opportunities. It will remove poverty and unemployment. Thus more production of producers' goods is the basis of economic development.

(3) **Basis of Economic Welfare**: Economic welfare of a country is promoted when the standard of living of its people is raised; per capita income is increased, people get necessities of life at fair prices. All this can be made possible only when there is large-scale production of agricultural products and other consumer goods. These goods should not only be quality goods but must be available at low price. Thus quantity and quality of production are the basis of economic welfare.

(4) **Basis for Economic Planning**: Main basis for economic planning, just as Five Year Plans in India, is to determine production targets of different commodities. Success or otherwise of a plan is judged by the achievement or otherwise of the production target during the period of its operation.

(5) **Basis of Trade**: Volume of internal and external trade of a country very much depends upon the volume of its production. Higher production alone would lead to higher volume of Trade and economic activity.

(6) **Basis of Government's Income**: One of the main sources of revenue of the government is tax on production, e.g., excise duty, customs duty, sales tax etc. If production is more in the country there will be more revenue collected through these taxes. More collection of revenue will enable the government to spend more on the economic and social well-being of the people.

✓ 8. Factors affecting the Volume of Production
 The aggregate of market price of the final goods and services produced in a country in a given year is called its national output. Most of the gulf countries today are ranked among the richest countries of the world. All this is due to large-scale production and export of petroleum. Despite the havoc caused by World War II, Germany and Japan have rehabilitated their economies on a very sound footing mainly because of hard labour that has resulted into tremendous increase in production. A small British colony, Hongkong, by virtue of its excellent organisational and entrepreneurial ability has occupied a prominent place in the sphere of production. As a matter of fact, volume of production is influenced by natural resources, capital, labour, organisation, enterprise and economic, social and political factors. Modern economists express the factors influencing the volume of production in terms of Production Function.

According to them :

$$P = f(N, L, K, T, O, E, B, M, G)$$

It reads as : Production (P) is a function (f) of natural resources (N), labour (L), capital (C), technique of production (T), organisation (O), enterprise (E), banking (B) market (M) and government policies (G). These factors are explained as under :

(1) **Natural Resources** : Volume of production is very much affected by natural resources, like, minerals, fertile soil, forests, rivers, climate etc. If natural resources are available in plenty and are being properly exploited then the volume of production will be very large. Natural calamities like floods, earth quakes, droughts etc. reduce the volume of production considerably.

(2) **Labour** : Volume of production is also influenced by the efficiency of labour, habit of the labour to work hard and the spirit of discipline among the workers. If the labourers are literate and realize their responsibility then production will increase manifold.

(3) **Capital** : If the rate of capital formation in a country is high, volume of production will be large. Agricultural production can increase very much with the application of capital. Infra-structure in the form of irrigation, electricity, transport etc. can be built with the help of capital. It is again capital formation that helps in increase production of producers' goods, such as, steel, iron, machines etc. Capital is the result of savings by the people. It can also be obtained from abroad in the form of loan, direct investment, external aid etc.

(4) **Technique** : Volume of production is very much influenced by technique of production, new inventions, new methods of production. Modern technique of production increases the productivity of labour. Variety of goods are produced. Natural resources are properly harnessed. Thus application of latest technique multiplies production.

(5) **Organisation** : Large-scale production necessitates efficient organisation, competent managers and organised money and capital market. If there are able and skilled organisers available in the country then large business houses and industries can be run efficiently. Success of Small and cottage industries also depends on efficient organisation. It is the efficient organisation that is mostly responsible for large production of steel and watches in Tata Iron and Steel Works and Hindustan Machine Tools Factory respectively.

(6) **Enterprise** : Credit for large-scale production in countries like Japan, Hongkong, Germany etc. goes to talented entrepreneurs there. Innovations in production are possible only if entrepreneurs are

willing to undertake big risks. In an under-developed country like India, government has assumed the role of a big entrepreneur. Government of India has set-up large-scale industries in the public sector. Accordingly, private and public entrepreneurs play an important role in accelerating the rate of production in a country.

(7) **Banking and Credit Facilities** : Credit is the backbone of all types of production. Volume of production will be increased if the entrepreneurs succeed in getting credit facilities at cheap rate of interest at opportune time. Banks can perform this function efficiently and successfully. They collect large funds from the public in the form of small savings. These funds are made available to the entrepreneurs at low rate of interest to promote their production effort.

(8) **Facilities of Market, Transport and Power** : Wide extent of the market stimulates large production. Extensive markets are made possible by efficient means of transport. Regular supply of power is a must for large-scale production.

(9) **Policies of Government** : Economic policies pursued by the government also affect the volume of production in a country. In the interest of large-scale production, government of India has set-up in the public sector those basic and heavy industries which involve big risk, e.g., steel plants, fertiliser industries, heavy machines and heavy electrical goods industries etc. Government also provides subsidies to small entrepreneurs to increase their output. Farmers are given better quality seeds, fertilisers etc. at subsidised prices. Power tariff charged from the agriculturists is also very low. All this is done to increase agricultural production. Under self-employment Schemes, unemployed persons are helped to start their own enterprises. Accordingly, government patronage in India has facilitated production, both industrial and agricultural, to a very large extent. Countries having weak and unstable governments or those in the throes of political upheavals and turmoils suffer from low level of domestic production.

In short, economic well-being of the people very much depends upon the volume, quality and price of the production in the country concerned. Volume of production depends largely on the availability of factors of production their skill and efficiency and the patronage of the government.

QUESTIONS

1. What do you mean by production ? Are the following producers ?
 (a) A Teacher (b) A Dancer (c) A Lawyer and (d) A child building a house of sand.
2. What do you understand by Production in Economics ? Explain the factors upon which the volume of production depends.
3. What is production ? What are the factors of production ? Discuss the importance of production.
4. Explain and comment upon the following statements :
 - (a) Production is the creation of utilities
 - (b) Consumption involves the destruction of utility.
5. How does economist's classification of factors of production differ from the two-fold classification into natural and human factors ?

11 LAND

□ 1. What is Land ?

The soil we cultivate, the river-water with which we irrigate our fields, the forests we get wood from and the mines yielding coal and iron etc. are also provided to us by nature free of cost. All these free gifts of nature form part of Land. Undoubtedly, land is an important factor of production. Dictionary meaning of Land is surface of the earth. But in Economics, the term land is used in a broad sense. All goods which are provided by nature free of cost and which yield income are called Land.

Man gets many things free of cost from nature : e.g. oil-wells, iron, coal, forests, fertility of the soil rivers, oceans, mountains, deserts etc. All these are included in Land in Economics. Prof. Moreland has used the term "gifts of nature" for land. But the term Land continues to be more prevalent and popular. According to **Marshall**, the term land is used for the following factors provided by the nature :

(i) Upper surface of the soil, its fertility and forests and herbs existing thereon; (ii) mountains, oceans, rivers, lakes, ponds and all animals and creatures living thereon ; (iii) All minerals under the surface, iron, gold, coal, crude-oil etc., (iv) climate, air, sunshine, heat, light etc.

According to **Cairncross**, the term land should not be used for air, light, sun shine, heat etc. the same are not owned or possessed by any single individual. We have no right to sell these factors can we economize them. As such Cairncross has used the term land for the following natural resources

(i) All those areas of earth's surface which are under cultivation (ii) Forests and deserts (iii) Seas and oceans (iv) Mines (v) Climate.

According to **Prof. J.K. Mehta**, "The modern definition is that land is a specific factor or that it is the specific element in a factor or again that it is the specific aspect of a thing."

Specific resource is that factor which lacks mobility, which cannot be moved from one place to other. Thus, Specific resources or Space are called Land in Economics.

□ 1.1 Definitions

Main definitions of land are as follows :

- (1) According to **Marshall**, "By land is meant not merely land in the strict sense of the word, the whole of the material and forces which nature gives freely for man's aid - land and water, in air, and heat."

- (2) According to **Cairncross**, "All free gifts of nature that yield income, e.g. agricultural residential land, mines, fisheries etc. are included in land." We exclude from land sun shine, rainfall, other natural resources because the same are not owned or possessed by any single individual.

- (3) In the words of **H.A. Smith**, "Land applies to all those gifts of nature which man uses providing the things that satisfy his wants."

(4) **J. Ulmer** has defined land in these words, "Land consists of all economic goods, wealth supplied by nature, natural resources in their original state."

□ 2. Characteristics of Land and their Importance

Main characteristics of land as factor of production are as follows:

(1) **Free Gift of Nature**: Land is a free gift of nature to the society. It has no cost of production for the society. No one ever paid a penny for its production. If by applying capital to land we increase its productive power then increase in the man-made productive power of land will be its cost of production. But there will be no cost of production of the natural productivity of any part of land, of climate or the situational advantage of land.

Importance: It is because of this characteristic of land that Socialists demand that land should not be owned by anyone. Feudal system must be abolished. Land should be nationalized. State alone should get rent on land.

(2) **Land is Limited**: Supply of land is limited. Total area of earth is fixed. Man can neither increase nor decrease it. Other factors of production are variable. They can be increased or decreased. Man cannot make air, sunshine, land minerals etc. Sometimes man may extend the area of land by drying up the marshy land, as was done by the Dutch people. Marine drive, Chowpatty, Nariman Point in Bombay are its examples in India. But this does not mean that man succeeds in increasing the total area of land. It remains the same, only its form and nature change. According to Marshall, Land has all the permanent characteristics of utility. Ricardo refers to them as original and indestructible powers of land.

Importance: Because of this characteristics of land, its owner may acquire monopoly power. The fall in demand for land causes steep fall in its price and rent. It is so because supply of land cannot be curtailed. It is on this score that classical economists maintain that from the point of view of society as a whole, "rent does not enter into price."

(3) **Land is Indestructible**: Land can neither be destroyed nor created. When a farmer makes use of land, he makes use of its productive capacity, but he cannot destroy the area of land.

Importance: Indestructibility of land is one of the prime reasons of the progress of underdeveloped countries. They have found relics worth millions of rupees on excavating old historic sites. Because of this attribute of land, importance of new technique and inventions to increase the value of production has increased.

(4) **Land differs in variety**: No two pieces of land are alike in productivity and situation. Haryana and Punjab have fertile soil. Rajasthan has sandy soil at many places. Sunderban lands are marshy. Karnataka has red and Maharashtra black soil.

Importance: One finds different kinds of minerals viz., iron, tin, coal, gold, silver, oil, etc. due to this characteristic of land. Farmers can grow variety of crops. Black soil is useful for growing cotton and red soil for oilseeds.

(5) **Land is not Mobile**: Land is not mobile. It cannot be transported from one place to the other. Punjab land cannot be carried to Haryana or Rajasthan. Picturesque Shimla environs cannot be brought to Hisar or Ambala districts of Haryana.

Importance: This characteristic of land has great effect on local and regional development. It is one of the leading causes of localisation of industry.

(6) **Land is a Passive Factor:** Land is a passive factor of production. It cannot produce anything on its own. It needs to be worked upon by man. Iron mines of Mahendergarh would not deliver iron on their own. It would have to be mined by man. Land in Karnal would not produce sugarcane on its own.

It is the handy work of man.

Importance: Because of passivity of land that feudalism has given way to Capitalism. Role of capital, labour and technique has increased in production. Demand for land reforms is also made due to this characteristic.

(7) **Law of Diminishing Marginal Returns:** Marshall was of the opinion that more units of labour and capital applied on a given area of land are followed by diminishing marginal productivity, popularly called law of diminishing marginal returns. Because of the limited supply of land this law applies relatively early on agriculture than to manufacturing industries.

Importance: Malthus' Theory of Population is based on this characteristics of land. Likewise Ricardo's Theory of Stationary state of Economic Development is also based on this attribute.

(8) **Effect of Situation:** Besides productivity, price of land is also influenced by its situation. Land which are near to towns and markets fetch more price. One square meter of land at Connaught Place may be worth thousands of rupees, but at Gurgaon the same size of land can be had at few hundreds.

Importance: Government's policy of decentralisation of industry or setting up of satellite towns based on this characteristic.

(9) **Use of Land:** The basic quality of land is its use. Right of using a piece of land at a given place provides the user with the power of its control. Man cannot perform any function without using a particular part of land. In that part of land, he enjoys all the elements provided by nature; namely, light, heat, rainfall etc. This determines his distance and relations with other goods and persons.

Importance: Variety of production activities depends on this characteristic of land. Rivers, oceans etc. have importance for sailors; mines have importance for miners and agricultural land for the farmers.

□ 3. Productivity or Efficiency of Land

Production capacity of land is called its productivity or efficiency. Other things being equal, if one hectare farm owned by you produces 20 quintals of wheat while one hectare farm of Ram produces 15 quintals of wheat, then productivity or efficiency of your farm will be more than that of Ram's farm. On the contrary, if both the farms measuring one-hectare each produce 20 quintals of wheat per hectare the quality of your wheat is superior to that of wheat of Ram's farm, then again productivity or efficiency of your farm will be considered more. It is therefore clear that productivity of land is determined by the quantity and quality of the produce. Productivity or efficiency of land depends upon the following factors:

(1) **Natural Factors:** Productivity of land is influenced by several natural factors like, configuration of the soil, climate, chemical properties of the soil etc., configuration of the soil belonging to Karnal its chemical properties are more conducive to agricultural operation than the soil of Narnaul which is suitable for mining operations. Land in Ganga Nagar district of Rajasthan has become more fertile on account of irrigation facilities provided by Rajasthan canal than the land in Jaisalmer district where irrigation facilities are not available.

(2) **Human Factor:** Productivity of land is very much influenced by human factor, e.g., devotion of farmer, his hard work, training, ability etc. Hard-working nature of farmers of Punjab and Haryana

largely responsible for the tremendous increase in agricultural production in these states. Again it is the hard labour and skill of the farmers in Himachal Pradesh that enabled the state to set new record of production of apples and potatoes.

(3) **Organisation:** By organisation we mean application of labour, capital, technique etc. in appropriate measure to land. If the organiser is competent he can increase the productivity of land by making optimum use of different factors on it.

(4) Proper Use of Land:

Productivity of land will increase if it is used for the purpose it is best suited for.

(7) **Land Reforms:** These reforms refer to the ownership and size of land. If land is owned by one who cultivates it, then he will work with enthusiasm. Consequently, there will be increase in the productivity of land. If the size of land is adequate in size then alone irrigation facilities and use of machines will be worth while. Use of better seeds, chemical manures etc. will add to the productivity of land. That is the reason why so many land reform measures have been enacted in India. These measures have abolished Zamindari System, determined ceiling on land holdings and promoted consolidation and co-operative farming.

(8) Improved Techniques of Production:

Productivity of land is much influenced by improved techniques of production. New inventions, modern and scientific methods of production can increase the productivity of land manifold. With the evolving of high yielding varieties of seeds and latest technique of production, production of wheat and rice has increased tremendously in India. Use of modern tools and techniques of mining has helped increase the production of coal and iron in India.

(9) **Social and Economic Factor:** Social and economic institutions also affect the productivity of land. The evil of sub-division and fragmentation of holdings in India has been due to the law of inheritance prevailing in the country. According to this law, property is divided among all the children equitably on the death of the father. The evil has reduced the productivity of land considerably. In UK, due to law of Primogeniture, the entire immovable property is inherited by the first born child; as such the evils of sub-division and fragmentations are not found there. It is one of the reasons of high productivity of land in U.K.

(10) **Policy of Government:** Prior to Independence, the British government was quite indifferent to the productivity of land in India. In the post Independence era, national government took several measures to increase the productivity of land through different Five Year Plans. Large amounts were spent on the extension of irrigation facilities, land improvement programmes, mechanisation of agriculture, evolving of new varieties of seeds, pest control etc. All these measures have decidedly added to the productivity of land.

□ 4. Importance of Land

Land is the cornerstone of all production. Whether you want to produce cotton or cloth you need land to grow cotton or to build textile mills. To run these mills you get hydro-electricity produced out of water or thermal electricity produced out of coal. Water and coal mines are very much part of land. To export cloth to Foreign countries you make to increase his output he brings more land under cultivation than the units of labour and capital. For instance, if 2 quintals of wheat are produced on a land measuring one hectare then to produce 4 quintals of sea-routes which again are part of land. Accordingly, land is needed for agriculture, industry, construction depends on the configuration of the soil. To export cloth to Foreign countries you make to increase his output he brings more land under cultivation than the units of labour and capital. For instance, if 2 quintals of wheat are produced on a land measuring one hectare then to produce 4 quintals of sea-routes which again are part of land. Accordingly, land is the basic factor of production. Importance of land in the sphere of production is evident from the following:

- (1) **Basis of Primary Occupation:** All primary occupations like agriculture, animal husbandry, poultry-farming, fisheries, dairying, forestry etc. are predominantly land-oriented.
- (2) **Basis of Industries:** Manufacturing industries get diverse type of raw materials from land either in newly inhabited territories where labour is scarce or in poor under-developed countries namely, raw cotton, sugarcane, raw jute, coal, minerals and metals etc.
- (3) **Basis of Power:** All sources of power, i.e. hydro-electricity, thermal power, diesel, coal, oil emanate from land.
- (4) **Basis of Trade:** Products of land are mostly traded within the country or form part of trade. Production like foodgrains, minerals, timber, leather, hides and skins, wool, tea, jute, petroleum products, milk, butter etc. figure prominently in trade.
- (5) **Basis of Transport:** All the three important modes of transport i.e., roads and railways, oceans and air which are waterways and air ways are mainly based on surface of the land, rivers, oceans and air which are constituents of land.

- (6) **Basis of Employment:** In under-developed agricultural countries nearly two-third of population is engaged in agriculture and other primary activities. Agriculture, forests, mines etc. provide employment opportunities to rising population.
- (7) **Basis of Economic Growth:** Natural resources, that is land, play an important role in economic development of a country. Prosperity of gulf countries lies in the oil-wells found there. Economic development of South Africa is mainly due to her gold-mines. High per capita income of Punjab Haryana is due to fertile lands, irrigation and power facilities. All these are different facets of land.
- (8) **Basis of Life:** We depend on land for our subsistence, residence and other necessary existence. Land provides food and healthy climate.

In short, it can be said that in an under-developed country like India where two-third of population depends on agriculture, land is the most important factor of production.

□ 5. Methods of Cultivation

- Volume of production depends on the factors of production, i.e., land, labour, capital etc. in the same ratio. Keeping the amount of labour and capital constant, you can increase the production of foodgrains by bringing more land under cultivation. Or else, you can increase the production of foodgrains by increasing the units of labour and capital, keeping the size of the land as constant. Accordingly, there are two methods of cultivation :

Cultivation

Characteristics of Extensive Cultivation

- (1) Under this type of cultivation relatively less use is made of labour and capital (2) Such cultivation is adopted either in newly inhabited territories where labour is scarce or in poor under-developed countries (3) More land is brought under cultivation to increase production (4) There is less production per hectare, as such there is no optimum utilization of land. (5) It is an unscientific method of cultivation.

Cultivation

- (2) **Intensive Cultivation:** Intensive Cultivation refers to that method of cultivation wherein production is sought to be increased by making more use of labour and capital than land. When a farmer applies more and more units of labour and capital on a given piece of land in order to increase production then it is called intensive method of cultivation. It admits of scientific method of cultivation. Under this method increasing use is made of machines, manures and better seeds. To have intensive cultivation, a farmer can adopt one of the following methods :

- (i) **More use of Labour:** Farmers make intensive use of labour. Different agricultural operations, namely, sowing, cultivating, supervising, harvesting are performed with the help of more and more of labour. All this results into rise in per hectare output. It may however be remembered that more labour does not mean labourers.
- (ii) **More Capital:** Farmer can make intensive use of capital as well, for example, better seeds, chemical fertilizers, modern agricultural implements, tractors, combined-harvesters etc. More use of capital also admits of rise in per hectare production.
- (iii) **Good Management:** Intensive cultivation implies good management. For instance, multiple cropping instead of single-cropping.

- An ideal method of intensive cultivation refers to the use of all the three methods discussed above. Which of the factors of production, namely land, labour, capital etc. will be used more by the farmer depends on the relative availability of the factor concerned. In a country like India, more use is made of labour than capital because the former is available in large numbers.

Characteristics of Intensive Cultivation

Main features of intensive cultivation are as follows :

- (1) More use of labour and capital is made (2) Productivity per hectare is more (3) It is found in developed countries (4) It is relevant to high density countries where land is scarce. (5) It makes use of scientific methods of cultivation.

Does Extensive Cultivation denote Large-scale Farming and Intensive

Cultivation Small-scale Farming

- It is not necessary that extensive cultivation is resorted to in large-scale farms and intensive cultivation in small-sized holdings. As a matter of fact difference between extensive and intensive

cultivation is not based on the size of the holdings, rather it is based on methods of cultivation. Intensive cultivation, labour and capital are used intensively and cultivation is done with scientific techniques and modern tools and implements. Such a cultivation can be practised on large-scale farms as in USA, Canada, Australia etc. where large-sized holdings are found. There, farming is done by scientific methods, machines, better seeds, better manures etc. Thus, despite large-scale farming we have intensive cultivation.

On the other hand, in India although the average size of holdings is very small, yet methods

cultivation are old and primitive resulting into low productivity per hectare. In India, the prevailing methods of cultivation is therefore called extensive cultivation.

Conclusion: Extensive and intensive are two methods of cultivation. They have no relation to the size of the farm. It is, therefore, not necessary that intensive cultivation be performed on small holdings and extensive cultivation on large holdings.

QUESTIONS

- Explain the meaning of land in Economics and give its peculiarities. What factors affect productivity of land?
- Define land and explain the peculiarities as well as the importance of land as a factor of production.
- What are the characteristics of land? Describe the factors influencing the productivity of land.
- What do you understand by the term land in economics? Discuss its characteristics.
- Write a brief note on Extensive and Intensive cultivation.
- Discuss the factors which influence the productivity of land. What is its importance factor of production?
- Define land and mention its characteristics. What factors affect the productivity of land?

What is Labour?

Labour is an important factor of production. Ordinarily, the 'labour' refers to that manual labour which is rendered to accomplish a given task. But in Economics the term 'labour' is used in a broad sense. Physical and mental activities which are undertaken to earn wealth are regarded labour. Whenever one undertakes a job, there is some purpose or motive behind it. If the purpose behind doing a job is mere entertainment or social service or patriotism or family affection etc: then such a job does not qualify to be called labour in Economics. In Economics, those activities are called 'labour' whose motive is to get some economic good, wholly or partially besides the direct pleasure derived from it. In your class-room you listen to the lecture delivered by the Professor of Economics. Act of listening on your part will not be treated as labour, because your motive is to acquire knowledge of Economics. But delivering of lecture by the professor will be treated as labour because his motive is to earn wealth besides disseminating knowledge in Economics. A nurse looking after a child in a hospital is doing labour because she gets a monetary reward for it. But when she looks after her own children in the house, then her work will not be called labour as she does this job as part of her maternal duty and not for seeking economic reward. Accordingly, work of a labourer, a doctor, a professor, a lawyer, a minister etc. falls under the category of labour in Economics, as the motive behind the work of all those persons is to get a monetary reward. All such activities are called labour in Economics as have the following attributes:

- (i) **Human Work:** Labour refers to the work rendered by human beings. Work rendered by animals

Machines is not regarded as labour.

- (ii) **Physical and mental work:** Activities of man, whether physical or mental, are called labour.

(iii) **Reward:** Those activities are called labour which are performed with a view to earning wealth. Teacher teaching in a school is doing labour as he gets reward for it. But if he teaches his own son at home, his work will not be treated as labour as he is not to get any remuneration from his son.

As a factor of production labour means "labour power", that is, those labourers who are either willing work or can be employed to do work if the opportunity so arises. Number of labourers is not fixed. It is their capacity to produce goods and services is fixed. It increases with increase in population. The production capacity of the labourers increases with increase in their education and training.

2. Definitions

Some of the definitions of labour are as follows:

- (1) According to **Marshall**, "By Labour is meant the economic work of man, whether with hand and head."

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LABOUR

(2) In the words of **Thomas**, "Labour connotes all human efforts, of body or mind, undertaken for the expectation of reward."

(3) According to **Jevons**, "Labour is any effort of mind or body undertaken partly or wholly for a view to some good other than the pleasure derived directly from the work."

□ 3 Types of Labour

Kinds of labour are as under:

(1) **Productive Labour**: That labour is called productive labour which help in satisfying our wants.

Such a labour creates utility. It produces both material and non-material goods. There has been a difference of opinion among economists with regard to the exact meaning of productive labour. According to **Physiocrats**, labour engaged in agriculture alone is productive labour. According to **Adam Smith**, labour engaged in the production of material goods alone can be productive labour, but the services rendered by a lawyer, a professor or an administrator are not regarded as productive labour. **Marschall** and **Taussig** and other economists treated that labour as productive labour which creates utility or satisfies any of our wants. Accordingly, the labour of a lawyer or a professor is also productive as their work satisfies our wants.

(2) **Unproductive Labour**: Unproductive labour is one that does not succeed in its purpose. Such a labour does not satisfy any of our wants; as it fails to create any utility. You dig a well but it does not yield any water; you drill an oil-well but no oil comes out. Thus your labour does not satisfy any want nor does it create any utility. Such a labour is, therefore, called unproductive labour.

(3) **Physical Labour**: Labour mainly performed with the help of human limbs is called manual physical labour e.g. the work of a mason, a coolie, a rickshaw puller etc.

(4) **Mental Labour**: Labour performed mainly with the help of mental faculties is called mental labour. Delivering a lecture by a professor, arguing a case in court by a lawyer, singing a song by a musician are examples of mental labour.

(5) **Skilled Labour**: A labour requiring a special type of training and activity is called skilled labour of a doctor or an engineer falls under the category of a skilled labour.

(6) **Unskilled Labour**: An untrained labour is unskilled labour. Certain jobs do not require training e.g. carrying a bricks by a labourer, luggage by a coolie and washing of dishes by a housewife.

□ 4 Characteristics of Labour and their Importance

As a factor of production, labour has many characteristics. These characteristics have great influence on the determination of wages and volume of production. Main characteristics of labour are as follows:

(1) **Human Factor**: Labour is an human factor of production. It concerns with economic activities of a man. It is not a free-gift of nature like land. It relates both to physical and mental labour. It has its own discretion.

Importance: This characteristics has great relevance to wage-determination. Being a living factor, it must get at least subsistence wage. The concept of minimum wage is based on this characteristic in order to get more work from the labour, he must be treated well by the employer.

(2) **Active Factor**: It is an active factor of production. Other factors of production like, land and capital are passive. It means without the cooperation of labour who is an active factor, land and capital are passive.

cannot produce anything on their own. You have one-hectare farm, seeds, manure and a well but you are sick. You can neither cultivate the farm, nor sow the seeds nor apply manure nor irrigate it. In other words, without labour nothing can grow on the farm. It is the labourer who makes use of other factors of production to produce a good.

Importance: It is because of this characteristics that the labourers can compel their employer to accede to their demands. If labourers go on strike, other factors like land, machines, mines etc. are thrown out of gear. Machines will not run in the factories without labour. No mining will be possible without labour and no trucks will ply without the drivers.

(3) **Labour cannot be separated from labourer**: Physical presence of the labourer is necessary to render his services, manual or mental. As such labour cannot be separated from labourer. Land and capital can be separated from the landlord and capitalist respectively. If you are to type some letters at your office, it is possible that you may send the type-writer to office and you yourself go to see a movie. But it is not possible that while you are in the cinema hall your labour will be operating the type-writer at your office. Unless you move physically to office you cannot type letters.

Importance: This characteristics of labour is very much concerned with his efficient and mobility. A labourer has to sell his labour personally. As such place where he is to work must be airy and well-lit, otherwise his efficiency will be adversely affected. Since he has to deliver his service personally, he may not go to a place where he has to face language difficulties or where people are of different religion and have different food habits. All these factors stand in the way of his mobility. Labourers who are less mobile work at low wages.

(4) **Perishable**: Labour is most perishable factor of production. Capital suffers gradual wear and tear but the supply of labour perishes in the very act of labour. A labourer cannot store his labour. If a labourer does not work on a particular day his labour of that day perishes.

Importance: Since labour is perishable, a labourer has weak bargaining power with his employer. A labourer cannot dictate his terms to his employer. The employer knows that if a labourer does not work for a day, he is deprived of his wages for that day. To avoid this exploitation the labourers organise themselves and form Trade Unions.

(5) **Labourer sells his labour and not himself**: A labourer sells his labour and not himself. A doctor, a lawyer, a teacher, a lawyer, a doctor, sell their services but they do not trade their ability.

Importance: All labour legislations are enacted to safeguard the physical, mental and financial interests of the labourers. If during the course of work, a labourer meets with an accident and suffers serious or fatal injury, the employer has to compensate him or his dependents.

(6) **Labour is both the means and end of Production**: Land and capital are the mere means of production; whereas labour is both means and end of production. It means that labour not only produces goods and services but these goods and services are also meant for the labourer. The labourers produce as well as consume wheat. They weave the cloth and also wear it.

Importance: This feature is of great importance. It means that at the time of unemployment, reduction in money-wage will neither be profitable to the employer nor will it increase employment. Reduction in money-wage will mean fall in income of the labourer. In money-wage will reduce the cost of production on the one hand and the income of the labourer on the other. Fall in his income means fall in his demand for goods. This in its turn means fall in production, and have fall in employment.

(7) **Difference in Efficiency:** All labourers are not equally efficient. Some are more efficient than the others. They produce quantitatively and qualitatively more than others.

Importance: This feature accounts for difference in wages in the same trade. An efficient carpenter earns Rs. 50 per day as wage whereas less efficient one is willing to work even at Rs. 30 per day as wage.

(8) **Labour is Mobile:** Labour can move from one place to the other or from one occupation to the other. Land is immobile. Immovable capital, like factory premises, heavy machines are less mobile compared to labour.

Importance: It is because of mobility that equilibrium of demand for and supply of labour is maintained. Because of more demand for labourers at Bombay their wages begin to rise. Supply of labourers in U.P. and Bihar being larger than its demand, labourers from these states move to Bombay to earn higher wages.

(9) **Limited Supply of Labour in Short Period:** Supply of labour depends on two factors. That is on the number of labourers and their productivity. It takes lot of time to bring about a change in both of them. As such, supply of labour remains fixed in the short period. If demand for labour increases the short period it is not possible to increase its supply. Similarly, supply cannot be decreased if demand for labour falls suddenly. It leads to unemployment. Thus supply of labour can be increased only over the long period.

Importance: It is because of this characteristics that when demand for labour increases in the short period wages rise very high. With fall in demand for labour wages fall steeply. Seasonal variations in wages are due to this feature.

(10) **Wages and Supply of Labour are inversely related:** Normally supply of labour increases with increase in its wages but after a particular limit rise in wages does not evoke increase in labour supply rather it causes a fall in it. Rise in wages leads to better standard of living. Now all the members of family need not go in for work. Some members of the family can now earn as much income as all the members used to earn previously. Thus rise in wages after a particular limit does not stimulate increase in supply of labour. Supply of land remains the same with rise in its rent. Supply of capital increases with rise in rate of interest, but supply of labour falls with rise in rate of wages.

(11) **Weak bargaining power of the labour:** Labour is a perishable commodity. It cannot be stored for the future. Hence it has a weak bargaining power vis-a-vis its employer.

Importance: In order to make-up this weakness the labourers have to organise themselves in Trade Unions. These unions are an effective tool of collective bargaining. They bargain with the employer in a concerted manner.

(12) **Efficiency of the labour can be increased:** By investing capital in the training of labour their efficiency can be improved upon. Capital is invested in labour-resource in the form of better health, training, education etc. An individual can become skilled labourer, technician, doctor, engineer, architect, skill of labourers constitute human capital.

Importance: By improving his skill and efficiency a labourer can get his wages increased. India, lot of money is being spent on expanding technical training facilities to the labourers.

(13) **Labourers can take their own decisions:** A labourer can take his own decision. Labourer finds that the electric motor is over-heated he switches it off lest it should be burnt. Thus

applies his mind judiciously and takes wise decisions. Land and Capital can neither think nor take independent decisions.

Importance: It is an account of this characteristics that labour as factor of production has been further classified as organiser and entrepreneur. Labourers having sharp intellect and deep understanding join the ranks of organisers and entrepreneurs and take bold decisions. They also command attractive salaries and perks because of their talent and skill.

□ 5. Importance of Labour

A labourer is both producer and consumer. Labour has important role to play in almost all economic activities besides production. Classical economist Ricardo and socialist economist Karl Marx treated labour as the source of all value. Significance of labour is evident from the following :

(1) **Basis of Production:** Labour is an active and indispensable factor of production. Capital and organisation are the outcome of labour. You may have enough land, a tractor, seeds, tube-well etc. but if you do not have labour, you can produce nothing. On the contrary, a poor farmer owning small holding may produce good crop by dint of hard labour.

(2) **Basis of Consumption:** Labour is an human factor of production. All production is ultimately meant for satisfying his wants. According to Keynes, consumption is very much influenced by the size of income of the labourer. A labourer spends a large proportion of his income on consumption compared to a rich person. If labourers have large income they demand more goods, their standard of living rises, their efficiency improves. Consequently, production is increased and employment generated. More employment leads to higher national income, more consumption and again more production.

(3) **Basis of Exchange:** Labour is also the basis of exchange. A labourer cannot satisfy his wants all by himself. If he produces cloth, he depends on others for the supply of food, kerosene oil, footwears etc. He sells cloth and with the amount so earned he purchases goods that he needs from others. Thus labour is the main base of all exchange. Higher the purchasing power of the labourer greater will be the quantum of exchange.

(4) **Basis of Distribution:** Labour is also the basis of distribution. It is that economic activity which refers to the distribution of production among different factors. Share of factors out of the total production depends on their demand, i.e., marginal productivity, and supply. If the labourer is skilled and hard working he can turn barren land into fertile fields and thus increase their marginal productivity. Efficient workers handle machines carefully and thus help increase their productivity. By increasing total production, labour can increase its share out of national income.

(5) **Basis of Economic Development:** Skill and efficiency of labour promote economic development. Proper harnessing of country's natural resources depends on the efficiency of labour. New inventions are conducted by labour. These inventions add to the productivity of capital. Per capita income in Punjab is double that of Bihar mainly because of increased efficiency of Punjabi labourers. Efficiency, discipline and training of labour etc. go a long way in promoting the prosperity of a country.

In short, it has been aptly said by Marshall that from all points of view problems of consumption and production and problems arising out of their mutual relation, known as distribution and exchange are related to labour.

□ 6 Efficiency of Labour

Efficiency of Labour

Having successfully completed their training in a tailoring institution, Ram, Sham and Teja applied for job with a garment-making factory. Their employer gave them one sewing machine each of the same brand, some piece of cloth of the same variety and thread of same quality to test their stitching ability. Ram stitched three shirts, Sham and Teja two shirts of identical pattern each in eight hours. Ram was given the job as he was more efficient than Sham and Teja. He stitched one shirt more than Sham and Teja in the given time. Sham and Teja went to another factory. There again they were put to test by the employer. Sham and Teja stitched two shirts each in the specified period here also. Quality of stitching, and filling of Sham's shirts was superior to that of Teja's. Sham was given the job as he proved to be more efficient than Teja. No doubt both of them had stitched the same number of shirts in a given time but the quality of Sham's work was better than that of Teja's. Accordingly, efficiency of labour refers to the comparison in quantity and quality of the work done by different labourers under similar circumstances and same period of time. Efficiency of labour is, therefore, a relative term as we know of it only after comparing the work of different labourers.

Q7 What is Efficiency of Labour ?

Q 7 What is Efficiency of Labour ?

Efficiency of labour refers to the capacity or ability of labour to work and produce. Efficiency of labour can be judged from the quantity and quality of goods produced by the labour in a given time. When we say that a particular labourer is more efficient, then it implies that we are comparing his efficiency with the efficiency of another labourer. Efficiency, therefore, is a relative term. One can measure efficiency by comparing the ability to work of two or more labourers. Such a comparison is possible only when conditions of work, such as, machines, tools, raw materials etc. and duration of work are alike for the labourers concerned. Under same conditions and same time, that labourer will be more efficient who produces more units of a commodity of a given quality. Accordingly, three things are kept in view while comparing efficiency i.e., (a) conditions of work and time-period of work ; (b) quantity and (c) quality of production.

Definitions

Main definitions of efficiency of labour are as follows:

(i) According to Prof. J.K. Mehta, "By efficiency of labour is meant the ability of labour by virtue of which it is producer."

(iii) In the words of **Dr. R.C. Saxena**, "By efficiency of labour we mean the amount of work which a labourer can do within a given time. In other words, the word efficiency denotes the capacity of a labourer to more or better work in a given time."

□ 8 Factors governing the Efficiency of Labour

There are several factors determining the efficiency of labour. According to **Thomas**, "Efficiency of labour is chiefly governed by two factors : (i) individual ability of the labourers (ii) ability of organisation and management." According to **Penson**, efficiency of labour depends partially on employers, partially on labourers, partially on organisation, partially on individual efforts, partially on skill and effort. Factors determining the efficiency of labour are as follows:

(i) **Racial qualities:** Workers belonging to different races have different efficiency. Each race has its own qualities. In India, labourers from Punjab, Haryana and Rajasthan are physically stronger than those from Bihar, Jharkhand and West Bengal.

Physical Qualities: Efficiency of labour is ^{dependent} upon the labourers from Bengal and Tamil Nadu. Hence they become good soldiers. Bengalis and Madrasis are mentally Sharp and so become good administrators.

(ii) Hereditary Qualities: Efficiency of labour is very much influenced by heredity.

(ii) Heredity.—Influence of the hereditary qualities, that is, the traits inherited from parents and grand-parents. Offsprings of healthy and intelligent parents are normally healthy and intelligent. Children of a skilled carpenter or weaver can prove to be more skilled carpenter or weaver.

(iii) **Climate:** Efficiency of labour is also affected by the climate. Extremely cold and extremely hot climate affect efficiency adversely. That is why labourers of Siberia and Africa are less efficient. Temperate climate is very congenial to efficiency. That is the reason why labourers of U.K. and U.S.A. are more efficient.

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(v) **General Intelligence:** Efficiency of a worker depends on his general intelligence. A worker with general intelligence understands his work quickly. He handles machines carefully and allows less wastage of raw material. He performs his duties in a responsible manner. There is no need of supervising him.

(vi) **Education:** Education plays an important role in increasing the efficiency of labour. Education is of two types: (a) general education (b) technical education. General education develops general intelligence whereas technical education enables a worker to operate complex machines. He specializes in a particular trade and this adds to his efficiency.

(vii) **Moral Qualities:** Efficiency of labour is also influenced by the moral qualities possessed by labourer. If he is honest, self-confident, responsible and works with a spirit of dedication, then he must be efficient in his job.

(viii) **Mobility of Labour:** If a labourer does not stick to a particular job or place but changes the same too often then he cannot gain experience of any trade. This adversely affects his efficiency.

(xi) **Wages:** If a labourer gets fair and high wages, his standard of living will be high. He must get wages regularly. There should not be illegal and improper deduction from his wages, otherwise he will remain disgruntled and thus will not work.

(x) **Hours of Work:** Long hours of work also affect efficiency adversely. Short hours of work coupled with proper rest decidedly add to efficiency.

(X) **Conditions of Work:** If the place of work is clean and airy, there is proper arrangement of atmosphere is calm and peaceful then all these will have a salutary effect on the efficiency of a worker. Such an atmosphere helps the labourer concentrate on his work. There should be proper

... atmosphere help the laouourer concerned to make arrangements to protect the workers from dangerous machines, gases, chemicals etc. Dirty and unhealthy atmosphere reduces the efficiency of labour.

Industry work -com or Work: If the worker gets sufficient lauree the employer pesters him too much and interferes in his work, then the efficiency of the labourer goes down.

QUESTIONS

1. What is labour ? Explain the peculiarities of labour and its kinds.
2. Define labour. Explain its peculiarities. Also discuss their effects on wages.
3. What factors go to determine the efficiency of labour ? What do you know about the efficiency of Indian labour?
4. What do you mean by efficiency of labour ? Why is the efficiency of Indian labour low?
5. What is efficiency of labour ? What are the factors on which efficiency of labour depends?

CAPITAL

Q 1. What is Capital ?

Capital is an important factor of production. In common language we do not make any distinction between wealth, capital, money etc. Goods included in capital are wealth but wealth and capital are not synonymous terms. In economics, that part of wealth is called capital which is used for the production of more wealth or income.

Accordingly, all productive goods, like machines, a building to let, savings in banks etc. are called capital. "Capital is that part of wealth which helps in production." Whether a good be treated as capital or not depends on its use. A good which is capital at one place, may be wealth at another place, time or situation. An electric fan in the house is a wealth but a fan in the given a cinema house is a capital. Coal in a factory is capital. A comb in your pocket is a wealth but in a hair cutting saloon it is capital. Capital is the result of man's effort. Capital consists of two things : (i) Physical capital, like moveable property seeds, fertilizers, business capital like goodwill of the firm etc and (ii) Financial Capital like, bonds, shares etc. Accordingly, that part of wealth produced with the co-operation of man and nature, is called capital which is used for the production of further wealth, e.g; seeds, manure, machine, tractor etc.

Thus capital has two main elements : (i) Capital is a part of wealth produced by man with the help of nature (ii) It is that part of wealth which is used for re-production.

O (1) Definitions

Main definitions of capital are as under :

(i) **Marshall has defined it in these words**, "Capital consists of those kinds of wealth other than free gifts of nature which yields income."

(ii) **According to Chapman**, "Capital is wealth that yields income or aids the production of an income or it intends to do so."

(iii) **In the words of Bohm Bawerk**, "Capital is produced means of production."

(iv) **In the words of Thomas**, "Capital forms part of that wealth of individuals and communities other than land which is used to assist in the production of further wealth."

O (2) Features of Capital

Main features of capital as a factor of production are as follows :

- (1) **Man-made factor**: Capital is produced by man by saving wealth. So it is also called self-labour. Like land it is not a free gift of nature. That wealth which is put for some productive use income is called capital. Thus man is the producer of capital.

(2) Secondary Factor of Production: Like land and labour, capital is not a primary factor of production. Production of wealth is possible even without it. In olden times man arranged for his food with the help of his bare hands and without any assistance of tools and equipment, i.e. capital.

(3) Capital is transferable: Capital can be transferred from one person to the other or from one place to the other. Mr. Mohan can sell his textile mills to Mr. Sohan.

(4) Depreciation: Constant use of capital leads to its depreciation. Some capital assets depreciate quickly others gradually. All this depends on their durability. Thus capital equipments i.e.; machines, tools etc. have got to be replaced sooner or later.

(5) Capital is mobile : Of all the factors of production capital is most mobile. It can be moved from one occupation to the other and from one place to the other easily.

(6) Passive Factor: Capital is a passive factor of production. It can produce nothing without the help of labour. In modern times with the increasing use of automatic machines, dependence of capital on labour has decreased.

(7) Rapid change in Supply: Compared to other factors of production, supply of capital can be easily increased or decreased. Supply of land cannot be enhanced and that of labour cannot be easily increased.

(8) Capital is not a free gift :- Individual and the society both have to toil hard and make sacrifices in order to accumulate capital. It is not a free-gift like land. It is man-made and not a free-gift like land.

(9) Capital depends on the use of wealth: Capital is composed of wealth but all wealth is not capital. Whether wealth will become capital or not depends upon its use. If wealth is used for further production of wealth or income it is called capital. A car used as a taxi is a capital because it serves as a source of income but a car used as a joy ride is a wealth.

(10) Capital is the result of Savings: Capital is the outcome of savings. That part of wealth which is not consumed is called savings. This saving when used in productive activities is called capital.

□ 2. Difference between Capital and other related concepts

In common parlance the terms wealth, capital, income, money etc. are used in more or less the same sense. Often we say that such and such person is a capitalist or a wealthy man. His income is large or that he has lot of money. Thus all these terms are treated as synonymous. In economics, however, these terms have different meanings. Their difference is explained in the subsequent paragraphs.

○ (1) Capital and Wealth

In economics, capital and wealth are two distinct entities. Capital is that part of wealth which yields income. A motor-car is a wealth. If it is plied as a taxi, it becomes capital. If the purpose behind the use of car is a joy ride and not to earn any income it will be a wealth. It is therefore aptly said, "All capital wealth but all wealth is not capital." Only that wealth is called capital which is used for earning income. Taxi in the kitchen is a wealth but in a restaurant it is a capital. A house is a wealth but if a part of it is rented out then that part constitutes capital. Accordingly, difference between wealth and capital depends upon their use. That part of wealth will be treated as capital which is used for further production of income. Real capital refers to those goods which are used for the production of other goods and services. Upon their use. That part of wealth will be treated as capital which is used for further production of earning income.

○ (2) Capital and Income

There is difference between capital and income. Capital is a means and income is an end. Use of capital results in income. Income is the result of investment of capital. To the owner of a taxi, his vehicle is a capital and the hire he charges is the income. Capital is a stock while income is a flow. For instance, the price of your taxi on 1st January 1995 was Rs. 80,000 and you got a hire of Rs. 3,000 p.m. on it, then it will be said that your capital on 1st January 1995 was Rs. 80,000 and income Rs. 3,000 p.m. Capital is a part of your total wealth, the gain out of the use of the wealth is called income. Income is not earned by capital alone. It is also earned by land and labour. In the words of Fisher, "Capital is a stock and income is a flow. Capital consists of wealth and income consists of benefits."

○ (3) Capital and Money

Money is only a part of capital. Besides money, capital consists of other material goods as well, e.g., machines, raw materials, buildings etc. All money is not capital. That part of money is called capital which yields income, as money given in loan for the consideration of interest. You have five thousand rupees with you. Out of this amount you lend Rupees two thousand to earn interest. This sum of Rupees two thousand will be treated as capital while the remaining sum of Rupees three thousands lying in your minar will be mere money and not capital.

○ (4) Capital and Land

Economists hold different opinions with regard to the distinction between capital and land. Some economists are of the view that land and capital are two independent factors of production; while others maintain that there is no difference between the two. We study both the opinions as follows:

(i) Land and Capital are different factors :

According to Dr. Marshall, Cairncross etc. Land capital have following differences : (1) Capital is man-made whereas land is a free gift of nature. Land is not mobile but capital has mobility. (3) Land is imperishable but capital is perishable. (4) Supply of land is fixed but supply of capital is variable. (5) Society has not to incur any cost to obtain land but to obtain capital both individual and society have to incur cost.

(ii) Land and Capital are not different : According to Prof. Seligman, Benham, Clark, Fisher because of the following similarities land and capital need not be treated as different factors — Man adds to the productive power of land, as such, land is also man-made. (2) Like capital, land is so mobile in the sense that it can be transferred from one use to the other. (3) An individual has to incur cost to obtain land in the same way as he incurs cost to get capital.

In spite of the above similarities between land and capital, it must be acknowledged that there are some differences between the two. India has more land than Japan but Japan has more capital than India. Property, therefore, demands that the two should be treated as independent factors of production, according to Prof. J.K. Mehta, Wicksteed etc. there is no basic difference between the two.

3. Classification of Capital

On the basis of its use, ownership etc; capital can be classified as under:

Capital is mainly of two types :

(i) Real Capital (ii) Financial Capital.

○ (i) Real Capital

Real capital refers to those goods which are used for the production of other goods and services. Real capital can be of the following kinds.

(1) **Fixed Capital** : It is that capital which can be used many times in producing goods. It is durable in nature. It yields income again and again for sometime. Machines are used again and again in workshops. A surgeon uses his tools again and again. A tailor makes use of his sewing machine for many years. Accordingly, machines, tools, factory buildings etc. are the examples of fixed capital.

(2) **Circulating Capital** : It is that capital which is used up after one application. Fertilizers used in fields are the example of circulating capital. Cotton in a textile mills is a circulating capital. Ink used in printing books cannot be used again. Such a capital changes its form in one use. Accordingly, raw material, electricity, coal etc. are the instances of circulating capital. It is of two types : (a) **Working Capital**, (b) **Loanable Capital**.

(3) **Floating Capital** : Floating capital is that capital which can be used for several purposes by several industries. Money can be used for any purpose. Electricity can be used in any industry. Lenses can be used for making shoes, belts, hand bags, suit cases etc. Thus, money, electricity, different materials are instances of floating capital.

(4) **Suck Capital** : Suck capital is that capital which is adopted to only one use. Printing machine can be used only for printing purposes. Railway lines are used for plying railway coaches alone.

(5) **Material Capital** : In the words of Thomas, "Material capital consists of objects which exist in concrete and tangible form and are capable of being transferred from one person to another." You can see and touch a machine or a factory building. You can also transfer the same in favour of another person. Accordingly, machine, factory building, raw material etc. constitute material capital.

(6) **Personal or Non-Material Capital** : Personal or non-material capital is that which cannot be seen or touched. It includes those qualities of a man which promote his efficiency. It cannot be transferred from one person to another. In the words of Thomas, "Personal capital comprises all those energies through which these qualities contribute to make people efficient." It consists of those personal qualities of man which help him earn income. It cannot be transferred. Melodious voice of a singer, ability of a teacher, skill of a doctor etc. are examples of personal or non-material capital.

(7) **Production Capital** : According to Marshall, "Production capital refers to that capital which helps production in aid of labour in production." Production capital refers to that capital which helps production in a direct manner e.g. machines, tools, raw material, etc.

(8) **Consumption Capital** : In the words of Marshall, "Consumption capital consists of all goods in a form to satisfy wants directly." Good and balanced diet to the labourer increases the efficiency of labour. He will work with vigour and enthusiasm. Good airy houses, nourishing food etc. are examples of consumption capital. All these increase the efficiency of labour and thus helps in increasing his earning capacity.

(9) **Remunerative Capital** : Wages or salaries paid to labourers and other employees consist of remunerative capital.

(10) **Auxiliary Capital** : Capital with whose help a labourer produces economic goods is called auxiliary capital. Tools, implements, machines, raw material etc. are examples of auxiliary capital.

(11) **Private Capital** : That capital which is owned by an individual or some individuals is called private capital. It is of two types : (a) **Individual Capital** which is owned by one individual e.g., factory premises or a cinema house or a tubewell owned by a person. (b) **Collective Capital** which is owned

by some persons jointly e.g. a factory run by a partnership firm or a transport company run by a joint family etc.

(12) **Public Capital** : Capital owned by the government is called public capital. Income out of workshops goes to state exchequer. Bhakra Dam, Haryana Roadways, Nangal Fertilizer Factory etc. are examples of public capital. Accordingly, public sector industries, nationalized transport, Indian Railways etc. are examples of public capital.

(13) **Social Capital** : Capital owned by the entire society is called social capital. It benefits all the members of the society. Hospitals, Schools and colleges etc. are examples of social capital.

(14) **National Capital** : Term national capital is used in two senses : (1) It is that capital which is owned collectively by the entire nation e.g., national highways, Indian Railways etc. (2) It is the aggregate of private and public capital. Factory premises of private and public sector industries are examples of national capital.

(15) **International Capital** : When two or more than two nations own a capital, it is called international capital. Kosi Project is a joint project of India and Nepal. It is an international capital.

O (ii) **Financial Capital**

It is that capital whose ownership yields but, as it is, it does not produce anything. It is in the form of paper claims or titles. It has many forms, the most prevalent being, shares, bonds, debentures etc.

of financial capital represents ownership titles and claims over real capital. It is not real capital in itself. Here shares represent your assets and company's liabilities. So these shares have no effect on national capital. As a matter of fact, financial capital is a stored purchasing power. That can buy goods and services. Institute part of the capital of the entire society. Supposing you hold shares worth Rs. 2,000 of a company. Tata Iron & Steel Company are examples of financial capital; but the factory building, machines, tools of Tata Iron and Steel company represent real capital. If the share certificates of Tata company are lost by share-holder, the production of Steel will not be affected at all. The company will continue its production process. Similarly, money (currency notes) also represents financial capital. It is an asset of the holder of financial capital but liability of the government or the bank who issues it. These assets and liabilities are equal. As currency notes but this will not increase real capital.

In short, financial capital refers to those paper titles which yield interest, dividend and help generate income. Its loss or destruction does not affect production process adversely.

4. Functions and Importance of Capital

Prior to independence, regions now representing Punjab, Haryana and Himachal Pradesh constituted poor regions of India. Forty years after independence, these regions are ranked among the richest countries. It is because these regions have made efficient investment of capital. Capital plays an important role in accelerating the rate of economic growth. Present economic progress of the world is mainly due to large investment of capital and improved technique. Those countries in the world which have large supply of capital. Those countries are rich countries in the world which suffer from the

deficiency of capital. Capital is the most important factor of production. Capital is the corner stone of modern production system. Capital plays the following important role in the modern production system:

- (1) **Basis of Production** : Capital is the basis of all types of production. It is capital that provides raw material (ii) machines and tools and (iii) wages to labourers in industries and agriculture etc.
- (ii) not possible to produce anything without capital.

(2) **Basis of Efficient Labour** : Capital renders labourers efficient in two ways. Firstly, capital invested in general education, health, training etc. of the labourer adds to his skill. Secondly, by making use of good and modern tools and machines the labourer can augment his productive capacity. A peasant cannot produce anything without plough, pair of bullocks, seeds, manures etc. A fisherman can catch fish if he is equipped with big net and boat. Capital, therefore, is the basis of efficient labour.

(3) **Basis of modern system of production** : Modern system of production is a round about system of production. Before making any thing, it is necessary to produce its raw material and tools etc. Then alone its production become feasible. In olden times people used to cover their bodies with the bark of the trees. To-day, they first manufacture textile and sewing machines and with their help they stitch shirt to wear. In present day world mere land and labour cannot produce much.

(4) **Basis of Transport** : Economic activity does not come to an end with the production of goods. The goods produced must be transported to market for disposal and raw material must be forwarded from manufacturing industries. This is done through different means of transport, viz; railways, trucks, steamers etc. It is capital again that makes means of transport available.

(5) **Basis of Technical Progress** : Capital makes technical progress possible and stimulates new inventions. Capital is needed to put the inventions to practice. Technical progress and new inventions increase the productivity of labour. Cost of production goes down, goods are sold at low price. The size of market is enlarged. Thus capital is the main source of technical progress.

(6) **Basis of Trade** : Expansion of internal and foreign trade also depends on capital. Large scale production is made possible by the use of capital. Large scale production implies low cost of production and low price of the finished product. Thus demand increases tremendously. Capital also makes possible wide publicity of the goods produced. In advanced countries manufacturing concerns spend millions of dollars on making and advertising. Multinational companies like Bata, Lever Brothers, Coca Cola etc. invest huge amount of capital in foreign countries and thus expand their trade.

(7) **Basis of Credit** : Credit is the backbone of trade and industry. Expansion of credit facilitates expansion of trade. Credit itself depends upon the amount of capital. Traders who have large capital resources command good deal of credit in the capital market. If the capital invested in your factory building machines and other equipment amount to Rupees ten lakhs, you may procure credit worth Rupees seven lakh on its basis from any financial institution. Capital thus serves as a basis of credit.

(8) **Basis of Employment** : Level of employment in a country depends on the development of industry, agriculture, transport etc. These sectors of production can be developed with the help of capital. Thus employment opportunities are generated by the availability of capital.

(9) **Basis of Economic Development** : Economic development implies increase in production capacity and rise in per capita income. Production capacity cannot be increased without capital investment and setting up of industries. Higher stage of economic development is made possible by capital formation alone. Stock of capital is an index of a given stage of economic development in a country. Fredrick List has mentioned five stages of economic development:

- (i) Hunting and Fishing Stage
- (ii) Pastoral stage
- (iii) Agricultural stage
- (iv) Industrial stage and Commercial stage. Each successive stage of economic development is more capital intensive. Compared to agriculture, commerce needs more per capita investment of capital. A country with vast capital resources is capable of attaining highest stage of economic development. Capital formation is an important determinant of economic development.

(10) **Basis of Economic Efficiency**: Economic efficiency refers to efficient utilization of factors of production so that maximum output is obtained at minimum cost. Capital is the main basis of economic efficiency. It makes specialization or division of labour possible, that increases productivity of labour. Productivity of land increases and improved technique can be used. Consequently, factors are utilized efficiently.

(11) **Basis of Economic Welfare** : Economic welfare is maximum when per capita real income and living standards are very high and income of the people is equitably distributed. Capital by increasing the rate of economic development leads to increase in per capita income. If proper monetary and fiscal policies are adopted by the government there will be equitable distribution of income. Capital therefore helps promote economic welfare.

In short, capital is the life and blood of modern business. It is the main basis of economic development. Neither the natural resources can be developed nor the efficiency of labour can be improved upon without capital. Improved technique cannot be made use of without capital.

□ 5. Efficiency of Capital

Increased production does not depend upon the quantity of production alone it requires efficient capital. Efficiency of capital refers to that quality of capital by virtue of which it produces goods of improved quality in large quantity. Efficiency of capital is influenced by the following factors :

(1) **Suitability**: Efficiency of capital depends upon the fact whether it is suitable for the use to which it is being put or not. If a textile mill is to produce thousand metres of cloth per day, then it must install large power looms. A small hand-loom will not be suitable for the purpose.

(2) **Method of Use** : Efficiency of capital is also determined by the method of its use. If the labourer is fully competent to operate a machine he can produce maximum output by its use. If he does not know how to handle it, he cannot produce much with its help.

(3) **Ability of the Organiser** : Efficiency of capital also depends upon the ability of the organiser. An able organiser puts machines in the charge of competent labourers. This will add to the efficiency of machines.

(4) **Quality of Capital** : Efficiency of capital is also determined by its quality. If capital, that is, machines etc. is of high quality, production will be more. If, on the other hand, machines are obsolete and of poor quality then production will be very little.

(5) **Quality of Raw Material** : Use of high quality raw material adds to the efficiency of capital.

(6) **New Inventions** : New inventions help increase productive capacity of capital. There is better utilization of capital and cost of production goes down.

(7) **Proper Co-ordination** : Due to division of labour, work can be divided into many processes and sub-processes. If each process is not attended to with equal efficiency, total production will be less. For example, the work of manufacturing of motor-cars is divided into different departments.

If the department making wheels is less efficient than other department there will not be balance in the operational efficiency of different departments. It will result into high cost of production of motor-cars.

(8) **Conditions of Production** : If there is peace and order in the country, production will be conducted smoothly and the volume of production will be very large. Under disturbed conditions due to defective policies of the government the level of production will fall low.

In short, efficiency of capital largely depends on suitability of capital, ability of the organisation, the labourers.

□ 6. Accumulation of Capital or Formation of Capital

Capital formation has great significance for the economic development of every under-developed country of the world. Other things being equal, higher the rate of capital formation greater will be the rate of economic development.

That part of income which is not consumed is called saving. If we spend our saving on increasing the stock of machines, tools, factory buildings, raw material etc; such a spending is called investment. As a result of investment formation of capital goods takes place, or capital is increased. Increase in the stock of capital is called capital formation.

Capital formation, therefore, refers to increase in the net stock of machines, tools, social overheads and productive skills of man. It is made possible by investing the savings. Accordingly, volume of capital formation is equal to net investment.

○ (1) Definitions

Capital formation means net increase in the stock of capital every year, that is, use of saving increasing the net stock of machines, raw materials, factory buildings etc.

(i) In the words of **Nurkse**, "The meaning of capital formation is that society does not apply the whole of its current productive activity to the needs and desires of immediate consumption, but directs part of it to the making of capital goods, tools and instrument, machines and transport facilities, plant equipments."

(ii) According to **Benham**, "The amount a country adds to its capital during a period is known as the capital formation during that period."

$$\text{Capital Formation} = \text{Postponed consumption} = \text{Saving} = \text{Investment.}$$

□ Factors Affecting Capital Formation

Capital formation is affected by these factors :

- (1) Volume of Saving (2) Mobilization of Saving (3) Investment of Saving.

Comprehensive study of all three factors affecting capital formation will be of immense use.

(1) Volume of Savings

Larger the volume of savings in a country greater will be capital formation. Volume of savings depends upon three things.

- (A) Power to Save (B) Willingness to Save (C) Facilities to save.

○ (A) Power to Save

Power of a nation or an individual to save depends on the difference between income and expenditure. Higher the income of an individual than his expenditure greater will be his power to save.

Power to save on the part of the people of a country depends upon two things : (1) National Income and (2) Standard of living of people.

○ (B) Willingness to Save

Willingness to save is as much essential as power to save to accumulate capital. A poor person has a very low capacity (power) to save but if he has a strong 'will' to save, he will succeed in saving, however little it may be. On the other hand, a rich person has a big power to save but if he has a weak 'will' to save, he may not be able to save anything. Willingness to save depends upto the following factors :

- (i) Peace and Security (ii) Taxation Policy (iii) Purchasing power of money (iv) Capable Entrepreneurs

○ (C) Facilities to Save

Volume of savings also depends upon facilities to save. If people have power and willingness to save but lack facilities to save, then there can be no savings. Following facilities are conducive to save :

- (i) Peace and Security (ii) Taxation Policy (iii) Purchasing power of money (iv) Capable Entrepreneurs

○ (2) Mobilisation of Savings

Unless savings are invested in some productive channel, capital cannot be accumulated. It is therefore, necessary to mobilise small savings effected by numerous small savers. Financial institutions in the country do the job of mobilizing savings. If the number of banks, cooperative credit societies, post office saving banks, insurance companies, investment trusts and other financial institutions, is large in the country there will be large scope for capital formation. Monetary policy and taxation policy of the government should also be favourable and generous.

○ (3) Investment of Savings

Mere saving does not result into capital formation. It must be invested somewhere. It must be invested in such activities as are conducive to the production of wealth. For example, investment in a new business, purchase of shares of a new company, installing of new machines, construction of factory premises part of it to the making of capital goods, tools and instrument, machines and transport facilities, plants etc.

□ Factors Influencing the Investment

Entrepreneurs make investment in the private sector with the motive of earning profit. Future expectations of profit are normally uncertain. So the volume of investment is subject to variation. An entrepreneur will make investment in a new enterprise upto that extent where the expected profit from new investment is equal to the rate of interest paid on that investment.

(1) **Comparison between MEC and Interest** : The amount of profit expected from the use of more unit of new investment is called marginal efficiency of capital (MEC). If the amount invested is borrowed from others then the investor has to pay interest on it. On the contrary, if the investor has his own funds which he uses in buying government securities, bonds etc. instead of investing it in some business, he earns an interest thereon. Every entrepreneur at the time of making new investment compares the marginal efficiency of capital with the rate of interest. He will go on making new investment until the marginal efficiency of capital is equal to the rate of interest.

(2) **Technological Advance and Innovations** : Inducement to invest is very much influenced by technological advancement and innovations. For instance, during the last five decades technological changes in the world has induced large-scale investment in new machines and industries.

(3) **Maintenance of Machinery and Operating Costs** : While calculating expected profitability, entrepreneur takes into consideration supply price of the machines and cost likely to be incurred to

maintain their operational efficiency. If these costs are high, net profit will be less and this will discourage inducement to invest and if these costs are low net profit will be high and inducement to invest will be more.

(4) **Government policies** : Taxation policy of the government also influences inducement to invest. High rates of taxes escalate the costs of the producers and lower the rate of expected profit or MEC causing fall in the level of investment. If, however, taxes are light, investment will be encouraged.

(5) **The present stock of Capital Goods** : Amount of investment also depends on existing stock of capital goods i.e., machines, equipments etc. If in an industry the existing stock of capital good is large scope for new investment will be large.

(6) **Expectations** : Inducement to invest also depends on business expectations. If, in the present business conditions are good the businessmen will turn optimistic about future and be willing to invest more. If existing business conditions are not so cheerful the businessmen will have a pessimistic view of the future expectations and it will cause fall in the level of investment.

(7) **Rate of Population Growth** : If population of the country is rising by leaps and bounds there will be demand for new houses, schools, public parks, hospitals, roads, all types of furniture, varied consumer goods etc. will multiply. To meet this ever increasing demand there will be need for new investment.

(8) **Territorial Expansion** : If new colonies and townships are being built up to accommodate increasing population then huge private and public investment will be called for.

(9) Aggregate Demand

If aggregate demand in the country is quite large then all manufacturing units in the country will produce goods upto their full production capacity. Their profits will look up thus inducement to invest brighten up.

In short, capital formation has great significance to every country. It depends on saving and investment.

QUESTIONS

- Define the term Capital. Explain its characteristics. Also distinguish it from Wealth, Money and Income.
- Discuss the nature of capital. Which of the following is capital and why : (1) Jewellery, Bank locker (2) An air conditioner in your bed room. (3) A sickle with the grass cutter. A sofa set in a Restaurant.
- Define Capital. Distinguish it from Wealth. Discuss the importance of capital in the system of production.
- Define Capital. How is capital accumulated ?
- What is Capital formation ? Account for the factors responsible for the low rate of capital formation in an under-developed country.
- What is capital formation? What are the factors which influence it? Why is it low in India?
- Give the meaning of capital formation. Bring out the factors which affect capital formation in a free enterprise economy.
- Explain the concept of capital formation and explain the factors that influence it.

14

ENTREPRENEUR

1. Who is an Entrepreneur ?

In modern age, significance of entrepreneur as a factor of production has increased manifold. Entrepreneur is a chief human factor of production. Classical economists made no distinction between an entrepreneur and an organiser. In those days scale of production was not so large. The person who invested capital also organised the production and took the risks. Since the inception of joint stock companies, the functions of organisation and risk-taking are being performed by different persons.

Prof. Schumpeter regards entrepreneur as the main factor of production. Entrepreneur is that person who takes decision regarding what to produce, how to produce, where to produce and for whom to produce. He mobilises other factors of production namely, land, labour, capital, organisation and initiates production process. He is responsible for the loss if any, and the profit. It means he is to bear the loss and he alone is to pocket the profit and this is what is called taking of risk on his part. He is to bear all uncertainties involved in the enterprise. In India, Birla, Tata, Modi, Singhania are big entrepreneurs. In short, entrepreneur is a person who takes all economic decisions and also bears all risks of the enterprise.

1.1 Definitions

Some main definitions of an entrepreneur are as follows :

- In the words of **Knight**, "An entrepreneur is a person who performs dual function of risk-taking and control."
- According to **Schumpeter**, "Entrepreneur is associated with innovations."
- In the words of **Whitehead**, "The entrepreneurs are the owners of the business who contribute the capital and bear the risk of uncertainties in business life. They may be sole traders, limited partners and shareholders."
- In the words of **Vera Anstey**, "Entrepreneurs are the individuals or firms including government who take decisions by promoting and organising projects. They bring together the various factors of production. They are willing to bear financial risks involved."
- According to **Whitehead**, "Whoever is responsible for the policy of a firm and bears the uncertainties of economic life is called an entrepreneur."

2. Functions of an Entrepreneur

Main functions of an entrepreneur are as follows :

- Entrepreneur bears risk** : Every entrepreneur has to take risks. These risks are of two types : (i) Certain Risks: Risks like fire, theft, accident etc. are certain risks which can be foreseen and also

forestalled. A farsighted entrepreneur escapes these risks by getting his premises, machines, equipment etc. insured against fire, theft, sabotage etc. So these risks no longer remain risks of the entrepreneur. These risks relate to change in demand. Today, the production process has become quite roundabout. Production is undertaken in anticipation of demand. There is a time-lag between production and rate of the product. During this time interval demand may undergo change to the disappointment of the producer; tastes of the consumers may change. These risks are invariably borne by the entrepreneur himself. The basic feature of an entrepreneur according to Knight, is that he has to encounter uncertainties.

(2) **Entrepreneur manages business and takes decisions** : Another function of the entrepreneur is to control and manage his business. The pattern of this function varies with the nature of enterprise.

In a joint-stock company, the job of management is done by paid managers whereas policy regarding management is framed and controlled by the directors.

(3) **Entrepreneur chooses the business** : The first task of the entrepreneur is to select the business. There are hosts of industries in the world. He has therefore to decide, first of all, which industry he wants to set up: for instance, textile industry, leather tanning, paper manufacturing, machine tool, computer software etc. He must be aware of the position of demand for and supply of various industrial products produced in the country. He must also be in the know of various facilities made available by the government to different industrial units.

(4) **Entrepreneur makes a selection of product** : After making a selection of the industry, he has to decide about the particular product of the industry that he wants to produce. For example, in textile industry, he has to decide whether he wants to produce cotton cloth, silk or woolen cloth.

(5) **Entrepreneur chooses the size of the plant** : Entrepreneur also decides about the size of the plant he is going to install. Whether he is to set up one unit or multiple units; one shop or several shops in different parts of the state or region or country. This decision of the entrepreneur is influenced by the size of the demand for product.

(6) **Entrepreneur chooses place of Production** : Entrepreneur is also to decide about the place or places of his work. In taking this decision he is influenced by the availability of raw material, labour capital etc; market potential of a place, government policy regarding development of a particular place etc.

(7) **Entrepreneur organises Sales** : Entrepreneur is not concerned with the production of goods alone. He is to ensure their sales as well. Every entrepreneur has to face tough competition from his rivals. He has to organise marketing and advertising of his products. He has to conceive subtle ways and means to push the rate of products. He may have to introduce tempting gift schemes to attract large clientele.

(8) **Entrepreneur promotes New Inventions** : He encourages innovations. Plans late techniques of packing, salesmanship, advertising etc. Consequently, cost of production per unit falls. He may plan import-substitutes or alternative sources of energy i.e., bio-gas, thermal gas etc.

(9) **Entrepreneur Co-ordinates** : An entrepreneur is also to coordinate the work of different factors of production, i.e., land, labour, capital so as to combine them in an ideal ratio.

(10) **Entrepreneur arranges the raw material** : An entrepreneur must procure best quality material at competitive price.

(11) **Entrepreneur arranges the machinery** : An entrepreneur arranges machines for production and ensures their proper running and maintenance. These machines must be handled by skilled labourers. The entrepreneur must himself have knowledge of operating the machines.

(12) **Entrepreneur employs labourers** : An entrepreneur not only employs labour but also distributes work among them according to their ability and competence. He supervises their work and also inspires them to do hard labour. He ensures that all workers work as a team in a cordial atmosphere.

(13) **Entrepreneur decides relation with Competitors** : In real life, an entrepreneur has to compete with many competitors. Manufacturers of Dalda Vanaspati ghee have to face the competition of Path Vanaspati ghee. Obviously, while fixing the price of Dalda its manufacturers will keep the price of Path in view.

(14) **Entrepreneur decides relation with Government**

In present times, government has been taking active part in economic activities. Private entrepreneur also comes in control with the official agencies. An entrepreneur has to deal with various government departments like, sales tax, labour, electricity, export-import, railways etc.

(15) **Entrepreneur distributes the Rewards** : It is the entrepreneur who distributes the rewards among the factors of production for their contribution to the production process. He pays rent to landlord, wages to labourers and interest to the capitalist.

3. Difference between Entrepreneur and other Human Factors

In economics all activities of a man, whether mental or physical, that are undertaken to earn wealth are called labour. Question therefore arises what is the difference between a labourer and an entrepreneur or an organiser and capitalist. They are regarded as separate factors of production because of the following differences :

(1) Difference between Labourers and Entrepreneurs

Many economists treat entrepreneur as a higher form of a labourer. According to them, entrepreneur is a mental labourer of high degree. But following differences are found between the two :

(i) **Nature of Work** : Nature of work of an entrepreneur is much different and comprehensive than that of a labourer. Labourer performs certain specific functions while an entrepreneur has to attend to all kinds of jobs from selection of occupation to the sale of the product.

(ii) **Nature of Risk** : A labourer has not to take any risk pertaining to the business. A labourer gets not only reward for his labour in the form of wage but that wage is pre-determined. An entrepreneur takes diverse risks and yet there is not certainty of earning any profit.

(iii) **Availability of Income** : Labourers get their wages after a specific period, irrespective of the sale of the product. But the entrepreneur gets his profit if any, only on the sale of his products.

(iv) **Mobility** : A labourer is more mobile than an entrepreneur. A labourer can change his work place easily, but an entrepreneur cannot change his occupation or place of work with that ease.

(2) Difference between Entrepreneur and Capitalist

Entrepreneur and Capitalist are two separate entities. Their main differences are :

(i) **Nature of Work** : A capitalist's function is to lend his capital. He is a creditor. An entrepreneur

(ii) **Element of Risk** : An entrepreneur takes all risks concerning the enterprise. He is answerable for all profits and losses. A capitalist is not concerned with the profit and loss of the enterprise. He is

defected in his capital and interest thereon.

O (3) Difference between Entrepreneur and Organiser

Classical economists like Dr. Marshall and others made no distinction between an entrepreneur and an organiser. However, modern economists treat them as separate functionaries.

(i) **Nature of Work**: An entrepreneur's function is to set up an enterprise and take all risks involved in it. Function of the organiser is to manage efficiently the affairs of the enterprise. He carries out instructions of an entrepreneur.

(ii) **Nature of Risk**: An entrepreneur is responsible for profit and loss of the concern but not an organiser. The latter gets his pre-determined salary at the stipulated time.

(iii) **Nature of Business Organisation**: Functions of an entrepreneur and an organiser are very different. In a joint-stock company entrepreneurs as shareholders are numerous and scattered all over the country. In a joint-stock company, functions of an organiser are performed either in partnership, but in case of a cooperative society entrepreneurs as shareholders are numerous and paid efficient managers or managing directors.

□ 4. Who is an entrepreneur in the following enterprises ?

- (a) Bhilai Steel Plant — Union government is its entrepreneur.
- (b) Dalima Biscuit Factory — Shareholders are the entrepreneurs of this enterprise.
- (c) A cooperative Sugar Mill — Members of the Cooperative Society are the entrepreneurs of enterprise.
- (d) Tata Iron and Steel Company — All shareholders are its entrepreneurs.
- (e) Nangal Fertilizer Factory — Government is its entrepreneurs.
- (f) Delhi Cloth Mill — All shareholders are its entrepreneurs.

□ 5. Qualities or Efficiency of an Entrepreneur

A superior entrepreneur must possess the following qualities to be more efficient than others: therefore be bold and courageous to undertake risky ventures. There are ups and downs in the business. An efficient entrepreneur must face them with fortitude.

(i) **Courage**: An entrepreneur has to face many difficulties in running his business. He must anticipate accurately the fluctuations of the market. He should be aware of the social, economic and political changes in the world. He should be extra vigilant to study the changes in the tasks, habits and fashions of the consumers so as to make his products conform to them.

(ii) **Farsightedness**: An efficient entrepreneur must be a man of vision. He should be able to anticipate accurately the fluctuations of the market. He should be aware of the social, economic and political changes in the world. He should be extra vigilant to study the changes in the tasks, habits and fashions of the consumers so as to make his products conform to them.

(iii) **Quality of leadership**: An entrepreneur is the captain of the ship of industry. He must have qualities of leadership. He should be able to inspire confidence among the people and influence them. He should be expert in his occupation and firm in his convictions.

(iv) **Quality of organising the Labour**: He should know the art of man management. He should neither be too strict nor too lenient in dealing with his labourers. He should be sympathetic to them and redress their genuine grievances.

(v) **Knowledge of Business**: He should have complete knowledge of his business-line. With such a knowledge he can neither select good quality raw material nor buy good machines nor procure skilled and efficient labourers. He should be able to operate the machinery installed in his enterprise factors. If other factors like, land, labour, machines etc. are not efficient then entrepreneurs own efficiency will be of little avail. He would be unable to increase production or productivity. Efficiency of other factors is as must relevant as the efficiency of the entrepreneur himself.

(vi) **Knowledge of Psychology**: An Entrepreneur should be able to understand the psychology of labourers to check any discontentment among them. Otherwise, he will face demonstrations and strikes. If he is familiar with human psychology he will be able to keep his labourers happy and contented.

(viii) **Experience**: An entrepreneur having long experience will be adept in his work. A person with normal intelligence becomes proficient by virtue of experience.

(ix) **High Education**: An entrepreneur should have reasonable knowledge of subjects like, economics, commerce, banking etc. Knowledge of these subjects renders him more efficient.

(x) **Moral Qualities**: Virtues like honesty, credibility etc. are of great significance in the field of business and trade. Large transactions are based on confidence or credit. If the entrepreneur is not honest or is not true to his words then people will have no faith in him. He will not be able to get any financial accommodation from any quarter.

□ 6. Importance of Entrepreneur

Modern era is characterized by industrial progress. Scale of production has increased tremendously due to division of labour and use of machines. It has also become quite uncertain. It calls for persons with special qualifications and talent to lead it. Such a leader is to obtain land from the landlord, capital from the capitalist and labour from the labour market. These factors are to be combined in an optimum ratio to get maximum out of them. As a matter of fact, large-scale production, in modern times, is not possible without an entrepreneur. That is the reason, it is considered to be the most important factor of production. Such countries make rapid progress as have hosts of able and competent entrepreneurs. Japan, Germany, U.K. owe their progress to the gifted entrepreneurs in those countries. Prof. Schumpeter considers entrepreneur to be the most important component of economic progress. Entrepreneur is the cornerstone of modern business. He is captain of modern industry. Thus : (1) An entrepreneur is the leader of modern production (2) Industrial development of the country depends on his efficiency. (3) In this era of competition, existence of an entrepreneur is most essential (4) Entire production process is controlled by him. (5) To maintain regular supply of goods and services in the country is the function of the entrepreneur (6) Economic welfare of the country depends upon the efficient organisation of the entrepreneur.

QUESTIONS

1. What is entrepreneurship? Analyse the functions of an entrepreneur.
2. Explain the term entrepreneur. How does an entrepreneur differ from a capitalist? Explain its functions.
3. Who is the entrepreneur in the following enterprises?
 - (a) Bhilai Steel Plant (b) Dalima Biscuit Factory (c) A cooperative Sugar Mill
4. Why is the entrepreneur known as the Captain of the Industry?
5. Distinguish between Entrepreneur and Manager of a firm. What functions are performed by an Entrepreneur?
6. Define an entrepreneur. What are its functions? Who is the entrepreneur in the following enterprises?
 - (i) Bokaro Steel Plant (ii) A cooperative Cloth Mill (iii) Haryana Roadways.
7. Differentiate between organiser and entrepreneur as a factor of production. Mention the functions of an entrepreneur.

15

DIVISION OF LABOUR

□ 1. What is Division of Labour ?

The concept of division of labour was first of all analysed by Adam Smith. According to him, two individuals may not have identical qualities. A professor may be incompetent to prepare food and his cook may be incompetent to deliver lecture to the class. If both these individuals confine themselves to the jobs that they can accomplish most efficiently then they will stand to benefit immensely. According to everybody will specialise in one job only. It is essential that every task be divided into small parts and each part be allotted to a different worker. Such a mode of doing work is called division of labour. Division of labour means that work relating to the production of a good be divided into different parts and each be allotted to a labourer according to his skill and ability. Accordingly, division of labour refers to splitting up of the production process into more than one part and entrusting the same to different specialists. For instance, the job of shoe-making is divided into different parts, such as, cutting of leather, making the upper part, making of heels and soles, stitching of different parts etc. Each part of the job is accomplished by a different worker. It is an instance of simple division of labour. As a matter of fact, individuals perform different jobs. But a complete good is made when workers performing different individually, division of labour is specialization and collectively it is co-operation, because different individuals perform different jobs. Prof. Benham uses the term specialisation in preference to division of labour to co-operate with each other.

□ 2. Definitions

Some main definitions of division of labour are as follows:

- According to **Penguin Dictionary of Economics**, "The specialisation of workers in parts of a production process is called division of labour."
- In the words of **J. Ulmer**, "Division of labour is a system of production in which individuals specialise in functions that are complementary."
- In the words of **A.H. Smith**, "Division of labour is defined as a system wherein the operations necessary to make a finished product are so minutely divided that each worker performs only a few simple operations."
- According to **Watson**, "Production by division of labour consists in splitting up the production process into component parts."

Main forms of division of labour are as under :

(1) Simple Division of Labour:

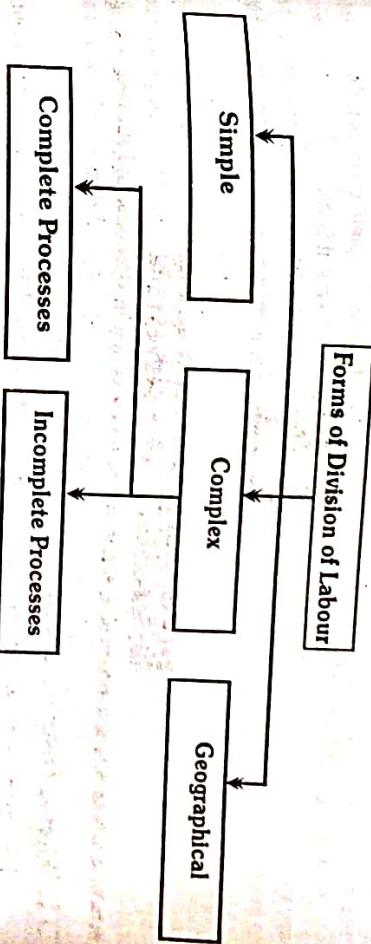
When more than one man combine to perform the same task and it is difficult to know the contribution of each man in completing the said task, then it is called simple division of labour. In the words of **S.E. Thomas** "Division of labour is described as simple when two or more men, working on the same task co-operate to perform that single task too expensive, difficult or burdensome to be carried out effectively by one man alone." Lifting of heavy logs of wood, harvesting of crops, pushing a vehicle, etc. are instances of simple division of labour. It is difficult to ascertain the amount of labour put in by each labour, the work being of a collective nature. Some writers are of the view that simple division of labour refers to that work which is performed from beginning to end by a single labourer e.g. the work of a carpenter, a blacksmith, a weaver, etc. Occupational Division of labour, like Caste System in India, is a form of simple division of labour.

Under this form of division of labour different occupations are differentiated and each individual devotes all his energy and skill in perfecting that occupation or trade e.g. some people are engaged in manufacturing ornaments, others in leather works and still others in wood works etc.

(2) Complex Division of Labour:

When a piece of work is divided into different processes and sub-processes and each process or sub-process is entrusted to different workers then it is known as complex division of labour. In the words of **Thomas**, "The division of labour is described as complex when each man or group of men undertakes a specialized function which is contributory only to final results." In a hosiery factory, for example, some workers are engaged in dyeing the wool, others in weaving sweaters, others in finishing and pressing the sweaters, still others in fixing labels and packing them etc. Making of a sweater is the result of combined effort of so many workers each doing a particular part of the job. It is complex division of labour. It is of two kinds.

- Division of Labour into complete processes:** When in an industry work is divided into different processes and each process is entrusted to different workers or group of workers, it is division of labour into complete process. The product made by one group of workers serves as raw material for the other group of workers. For example, farmer grows cotton, carder cards it, another person makes yarn out of it, still another person weaves cloth of it and so on. In this case, each process is complete in itself and is identified as a separate trade, e.g., cotton growing, carding, making of yarn, spinning and etc.



(b) **Division of Labour into incomplete processes:** When a complete process is divided into many sub-processes and each sub-process is entrusted to different workers, it is called division of labour. This inculcates the spirit of co-operation and discipline among them.

many sub-processes and each sub-process is entrusted to different workers, it is called division of labour. This inculcates the spirit of co-operation and discipline among them.

(11) **Increase in Co-operation and Discipline:** Workers have to work in co-operation with one another. This inculcates the spirit of co-operation and discipline among them.

(12) **Trade Unions:** On account of division of labour, many labourers work at one place. It facilitates forming of unions to solve their common problems.

(3) **Territorial or Geographical Division of Labour:** When in different countries of the world, a male-suit there are one hundred and fifty sub-processes.

(3) **Territorial or Geographical Division of Labour:** When in different countries of the world, different industries are established, it is called territorial or geographical division of labour. For example, cotton textile industry is concentrated in Bombay and Ahmedabad, in different territories of a country, while thousands of labourers work shoulder to shoulder. It has given rise to evils factory system, i.e.,

industry in West Bengal, Sugar industry in U.P. and Bihar in India. This type of division of labour is called 'Localisation of Industries.'

□ 3. Advantages of Division of Labour

Division of labour is of advantage to both the producers and workers. According to Adam Smith, division of labour largely accounts for the efficiency of labour and its power of judgement. Main advantages of division of labour are as follows:-

(1) **Right man at the Right place:** Each labourer is given work according to his ability and

Work requiring hard labour is entrusted to strong labourer and work requiring intelligence is entrusted skilled and trained labourer.

(2) **Increase in Production:** Division of labour promotes efficiency of labour and use of machine.

Both, in their turn, increase production. If the production of pins, from beginning to end, is entrusted to one labourer he will produce 48 pins in a day. If its production is divided into 18 sub-processes and each sub-process is entrusted to a different labourer then 48,000 pins can be produced in a day.

(3) **New Inventions:** When a labourer does only a particular job, day in and day out, he starts new inventions and devices new techniques of doing it. This encourages spirit of inventions among workers.

(4) **Superior Production:** Each process of production is assigned to a worker who is skilled in that process. Thus the finished product turns out to be a superior product as it is the result of so many skilled workers.

(5) **Less Cost of Production:** Division of labour reduces cost of production. It is so because division of labour results in large-scale production and hence reduction in cost per unit. Low cost represents his creativity, originality and personality and the maker feels proud of it. Such a job satisfaction is not possible when his contribution to the making of the product is very little as happens in case of division of labour.

(6) **Saving of Time:** Since a labourer has to do only a part of the job, he needs a few tools. There is no need for changing tools or shifting the same from one place to the other. This saves lot of time.

(7) **Saving of Tools:** Division of labour admits of saving of tools and implements. Labourer is hardly one or two tools relating to his part of production.

(8) **Increase in efficiency of Labourer:** By doing the job of one's taste continuously one becomes efficient and adept in it.

(9) **Saving in Learning:** Since a worker is to do a part of the job he learns it quickly.

(10) **Increase in Mobility:** Number of occupations multiply due to division of labour. The size of each worker is so small that he learns it quickly. This enables him to move from one trade to the other with ease.

□ 4. Disadvantages of Division of Labour

Chapman is of the opinion that division of labour has an adverse affect on the labourers and the society. The main disadvantages of labour are as follows:-

(1) **Monotony:** A labourer repeats the same process again and again. He loses all interest in his work as it becomes monotonous and dull.

(2) **Loss of interest:** By doing part of a work again and again, a labourer becomes like a cog in the machine. He becomes ignorant of all other trades and processes.

(3) **Lack of responsibility:** Under division of labour one product passes through the hands of many workers. If the finished product turns out to be defective none is ready to own the responsibility. It abets carelessness among the workers.

(4) **Loss of Joy:** If a person makes a product all by himself from beginning to end, the product represents his creativity, originality and personality and the maker feels proud of it. Such a job satisfaction is not possible when his contribution to the making of the product is very little as happens in case of division of labour.

(5) **Risk of Unemployment:** A labourer learns only a part of the task. If he loses his job, it may become very difficult for him to find a similar job elsewhere.

(6) **Exploitation of Women and Children:** Under division of labour work is divided into several small and simple parts. Such simple tasks are given to women and children who are employed at low wages. It causes unemployment among male workers on the one hand and exploitation of women and children on the other, as they are made to work under unhealthy conditions at low wages.

(7) **Evils of Factory System:** Division of labour accounts for the setting up of large-scale industries where thousands of labourers work shoulder to shoulder. It has given rise to evils factory system, i.e., congestion, pollution, slums, noise, smoke etc.

(8) **Conflict between labourers and employers:** The number of workers working in a factory, harvesting etc. It also holds good in the case of painting, wherein an artist is to demonstrate his skill. Hence he draws the whole portrait from beginning to end all by himself. There is no scope of division of labour interests. Labourers put up demand for higher wages, employers oppose it. Result inevitably is strike in such cases.

(9) **Harmful dependence:** Since a work is divided into several parts, production of one labourer serves as a raw material of the other. If one labourer stops his production the other labourer who depends on him will be rendered unemployed.

(10) **Fear of Over-production:** Volume of production increases tremendously under the system of division of labour. Sometimes production exceeds demand. Producers are therefore forced to sell at throw down prices. It causes depression in the market. Production is reduced by throwing thousands of workers out of employment.

(11) **Disadvantages of Geographical Division of Labour:** On account of geographical distribution of labour units producing same types of goods are set up at one place. It leads to the evils of localisation of industries e.g. dependence, unemployment etc.

(12) **Loss of Artistic Production:** Division of labour has encouraged the use of machine production as a result of which production of artistic goods is fast disappearing.

Conclusions: Despite its demerits, division of labour has been gaining ground day by day so because it helps production on large-scale and reduces cost of production. By providing favourable conditions of work, fair wages and good airy living quarters the above disadvantages can be removed.

□ 5 Limitation of Division of Labour or Factors influencing Extent of Division of Labour

Extent of division of labour depends on several factors. These factors constitute limitation of division of labour. To what extent division of labour can be extended in an industry is determined by limitation of division of labour. Following are its limitations:

(1) **Extent of the Market:** It has been aptly said by Adam Smith, "Division of labour is limited by the extent of the market." It implies that smaller the extent of the market lower will be the demand of goods. Level of production and the use of machines will be low. Consequently, opportunities of division of labour will be very little. For example, if the demand for shoes in a village is confined to that very small place then one shoe-maker will be enough to cater to that demand. He will not stand in need of any help on hand, nor will there be any division of labour. On the other hand, if persons from neighbouring villages also come to that shoe-maker for meeting their demand for shoes, then it would surely mean that demand for his shoes has increased, that is, extended beyond that village. To meet this enlarged demand he will have to engage some assistants and divide the work of Shoe-making into different parts.

(2) **Nature of Demand:** Division of labour also depends upon the nature of demand. If permanent then production will be a continuous process and division of labour will take place on other hand, if demand is temporary, production will be on a small-scale and the possibility of division of labour will be remote.

(3) **Nature of Industry:** Nature of some industries is such that their work cannot be divided into processes and sub-processes, e.g. agriculture. In this occupation, different processes and sub-processes are not of simultaneous nature. The same are undertaken in a sequence e.g. cultivation, sowing, irriga-

(5) **Availability of Resources:** Division of labour will be more if factors like adequate capital, efficient labour, fertile land etc. are available in ample measure. If these factors are scarce, production will be limited & so also the division of labour.

(6)

Mutual Co-operation of Workers: Division of labour implies dependence of one worker on the other. As such their mutual co-operation is an essential condition of the success of division of labour. Increased production causes rise in cost of production per unit. Large-scale production therefore is not profitable. But industries which are amenable to law of Increasing Returns and hence decreasing cost per unit are most suitable for increased division of labour.

(7)

Laws of Returns: Laws of Returns also determine the limit of division of labour. Division of labour will be limited in those industries which obey the law of Diminishing Returns. In such industries increased production causes rise in cost of production per unit. Large-scale production therefore is not profitable. But industries which are amenable to law of Increasing Returns and hence decreasing cost per unit are most suitable for increased division of labour.

(8)

Efficiency of the Organiser: Division of labour results into large-scale production. Such a large-scale production can be managed and controlled only by efficient organiser. Hence without efficient organiser division of labour will not be carried far.

(9)

Inventions: Those industries will have little division of labour whose method of production are old and machines are obsolete.

(10) **Scale of Production:** Division of labour is also limited by scale of production. Division of labour will take place only if goods are to be produced in large-scale. Scope of division of labour will be limited if scale of production is small.

In short, several factors determine division of labour. If demand is large, market is extensive and large-scale of production is possible, division of labour must be more.

□ 6 Favourable Conditions for Division of Labour

Conditions favourable to division of labour are as follows:

(i) **Sufficient Quantity of Labourers:** Division of labour is possible only when the number of labourers working in a factory or occupation is very large. Because then alone work can be divided into processes and sub-processes.

(ii)

Large-scale Production: Division of labour is not possible under small-scale production. Imagine, what kind of division of labour can be expected of a small cobbler and how many shoes can he produce in a day compared to a giant multinational factory like Bata Shoe Company, that manufactures thousands pairs of shoes per day. A pair of shoes passes through the hands of many workers working together.

(iii)

Co-operation: Workers must co-operate with one another to make division of labour a success.

(iv) **Monetary System:** Invention of money has facilitated exchange and widened the market. Consequently, there is large-scale production and division of labour.

(v) **Development of means of transport:** Size of the market is extended by the development of means of transport and communication. Rise in demand necessitates large-scale production and division of labour.

(vi) **Continuous Production:** When wants multiply and trade develops then demand for commodity increases and so production also rises permanently. It stimulates division of labour. Continuous increase in production makes economies of division of labour possible.

In short, Cairncross has rightly said, "exchange trade, production and sale are not possible without division of labour. Every economic system is based on division of labour. Our standard of living will down without it."

QUESTIONS

- What is Division of Labour? Describe the kinds and advantages of Division of Labour.
- What is meant by division of labour? Discuss its advantages and disadvantages.
- What is division of labour? Discuss its main merits. How is the division of labour limited by the extent of the market?
- What do you mean by Division of Labour? Explain the factors which determine the extent of division of labour.
- What is division of labour? Give its main merits and demerits.

LAWS OF PRODUCTION — LAW OF VARIABLE PROPORTIONS AND RETURNS TO SCALE

16

01 Laws of Production

Output of any good depends on the quantity of inputs and technique of production. If a producer desires to change the amount of his output, he can do so by making a change in his inputs. When a producer effects a change in his production by increasing or decreasing only one factor of production and as a result there is a change in the proportion of combination of factors of production, then this proportional relationship between production (output) and factors of production (inputs) is referred to as **Law of Variable Proportions or Law of Returns to a Factor**. (On the contrary, when a producer changes all the factors of production in the same proportion, the proportional relationship between production and factors of production is referred to as **Law of Returns to Scale**). In order to increase the output of a commodity, either the amount of factors of production is to be increased or the technique of production is to be improved upon. Presuming that technique of production remains constant, then change in the amount of production (output) will depend exclusively on change in the amount of factors of production (inputs). Production function can be expressed as :

$$Y = f(L, K, S)$$

It will be read as Production is a function of labour, capital and land.

Here : (Y = Production; L = Labour, K = Capital; S = Land)

02. Fixed and Variable Inputs or Factors of Production

A firm uses many kinds of inputs to produce its output. The amounts of inputs it uses vary as the amount of output varies. The amount of some inputs used can be adjusted quickly, but others are not as easy to adjust. Thus inputs or factors of production may be classified as follows.

O (i) Fixed Input or Factor of Production

A fixed input or factor of production is defined as one, the quantity of which cannot be changed in the short run as the level of output changes. Some examples of fixed inputs are plants, major equipments, buildings, services of management and supply of skilled labour.

O (ii) Variable Input or Factor of Production

A variable input or factor of production is defined as one the quantity of which may be changed in the short run as the level of output changes. Some examples of variable inputs are raw materials and labour services.

The concepts of fixed and variable inputs can be clarified with the help of an illustration. Suppose a firm prints 1,000 books daily. If it wants to print 2,000 books daily, what shall it do? Certainly, it will need

more factors of production. But it will not be possible to increase some factors immediately, e.g., printing press, building etc. Such factors are called **fixed factors**. Consequently, to increase the production of book, one more or one less unit of the variable factor. In other words marginal product measures the firm will have to depend on those factors whose supply can be increased immediately, such as, labour or paper etc. Such factors are called **variable factors**. In the above example, printing press and building rate at which output changes as a variable factor changes. Symbolically, represent fixed factors of production, whereas labour and paper represent variable factors of production.

□ 2.1 Time Period

It may be worth noting that fixity or variability of inputs or factors depends upon period of time available for the adjustment of inputs in accordance with the changes in output. Economists divide period of time mainly into two parts:

- (i) **Short Period or Short Run**

Short run is defined as that period of time in which one or more factors of production are fixed and others are variable. Therefore, changes in output must be accomplished exclusively by changes in the use of variable inputs. In other words, in short run there are both units increased by increasing the amount of the variable factor. **The response of output to changes in inputs and fixed inputs.** Thus if producers wish to expand output in the short run, they must do so by using a fixed amount of a variable factor, the amount of all other factors remaining constant is referred more raw materials and hours of labour service with the existing plant and equipment. Similarly it is as 'Returns to a Factor'. On the other hand, in the long run output can be increased by increasing wish to reduce output in the short run, they may use less raw materials or discharge certain types of workers the factors. **The response of output to changes in the size or scale of all the factors (in the same proportion)** is termed as **Returns to Scale**.

- (ii) **Long Period or Long Run**

Long period or long run is defined as that period of time in which all factors of production or inputs are variable. In the long run all factors are varied in quantity and there are fixed factors. In other words, long period refers to that period of time in which the quantity of all factors can be increased or decreased.

□ 3. (A) Variation of Output or Product in Short Run

In the short run, more or less units of variable factor are applied to a given quantity of fixed factors to produce different units of the product. There are three important concepts of product in this connection:

- (i) Total product (TP)

Total product of a variable factor is the maximum output produced by combining given input of that factor with the fixed factor.

- (ii) Average Product (AP)

The average product of a variable factor is simply the total product of the factor divided by the total units of the variable factor. It measures the average output per unit of the variable factor. Symbolically,

$$AP = \frac{TP}{L}$$

(Here AP = Average Product; TP = Total Product; L = Total Units of Variable factor which assumed to be labour)

The average product is an indicator of productivity of the variable factor

□ 4. Laws of Production

The laws of production describe the ways which are technically possible to increase the level of production. The output can be increased in various ways.

In analysing the nature of production function, we have discussed that in short run the output can be increased by increasing the amount of the variable factor. **The response of output to changes in inputs and fixed inputs.** Thus if producers wish to expand output in the short run, they must do so by using a fixed amount of a variable factor, the amount of all other factors remaining constant is referred more raw materials and hours of labour service with the existing plant and equipment. Similarly it is as 'Returns to a Factor'. On the other hand, in the long run output can be increased by increasing wish to reduce output in the short run, they may use less raw materials or discharge certain types of workers the factors. **The response of output to changes in the size or scale of all the factors (in the same proportion)** is termed as **Returns to Scale**.

Laws of Production

Law of Variable Proportions
or Returns to a Factor

A Single Variable Factor
(Other Factors Constant)

Generally Short Run Analysis

Law of Returns to Scale

All Factors are Variable in the same proportion

Always Long Run Analysis

○ (iii) Marginal Product

Marginal product of a variable factor is the change in total product resulting from the addition of one more or one less unit of the variable factor. In other words marginal product measures the rate at which output changes as a variable factor changes. Symbolically,

$$MP = \frac{\Delta TP}{\Delta L}$$

(Here MP = Marginal Product of Labour; ΔTP = change in total product, ΔL = change in variable factor which is assumed to be labour.)

A producer may effect a change in his production by changing only the variable factor, other factors of technology remaining constant. Consequently there is a change in the proportion of combination of factors of production. This proportional relationship between production and variable factor of production is termed as **returns to a factor**.

On account of change in the proportion of factors there will also be a change in total output but at different rates. Initially, when more units of a variable factor are employed on the fixed factor, total output will increase at the **increasing rate**. But a stage will come when ultimately total output will increase at the **diminishing rate**. Thus returns to a factor exhibit three phases.

- (i) **Increasing Returns to a Factor** : Increasing return to a factor refers to a situation in which additional unit of the variable factor adds more to the firm's output and marginal product of the variable factor rises as more of it is used.
- (ii) **Constant Returns to a Factor** : Constant returns to a factor refers to a situation in which the units of a variable factor add the same amount to the firm's output and the marginal product of the variable factor is constant.

(iii) **Diminishing Returns to a Factor** : Diminishing returns to a factor refers to a situation in which each additional unit of a variable factor adds less to the firm's output, and the marginal product of the variable factor falls as more of it is used.

The modern economists study all the three phases of the return to a factor with reference to Variable Proportions.

6. Law of Variable Proportions

In short-period when the output of a product is sought to be increased by way of application of the variable factor to a given quantity of fixed factors, law of variable proportions into operation. **The law of variable proportions is that law which predicts the consequences of varying the proportions in which the fixed and variable factors of production are used.** When the number of one factor is increased while all other factors remain constant, then the proportion between the fixed and variable factors is altered. Supposing there are two factors of production i.e., land and labour. Land is a fixed factor and labour a variable factor. Accordingly the proportion between land and labour will be 1 : 2. If the number of labourers is increased to 2 then the new proportion between land and labour will be 2 : 2, in other words, if there were 2 hectares of land per labourer previously, now there will be 1 hectare of land per labourer. On account of change in the proportion of factors there will also be a change in total output at different rates. **In Economics, this tendency is called Law of Variable Proportions.** The law of variable proportions states that as the proportion of factors is changed, the production at first increases more than proportionately, then equi-proportionately and finally less proportionately. The classical economists called it the **Law of Diminishing Returns**. They derived applying more and more labour to a fixed acreage of land, and thought of it as associated particular agriculture. But it is a general principle that can be applied to any production operation. It is now usually called the **Law of Variable Proportions**. It can also be called the **Law of Diminishing Marginal Product or Diminishing Marginal Returns** or simply as **Diminishing Returns**. In this connection the following argument of Prof. H.R. Varian is worth noting, "It is not really a law. It is just a common feature of most kinds of production processes."

6.1 Definitions

(1) According to Leftwich, "The law of variable proportions states that if the input of one factor is increased by equal increments per unit of time while the inputs of other resources are held constant, output will increase, but beyond some point the resulting output increases will become smaller and smaller." (2) In the words of Calvo and Waugh; "The law of variable proportions states that if a fixed quantity of one resource is applied to a fixed amount of other inputs, output per unit of variable input increase but beyond some point the resulting increases will be less and less, with total output reaching maximum before it finally begins to decline."

6.2 Assumptions

The law has following main assumptions:

- (1) One of the factors is variable while all other factors are fixed. (2) All units of the variable factors are homogeneous or equally efficient. (3) There is no change in the technique of production. (4) The proportion of production can be used in different proportions, for example, 2 hectares of land with 1 labourer, 4 hectares of land with 2 labourers etc.

6.3 Explanation of the Law

Law of variable proportions is explained with the help of table 1 and fig 1. Supposing you have a farm measuring 1 hectare and you also possess agricultural equipments, seeds, manure etc. You

grow tomatoes. You are to decide about the number of labourers to be engaged for growing tomatoes. Keeping all other factors constant, as you increase the number of labourers on the farm, their total, average and marginal product will change as shown in table 1.

Table : 1 Behaviour of Total, Marginal and Average Product

Units of Land	Units of Labour (L)	Total Product (TP)	Marginal Product ($MP = \frac{\Delta TP}{\Delta L}$)	Average Product ($AP = \frac{TP}{L}$)
(1)	(2)	(3)	(4)	(5)
1	1	2	—	2
1	2	5	3	2.5
1	3	9	4	3
1	4	12	3	3
1	5	14	2	2.8
1	6	15	1	2.5
1	7	15	0	2.1
1	8	14	-1	1.7

In column 1 of the above table, units of the fixed factor i.e., land have been shown. Column 2 shows the units of the variable factor i.e. labour. Column 3 shows total product, column 4 marginal product. By using one more unit of labour, whatever addition is made to the total product is called marginal product. Column 5 shows average product. It is calculated by dividing the total product of labour by the number of labourers.

The table shows that if increasing units of labour are added to a fixed quantity of land, the total product first rises at an increasing rate upto 3 units of labour, afterwards it rises at decreasing rate. When 6 labourers are employed, the total product is maximum. It begins to decline when 8 labourers are employed. The marginal product first increases reaching the maximum point when 3 labourers are employed. Afterwards it starts declining but remains positive upto the employment of 6th unit of labour. The marginal product of the 7th unit of labour is zero and of 8th unit it is negative. Average product of labour first increases and then declines gradually. Average product becomes equal to marginal product when the latter starts declining. The marginal product drops off faster than the average product.

In fig 1, quantity of product is shown on OY-axis and number of labourers on OX-axis. TP is total product curve. Up to point 'E', total product increases at increasing rate.

Figure 1

Between points E and G it is increasing at the decreasing rate pointing to the fact that marginal product has started falling. At point 'G', i.e., when 7 units of labourers are employed, total product is maximum when marginal product is zero. Thereafter, it begins to diminish corresponding to negative marginal product. MP is marginal product curve. Upto point 'A' marginal product increases. At point 'A', i.e., when 3 units of labourers are employed, it is maximum. Thereafter, marginal product begins to decline. Before point 'B' marginal product is more than average product. At point 'B', marginal product and average product are equal. After point 'B', marginal product diminishes. Marginal product is zero at point C and thereafter it turns negative. Average product is represented by AP curve. Average product first rises until it reaches its maximum at point B, where marginal and average products are equal. Subsequently average product declines.

□ 4.4 Three stages of Production

From the above Table and Diagrams drawn on the assumption that production obeys the law of variable proportions, one can easily discern three stages of production. These are elucidated in Table below:

Table : 2 Three Stages of Production

Stages	Total Product (TP)	Marginal Product (MP)	Average Product (AP)
Stage I O—M (Boundary Line MF)	Initially it increases at an increasing rate upto point E. Later at diminishing rate from point E.	Initially increases and reaches the maximum point at A. After A it begins to diminish	Increases and reaches its maximum at point B which is on the boundary line MN of stage I. At point B average and marginal product are equal (AP=MP).
Stage II M—N (Boundary Line NG)	Continues to increase at diminishing rate and reaches its maximum point at G.	Continues to diminish and becomes Zero at C.	After reaching its maximum begins to diminish
Stage III (Beyond N)	Starts declining	Becomes negative	Continues to diminish but always remains greater than zero.

The three stages of production have the following characteristics:

- Stage I :** (i) It begins from point of origin O and lasts upto point M. The line MF is its boundary line. In this stage (i) **Total product** increases initially at increasing rate upto point E. Between 'E' and 'G' it increases at diminishing rate : (ii) Marginal Product also increases initially reaching its maximum at point 'A'. Thereafter it begins to decline and becomes equal to average product at point 'B'. (iii) Average product increases and reaches its maximum at point B. On the boundary line of stage I, average product is equal to marginal product ($AP = MP$).
- Stage II :** It starts from point M on OX-axis and continues upto point N. The line NG indicate its boundary line. In this stage (i) Total product increases at a diminishing rate and reaches its maximum point at G on the boundary line NG. (ii) Marginal product continues to decline and becomes zero at point 'C'. (iii) Average product starts diminishing.

Laws of Production — Law of Variable Proportions and returns to Scale

(3) Stage III : The stage III begins beyond point N on OX-axis. In this stage (i) Total product starts declining. (ii) Marginal product is negative. (iii) Average product continues to decline but remains positive.

□ 4.5 Stage of Rational Decision

In order to achieve maximum profits, the rational decision of the purely competitive firm will be to operate in stage II. In stage I, the average returns to the variable input are increasing but the fixed factor is being used uneconomically. Hence, as the output increases, the total profit also increases. Thus, the firm will have an incentive to expand through stage I.

It must be clear that a rational firm never operates in stage III. In this stage there is actual decline in the volume of total production. In the words of Ferguson, "Even if units of the variable input were free, a rational producer would not employ them beyond the point of zero marginal product because their use entails a reduction in total output."

In short, a rational perfectly competitive firm always produces in stage II, where diminishing returns sets in. Thus, the perfectly competitive firm will operate neither in stage I nor in stage III. It will operate in stage II. The actual volume of production in stage II will depend on the prices of inputs and output.

4.6 Conditions of Applicability or Causes of Application

(1) Indivisibility of Factors : The main cause of the stage of increasing returns is that some factors of production are indivisible. It means, in order to produce goods upto a given limit, at least one unit of the fixed factor is indispensable. In the initial stages, fixed factor (such as machine) remains under-utilised. Its fuller utilization calls for greater application of the variable factor (labour). Moreover, additional application of the variable factor (labour) facilitates process based division of labour that raises the efficiency of the factor. It also tends to improve the degree of co-ordination between the fixed and variable factors.

(2) Change in Factor Ratio : The main cause of the stage of diminishing returns is that one of the factors of production is variable while others are fixed. When this variable factor is used with fixed factors, then their ratio compared to variable factors falls. Production is the result of the operation of all factors. When an additional unit of a variable factor has to produce with the help of a relatively less units of fixed factor then the marginal return of the variable factor begins to diminish. For instance, in a field measuring 10 hectares, 5 labourers are employed. Land is fully utilized with the help of these five labourers. In this case, land-labour ratio is 2 : 1. On the contrary, if the number of labourers increased to 10 then the new land-labour ratio will be 1 : 1. It is obvious that one labourer on 1 hectare land will produce less than one labourer on 2 hectares of land. Thus, as the ratio of land (fixed factor) to labour (variable factor) falls, the marginal production of the labourer diminishes.

(3) Imperfect Substitutes : According to Mrs. Joan Robinson, it is the imperfect substitution factors that is mainly responsible for the operation of the stage of diminishing returns. One factor cannot be used in place of the other factor indefinitely. Had perfect substitution among the factors been possible, or could be increased by making use of its substitutes. Such a substitution would have made it possible to increase the production in the same proportion as before. But in real life factors are imperfect substitutes. Accordingly, one factor cannot be substituted by another factor indefinitely. Consequently, when fixed and variable factors are not combined in an appropriate ratio, the marginal return of the variable factor begins

□ 4.7 Postponement of the Law

The law of variable proportions may be postponed if improvement in technology takes place. In other words, the law of variable proportions becomes inoperative when improved technology is introduced causing increase in productivity and fall in cost.

(iii) The operation of the law may be postponed also when the factors of production are perfect substitutes of each other. **In such a situation the limitation of the fixity of factor does not exist.**

4.8 Application of the Law
The law of variable proportions is no more than an empirical regularity based on some observed facts. It is not a theorem deducted analytically. The diminishing returns relationship certainly holds up if not universally. It applies to the inputs used in agriculture as well as in industry which is why it is called a law.

↳ 5. Returns to a Factor - A detailed study of Different Phases

The law of variable proportions has three distinct phases. Constant Returns to a factor (iii) Diminishing Returns to a factor. The following paragraphs discuss different phases.

□ 5.1. Increasing Returns to a Factor or Law of Increasing Returns

Increasing Returns tends to increase at the increasing rate when more of the variable factor is combined with the fixed factors of production. In such a situation, marginal product of the variable factor must be increasing. In the marginal cost of production must be diminishing.

O(2) Explanations

Table 3 and diagram 2 illustrate the operation of increasing returns to a factor.

Table 3. Increasing Returns to a Factor				
Units of Labour	Units of Capital	Total Product	Marginal Product	Average Product
1	1	4	4	4
2	1	10	$10 - 4 = 6$	5
3	1	18	$18 - 10 = 8$	6
4	1	28	$28 - 18 = 10$	7
5	1	40	$40 - 28 = 12$	8

The table shows that as more and more units of labour are combined with the fixed amount of capital, total output tends to increase at the increasing rate. Marginal product of the factor labour is increasing.

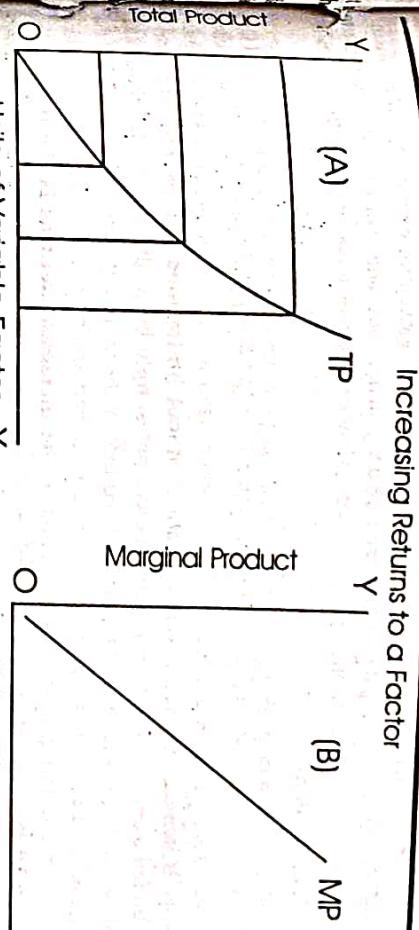


Figure 2

In fig 2-A total product is increasing at the increasing rate, while fig 2-B shows increasing marginal

O(3) Causes of the Application of the Law

Main causes of the application of the law are as under:

Its fuller utilization calls for greater application of the variable factor (labour). Hence,

By additional units of the variable factor add more and more to total output, or, marginal product of variable factor tends to increase. For example a small plant is manufacturing cloth. The size of the plant is limited in the short period. Five workers are required to get maximum output out of this plant. If this factory had one or two workers the plant would be under manned and production there would be inefficient. difficulties would disappear as more workers are added. The plant would be more efficiently utilized. As more workers are added to the initially under manned plant the marginal product of each will rise.

Increase In Efficiency: Several economists like Baumol, Blackman, and Wolff have argued that increased use of variable factor adds

(iii) **Better Co-ordination between the Factors** : So long as fixed factor remains under-utilised, application of the variable factor tends to improve the degree of co-ordination between the fixed factors. As a result, total output increases at the increasing rate.

(4) Applications of the Law of Increasing Returns

According to Marshall, law of increasing returns mainly applies to manufacturing industries. The only difference is that it does not apply to fisheries, mining etc.

is that this law operates in manufacturing industries for a relatively longer duration than in agriculture. Ultimately the law of diminishing returns must prevail whether in agriculture or industry. Mrs. Joan Robinson thus remarks "Law of diminishing returns is a logical necessity while law of increasing returns is an empirical fact." However the modern view is that the law applies to all types of productive activities.

O (5) Limitations

The law of increasing returns applies in the initial stages of production, when the amount of variable input is small relative to the fixed input so that the fixed input remains under utilized. Full utilization of fixed input by variable input results in increasing returns. But this situation does not continue indefinitely. If increasing returns were operative without limitations indefinitely, the world could be fed from a kitchen garden or a flower pot simply by adding enough labour and capital to the fixed land. Thus there would be no food problem in any part of the world. But the operation of increasing returns must eventually come to an end and a point is reached beyond which marginal product cannot increase. The limitation to the increasing returns is the fixity of factor. A point must come when each additional unit of the variable input has on an average, fewer units of fixed input with which to work. Consequently, an increase in the use of variable input yields less and less additional product.

D 5.2 Constant Returns to a Factor or Law of Constant Returns

Constant Returns to a factor refers to the stage when increasing application of the variable factor no more results in increasing marginal product of the factor; rather marginal product of the factor tends to stabilize. Accordingly, total output increases only at the constant rate.

O (1) Definition

(1) According to Marshall, "If the actions of the law of Increasing and Diminishing Returns are balanced, we have the Law of Constant Returns."

(2) In the words of Prof. Hanson, "Constant returns to a factor occurs when additional application of the variable factor increases output only at the constant rate."

O (2) Explanation

Table 4 and Diagram 3 illustrate the operation of constant returns to a factor :

Table 4 : Constant Returns to a Factor

Units of Labour	Units of Capital	Total Product	Marginal Product
1	1	5	5
2	1	10	5
3	1	15	5
4	1	20	5
5	1	25	5

The Table shows that as more and more units of labour are combined with the fixed amount of capital, total output increases only at the constant rate. Marginal product of the variable factor (labour) remains constant.

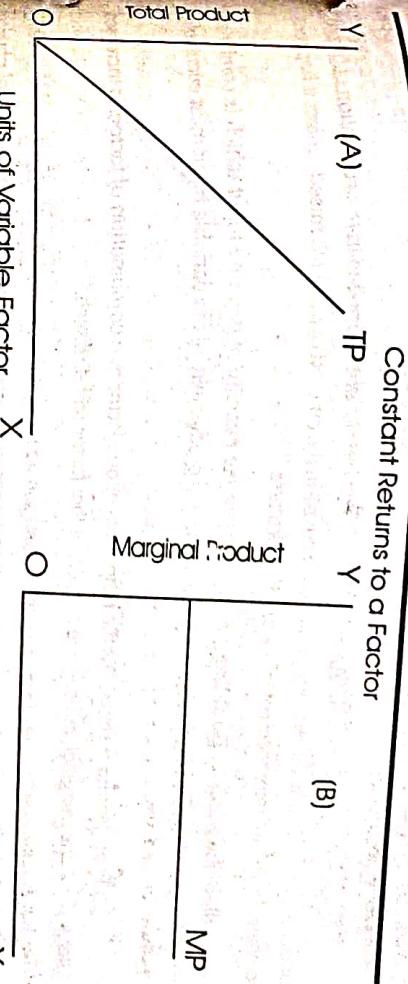


Figure 3

In fig 3 (A), total product is increasing at the constant rate indicated by an upward sloping straight line TP curve. Fig 3 (B), shows constant marginal product of the variable factor, indicated by horizontal straight line MP.

O (3) Causes of Constant Returns to a Factor

Constant returns to a factor may be explained in terms of the following factors :

(i) **Optimum Utilisation of the Fixed Factor** : As production is increased by increasing the application of variable factor, a stage comes when the fixed factor gets optimally utilised. It is here that marginal product of the variable factor is maximised and tends to remain constant.

(ii) **Ideal Factor Ratio** : Constant returns to a factor corresponds to an ideal ratio between fixed and the variable factors. Hence, marginal product of the factor stabilises at its maximum.

(iii) **Most Efficient Utilisation of the Variable Factor** : As more and more of the variable factor is combined with the fixed factor, a stage comes when there is best possible division of labour corresponding to which variable factor (labour) is most efficiently utilised. Accordingly, its marginal product tends to be constant at its maximum.

D 5.3 Diminishing Returns to a Factor or the Law of Diminishing Returns

Diminishing Returns to a factor or Law of Diminishing Returns refers to a situation in which total output tends to increase at the diminishing rate when more of the variable factor is combined with the fixed factor(s) of production. In such a situation marginal product of the variable factor must be diminishing.

O (1) What is Law of Diminishing Returns?

The law was first explained by Turgot. He and other classical economists, like Ricardo and Co. economists, like Marshall, have studied it mainly in the context of agricultural production. According to this law, as more and more units of labour are employed on a given piece of land, the marginal product of the variable factor must be decreasing. In other sense, additional units of labour will go on diminishing. Modern economists interpret this law in a agriculture, according to them, this law applies not only to agriculture but to all spheres of production, industry etc.

○(2) Definitions

(i) According to **Marshall**, "An increase in the capital and labour applied in the cultivation of fixed 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."

(ii) In the words of **Boulding**, "As we increase the quantity of any one input which is combined with fixed quantity of other inputs, the marginal physical productivity of the variable input must eventually decline."

(iii) **Prof. Benham** states, "As the proportion of one factor in a combination of factors is increased after a point, the marginal and average product of that factor will diminish."

(iv) In the words of **Miller**, "The law of diminishing marginal returns states that, other things being equal, as the variable input is increased by equal increments, after a certain point, the marginal physical product of the variable input will decrease".

○(3) Assumptions

The main assumptions of this law are as follows (i) Only one variable input is varied and all other are held constant. (ii) No change in technique of production. (iii) Variable proportions productive functions. It means more of a variable factor can be used with the constant inputs of the fixed factors.

(iv) All units of variable factor are homogeneous (v) Adequate or standard doses of variable factor are applied.

○(4) Explanation

Table 5 and Diagram 4 illustrate the operation of diminishing returns to a factor:

Table 4: Diminishing Returns to a Factor Or Law of Diminishing Returns

Units of Labour	Units of Capital	Total Product	Marginal Product
1	1	5	5
2	1	8	3
3	1	10	2
4	1	11	1
5	1	11	0
6	1	10	-1

The Table shows that as more and more units of labour are combined with the fixed amount of capital, total output increases only at the decreasing rate, or it may even stop increasing at all, or still further start diminishing. The marginal production of the variable factor is diminishing and beyond a point becomes zero or even negative.

In diagram 4A, total product is increasing at the decreasing rate as indicated by the slope of the curve. At point P, it becomes maximum and, beyond that, it starts reducing.

Diagram 4B shows diminishing marginal product of the variable factor, indicated by downward sloping MP curve. Beyond a point it becomes zero or even negative.

Diminishing Returns to a Factor

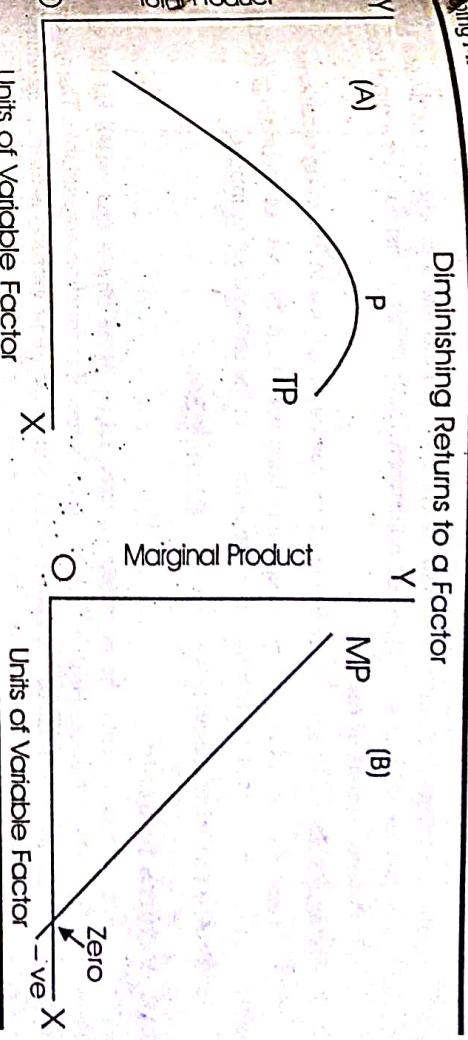


Figure 4

○(5) Causes of Diminishing Returns to a Factor

Diminishing returns to a factor or the Law of diminishing returns may be explained in terms of the following factors :

(i) **Fixity of the Factor** : Fixity of the factor(s) is the principal cause that explains the occurrence of the law of diminishing returns. As more and more of the variable factor continues to be combined with the fixed factor, the latter gets over-utilised. Hence the diminishing returns.

(ii) **Imperfect Factor Substitutability**: Factors of production are imperfect substitutes of each other. More and more of labour, for example, cannot be continuously used in place of additional capital. Accordingly, diminishing returns to the variable factor becomes inevitable.

(iii) **Poor Co-ordination between the Factors**: Continuous increasing application of the variable factor alongwith fixed factor(s) beyond a point crosses the limit of ideal factor-ratio. This results in poor co-ordination between the fixed and variable factors. The law of diminishing returns accordingly sets in.

○(6) Importance of the Law

Law of diminishing returns is a very significant law of economics. Following points underline its importance:

(1) **Basis of the Theory of Population**: Malthus has based his theory of population on this law. According to him production of foodgrains lags behind increase in population. The reason being that agriculture obeys the law of diminishing returns.

(2) **Basis of the Theory of Rent**: Ricardo's theory of rent is based on this law. First dose of labour and capital applied to land yields more returns than the second dose. Difference in return of first and second dose is called 'rent'.

(3) **Basis of the Theory of Distribution:** Marginal Productivity Theory of Distribution is based on this law. As more and more units of factor of production are employed its marginal product goes on falling. Consequently its per unit share in total production also falls.

(4) **Basis of Equilibrium Production:** With the help of this law a producer can decide equilibrium output. Equilibrium is achieved at a point where rising marginal cost equal marginal revenue.

O (7) Postponement of the Law

The application of the law of diminishing returns can be postponed in following situations:

- In case the state of technology is improved. Improvement in the state of technology facilitates greater output with the same set of inputs, or same output with the reduced set of inputs.
- When a perfect substitute is available of the fixed factor.

D 6 Returns to Scale

Returns to scale describe the behaviour of total output as all inputs are varied by the same proportion. It is a long run concept. In the long run all factors of production are variable. The response of output to changes in the scale or size of all the factors in the same proportion is termed as returns to scale.

O (1) Definition

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

O (2) Explanation

In the long-run, output can be increased by increasing all factors in the same proportion or different proportions. Ordinarily, law of returns to scale refers to increase in output as a result of increase in all factors in the same proportion. Such an increase in output is called Returns to Scale.

Supposing, initial production function is as follows :

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

If both the factors of production, i.e. labour (L) and capital (K) are increased in the same proportion (m), then production function will be rewritten as:

$$P_1 = f(mL, mK)$$

(1) If P_1 increases in the same proportion as increase in factors of production, i.e., $\frac{P_1}{P} = m$, then will be an instance of **Constant Returns to Scale**. (2) If P_1 increases less than proportionate increase in factors of production i.e., $\frac{P_1}{P} < m$, then it will be an instance of **Diminishing Returns to Scale**.

If P_1 increases more than proportionate increase in factors of production, i.e. $\frac{P_1}{P} > m$, then it will be example of **Increasing Returns to Scale**. Returns to scale are explained with the help of table 6:

Table : 6 Returns to Scale					
Units of Labour	Units of Capital	Percentage increase in Labour and Capital	Total Product	Percentage increase in Total Product	Returns to Scale
(1)	(2)	(3)	(4)	(5)	(6)
1	2	—	10	—	
2	4	100%	30	200%	
3	6	50%	60	100%	Increasing
4	8	33%	80	33%	Constant
5	10	25%	100	25%	
6	12	20%	110	10%	
7	14	16%	120	9%	
8	16	14%	125	4%	Decreasing

(i) The column (3) i.e. percentage increase in labour and capital are derived as follows:

$$\text{Percentage change in labour} = \frac{2 - 1}{1} \times 100 = 100\%$$

$$\text{Similarly Percentage in capital is determined in the same manner}$$

$$= \frac{3 - 2}{2} \times 100 = 50\% \text{ and so on}$$

$$= \frac{4 - 2}{2} \times 100 = 100\%$$

$$= \frac{6 - 4}{4} \times 100 = 50\% \text{ and so on}$$

We find that the percentage increase in labour and capital is same since both change in the same proportion.

(ii) The column (5) i.e. percentage change in total production is determined as follows:

$$= \frac{30 - 10}{10} \times 100 = 200\%$$

(iii) If P_1 increases in the same proportion as increase in factors of production, i.e., $\frac{P_1}{P} = m$, then will be an instance of **Constant Returns to Scale**.

(iv) If P_1 increases less than proportionate increase in factors of production i.e., $\frac{P_1}{P} < m$, then it will be an instance of **Diminishing Returns to Scale**.

(v) If P_1 increases more than proportionate increase in factors of production, i.e. $\frac{P_1}{P} > m$, then it will be example of **Increasing Returns to Scale**.

Returns to scale are explained with the help of table 6:

$$= \frac{60 - 30}{30} \times 100 = 100\% \text{ and so on.}$$

(vi) As in the case of returns to a factor, there are three aspects of returns to scale, viz.

- Increasing Returns to Scale
- Constant Returns to Scale
- Decreasing Returns to Scale

○ (1) Increasing Returns to Scale

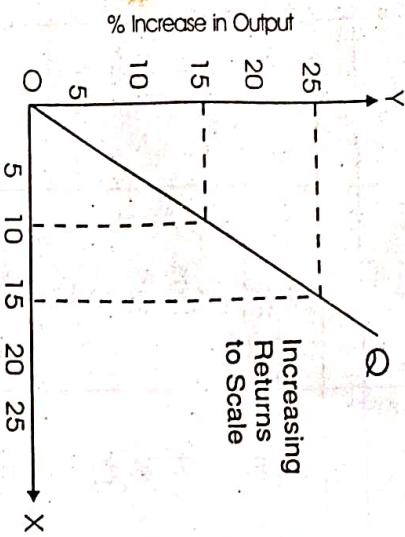


Figure 5

All these economies, are only internal economies as these are related to the scale of production of the concerned firm.

○ (2) Constant Returns to Scale

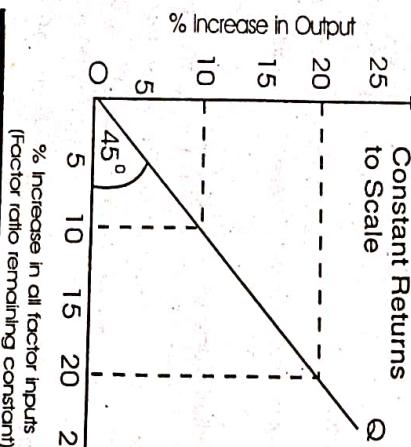


Figure 6

This situation arises, when after reaching certain level of production economies of scale are counterbalanced by diseconomies of scale. In mathematical terminology, that production function which reflects constant returns to scale is called **'Homogeneous Production Function'**. This function states that if labour and capital are increased in equal proportion then output will also increase in the same proportion. Fig 6 illustrates constant Returns to Scale.

○ (3) Diminishing Returns to Scale

Increasing returns to scale occurs when a given percentage increase in all factor inputs (in some constant ratio) causes proportionately greater increase in output. If 10% increase in all factor inputs causes, say, 15% increase in output, it is a case of increasing returns to scale. Fig. 5 illustrates this situation.

Fig. 5 shows that 10% increase in all factor inputs causes 15% increase in output. Likewise, 15% increase in factor inputs causes 25% increase in output. Thus, any percentage increase in inputs is causing a greater percentage increase in output. Increasing returns to scale are thus operative. The main cause of its operation is that when scale of production is increased then due to division of labour and specialization many types of economies are available. On account of these economies, proportional increase in returns is more than increase in factors of production.

All these economies, are only internal economies as these are related to the scale of production of the concerned firm.

○ 7. Economies of Scale or Causes of Increasing Returns to Scale

Occurrence of increasing returns is explained in terms of the economies of scale. Economies of scale refer to the situation in which increasing the scale of production reduces the unit cost of production or raises output per unit of the factor inputs. It may be pointed out that in the opinion of Prof. Koutsogiannis, "Returns to scale are only one part of the economies of scale. Returns to scale are technical, while economies of scale include the technical as well as monetary economies."

Broadly, economies of scale are classified as:

- (a) **Internal Economies of Scale** : These arise due to the change in the size of the firm, and are available to that firm only.
- (b) **External Economies of Scale** : These arise due to the expansion of the industry i.e. number of firms.

○ 7.1 Internal Economies

The Fig. 6 shows that 10% increase in all factor inputs causes 10% increase in output. Likewise, 20% increase in inputs causes 20% increase in output. Thus, any percentage increase in output matched with equal percentage increase in output QO line accordingly, forms a 45° angle from the origin, indicating the occurrence of constant returns to scale. Fig. 6 illustrates this situation.

The Fig. 6 shows that 10% increase in all factor inputs causes 10% increase in output. Likewise, 20% increase in inputs causes 20% increase in output. Thus, any percentage increase in output matched with equal percentage increase in output QO line accordingly, forms a 45° angle from the origin, indicating the occurrence of constant returns to scale. Fig. 6 illustrates this situation.

When a firm increases its scale of production it enjoys several economies. These economies are called internal economies. Increasing Returns to scale are due to internal economies. **These are those economies which are firm-specific**. These are available to that particular firm in the industry which seeks to increase its level of output by way of increasing its scale of production. These are called internal economies because these are not shared by other firms in the industry which are not expanding their scale of production.

Diminishing returns to scale occurs when a given percentage increase in all factor inputs (in some constant ratio) causes proportionately lesser increase in output. If 15% increase in all factor inputs causes, say, only 10% increase in output, it is a case of diminishing returns to scale. Fig. 7 illustrates this situation.

The Fig. 7 shows that 15% increase in all factor inputs causes only 10% increase in output. Likewise, 25% increase in factor inputs causes only 15% increase in output. Returns to scale are thus diminishing. The main cause of its operation is that diseconomies outweigh economies of scale.

Types of Internal Economies : Koutsovianis, has divided internal economies into two parts : (I) Real Economies and (II) Pecuniary Economies.

O (I) Real Economies

Real economies are those associated with a reduction in the physical quantity of inputs, materials, various types of labour and various types of capital. Real economies can be of six types:

(1) **Labour Economies or Specialization**: Increase in the scale of production of a firm results into many economies of labour, like specialization. Enlarged scale of production allows division of labour and specialization with the result of an improvement in the skills. Specialisation means to perform just one task repeatedly which makes the labour highly efficient in its performance. This adds to the productivity and efficiency of the labour. Adam Smith illustrated this point with an example. A labourer all alone can make just 20 pins in a day. But when he divides the work of pin-making into different parts and each part is entrusted to a different labourer then 2400 pins are made in a day. This is the marvel of division of labour which apart from increasing the skills of labour force, results in (i) Time Saving which is lost in shifting the worker from one job to another (ii) Promotion of New Inventions and (iii) Automation of Production Process. All these increase the productivity of labour and reduces costs.

(2) **Technical Economies or Indivisibility**: Technical economies are those economies which are related with the fixed capital that includes all types of machines and plants. The technical economies arise mainly from **indivisibilities of capital**. Indivisibility means that machinery is available only in minimum sizes or in different ranges of sizes. Small firms are often not able to utilize fully even the smallest size available of the plant. Effective utilisation of this equipment demands a high volume of production. This means only large-scale firms are able to afford and operate efficiently the best available plant. A big firm can not only install an appropriate type of machine but also different varieties of a given machine. So a firm producing on large scale can enjoy economies by the fuller utilisation of the fixed capital. Technical economies, in their turn, are of three types:

(i) **Economies of Increased Dimension**: A firm can obtain technical economies by increasing the size of its plant. Average cost of large machines is less but their average returns are more. For example building of a double decker bus, does not involve double the cost of labour and raw materials. It is less than double.

(ii) **Economies of Linked Processes**: A firm can obtain economies of linked processes. A firm producing on large-scale undertakes all processes, from the production of raw material to the finished product, even its distribution, all by herself. These linked activities save time and transport costs to the firm. For instance, iron and steel mills have their own coal and manganese mines, their own transport and distribution facilities.

(iii) **Economies of the Use of By-Product**: Firms producing on larger-scale do not throw away the waste material, rather they produce by-product out of them and thus supplement their income. For example, sugar mills make power alcohol out of the molasses. Paper mills make paper out of cotton-waste.

(3) **Inventory Economies**: A large-sized firm can enjoy several types of inventory economies. A big firm possesses large stocks of raw materials. Consequently, when the raw materials are in short supply and sold at exorbitant price, the firm has not to worry at all. Such a firm also keeps in its stock large quantity of spare parts and small tools. In case a machine goes out of order suddenly, it can be made operative no time. Thus there is no fear of stoppage of production.

(4) **Selling or Marketing Economies**: A firm producing on large-scale also enjoys several economies in respect of sale of this large output. For example, (i) economies on account of marketing (ii) firm can appoint its own sole distributors and authorized dealers (iii) economies on account of research and development. A large firm can conduct its own research to effect improvement in quality of the product and to reduce the cost of production. This enables the firm to produce quality products.

(5) **Managerial Economies**: A firm producing on large-scale can engage efficient and talented managers. The task of management is decentralized into different departments. Each department is headed by an expert who looks after the minute details of his department. Thus, as the production goes on an expert who looks after the minute details of his department. Thus, as the production goes on increasing, management cost goes on falling.

(6) **Transport and Storage Economies**: A firm producing on large-scale enjoys economies of transport and storage. A big firm has its own fleet of trucks to carry raw material and finished products. The firm also has its own storage and godown facilities. It can therefore store its products when prices in the market are not favourable. Transport and storage facilities help the firm to sell its products at the opportune time and at favourable price.

O (II) Pecuniary Economies

Pecuniary economies are economies realised from paying lower prices for the factors used in the production and distribution of the product due to bulk-buying by the firm as its sales increases. Firms producing on large-scale get raw material at low price since they have to purchase same in large bulk. Likewise, banks grant them several concessions as they constitute big customers. Firms also enjoy large discounts and commissions on advertisement and publicity of their products.

7.2 External Economies

External Economies are those economies which are industry-specific. These are available to all the firms in the industry when the scale of operation of the industry as a whole expands. Owing to overall expansion of the industry new markets are explored, new ways of doing business discovered, managerial techniques are improved and many linked processes are developed. All these developments tend to generate economies in terms of increased productivity or reduced cost of production. To be noted at the outset these economies should not be confused with the economies of scale of production of a particular firm. External economies are not related to the growth of the firm, these are independent of the size/scale of production of a particular firm. External economies refer to all those benefits and facilities available to all the firms of a given industry.

In the words of Cairncross, "External economies are those which are shared in by a number of industries when the scale of production in any industry or group of industries increases. They are monopolised by a single firm when it grows in size, but are conferred on it when some other firms grow."

These economies arise not because a single firm is growing in size but they arise because the entire economy or social overheads undergoes expansion. External economies can be explained with the help of an example. Supposing there is only one motor-car in a town. No one will set up a petrol pump in such a town. If the number of cars increases, a petrol pump will be set-up. Such a petrol pump will benefit all

car-owners and not one car-owner only. If the number of cars increases still further then there will be into being service stations, auto-spare part-sellers, repair workshops etc. Availability of these facilities prove beneficial and convenient to all the car-owners without any discrimination. Prof. Cairncross classified these external economies into three types as under:

(1) **Economies of Concentration:** When several firms of an industry establish themselves in one place, then they enjoy many benefits together, e.g., availability of developed means of communication and transport, trained labour, by-products, development of new inventions pertaining to that industry, mutual consultation by the entrepreneurs when faced with a general crisis and financial institutions; these facilities help the firms to develop and progress.

(2) **Economies of Information:** When the number of firms in an industry increases, it becomes possible for them to have concerted efforts and collective activities. They don't feel the need of independent research on individual basis. Scientific and trade journals are published. It becomes convenient for the firms of a given industry to collect necessary information. These journals provide such information such as new markets pertaining to the goods produced by the firms or the development of new production techniques abroad etc.

(3) **Economies of Disintegration:** When an industry develops, the firms engaged in it may agree to divide the production process among themselves. Every firm specializes in the production of particular item concerning that industry. For example, in case of cycle industry localized at a particular place, some firms specialize in the manufacture of free wheels, other specialize in cycle chains, still others in pedals, rims, hubs etc. It is called decentralization or disintegration. It is of two types : (i) Horizontal disintegration and (ii) Vertical disintegration. In case of horizontal disintegration, every firm endeavours to specialize in the production of same variety of the good e.g., all woolen mills manufacturing blouses. In case of vertical disintegration, different firms in the industry specialize in different stages of production process. For example, in textile industry some firms are engaged in spinning, others in weaving, still others in dyeing etc.

□ 7.3 Comparative Evaluation of Internal and External Economies

According to Prof. Cairncross, external economies do not differ from internal economies in significant manner. What are internal economies for one firm may constitute external economies for another firm. Every firm is mainly concerned with maximization of its profit, under a given arrangement irrespective of the fact whether it arises due to external or internal economies.

The difference being:

(1) At a given time, internal economies are beneficial to a particular firm whereas external economies are beneficial to all the firms working in an industry.

(2) In case of internal economies, only one firm earns large profit due to fall in its cost of production but external economies effect all the firms in an industry.

(3) External economies are very much beneficial to developing countries, because when the government of these countries invest generally on transport, communications, power resources, technology, then all firms stand to gain and industry expands.

□ 8.1 Internal Diseconomies

Internal diseconomies are those diseconomies which are experienced by a particular firm when it enlarges its production beyond a point. Unwieldy Management is the principal cause of diseconomies of scale or internal diseconomies is the difficulties of large-scale management. As a firm expands, difficulties of management go on multiplying. In a big firm, it becomes pretty difficult to co-ordinate the work of different sections. It also entails problems of bureaucratic red tapes. Moreover it becomes a tough problem to supervise the work spread all over. It adversely affects operational efficiency of the firm. In the words of McConnell, "The main factors causing diseconomies of scale have to do with certain managerial problems which physically arise as a firm becomes a large-scale producer."

□ 8.2 External Diseconomies

External diseconomies are those diseconomies which are experienced by all the firms of an industry when the scale of production of the industry as a whole expands beyond manageable limits. These diseconomies are suffered by all the firms in an industry irrespective of their scale of output. These are not confined to any particular firm. When an industry in a given area expands beyond certain limit then firms operating in that industry suffer external diseconomies. Significant external diseconomies come into operation when many firms are localized at a particular place. Then it becomes difficult for means of transport to cope with the additional burden of traffic. As such, transport costs go up. Firms experience great difficulties in procuring raw materials. Because of large demand for raw material, it becomes scarce and expensive. Besides, availability of skilled labour, power and finance becomes difficult and expensive. Cost of land for the new firms becomes prohibitive. All this leads to closure of several firms in the industry.

□ 9. Balance between Economies and Diseconomies Or Causes of

Constant Returns to Scale

The economies of scale give rise to increasing returns to scale. Diseconomies of scale, on the other hand, lead to decreasing returns to scale. There exists a wide range of output between the points at which economies of scale are encountered by the diseconomies of scale: This is the range of constant returns to scale. The firm enters the phase of constant returns to scale after the phase of increasing returns to scale exhausts itself and before the phase of decreasing returns to scale sets in. The main cause of the application of constant returns to scale is self cancellation of economies and diseconomies of scale. In other words, constant returns to scale arise when economies are exactly balanced by diseconomies.

□ 10. The Distinction between Returns to Scale and Economies of Scale

It must be remembered that returns to scale and economies as well as diseconomies of scale are related but are not exactly the same thing. There are following differences between these two concepts:

(1) Returns to scale are related to the technological relation between a proportionate change in inputs and the resultant change in output. In other words, returns to scale refer only to the phenomenon that occurs within a firm.

On the other hand when we consider the possibility of changes in things such as prices of factor we are considering what has been called external economies and diseconomies of scale. In other word external economies and diseconomies refer to the phenomenon that occurs outside the firm.

(2) Economies of scale can arise solely on the basis of technologically increasing returns to scale they can come about solely from the price effects on inputs. Hence, it is possible there to be increasing returns to scale but no economies of scale, if the firm must buy its inputs at prices that rise when the industry or firm expands production.

11. Differences between of Returns to a Factor and Returns to Scale

Main differences between returns to a factor and returns to scale are as under :

- (1) Returns to a factor are studied with reference to short period production function, while returns to scale are studied with reference to long period production function.
- (2) Returns to a factor applies when some factors are fixed and others are variable, Returns to scale on the other hand, become operative when all factors are variable.
- (3) Returns to a factor are studied with reference to change in variable factor only. On the other hand, Returns to scale are studied when all factors are changed in the same proportion.
- (4) The main cause of the application of Returns to a factor is the variation or change in the proportion of different factors. On the other hand, Returns to scale are caused by change in scale of production.

QUESTIONS

1. Explain the law of variable proportions. Explain the conditions of its applicability.

The law of diminishing returns is the only law of production. Increasing and Constant Returns are only a passing phase. Comment on this statement.

Or

2. What is meant by returns to scale? Explain its various phases.

Explain the concepts of Returns to Scale. Describe the factors which cause increasing returns to scale.

3. Explain and illustrate the Law of Diminishing Returns. Why does this law operate?

4. Explain the circumstances under which the law of increasing returns operate. Is it always applicable to industry?

5. Discuss the Law of Constant Returns. Why does it apply?

6. What do you understand by economies and diseconomies of scale ? Explain their relationship with the shape of long term average cost curve of a firm.

7. What do you understand by the terms internal and external economies?
8. Distinguish between external and internal economies and discuss the relation of these economies with the law of increasing returns.
9. Distinguish between return to a factor and returns to scale. What do you understand by the term economies of scale ? What are external and internal economies ?
10. Distinguish between returns to a factor and returns to scale. Are diminishing returns to a factor inevitable? Give reasons.
11. Prepare an imaginary short run production schedule for a firm using the inputs, capital and labour. Plot the data on a diagram to illustrate the total product, average product and marginal product curves.
12. What is the difference between Returns to Scale and Returns to a Factor? Explain the concept of economies and diseconomies of scale.

17

THEORY OF COSTS

□ 1. Introduction

The firm's decision on profit maximising output depends on the behaviour of its costs as well as the behaviour of its revenue. This chapter develops the theory of costs. A firm's cost of production commonly thought of as its monetary expenses. In order to produce a good, every firm makes use of various factor and non-factor inputs. In common parlance the amount spent on the use of these inputs called cost of production. However, the firm's money expenditure on inputs is only a part of the cost picture. There are different concepts of cost like money cost, real cost, opportunity cost and social cost.

□ 2. Concepts of Cost

The concept of cost is used in a variety of ways. Important concepts of cost are as follows :

○(1) Money Cost

○ Definition

The amount spent in terms of money for the production of a commodity is called money cost.

○(2) Real Cost

In the words of J.L. Hanson, "The money cost of producing a certain output of a commodity is the sum of all the payments to the factors of production engaged in the production of that commodity for non-factor resources."

The term money cost included the following expenses (i) wages paid to the labourers (ii) interest on loans (iii) Rent paid for premises (iv) expenditure on raw materials and machinery (v) Insurance (vi) interest on loans (vii) Payments for power, light and fuel (viii) Transportation charges etc.

○(3) Accounting Cost or Business Cost

The mental and physical efforts and sacrifices undergone with a view to producing a commodity are its real cost. In other words, real cost refers to the pains, the discomfort and disutility involved in supplying the factors of production by their owners.

○ Definition

In the words of Marshall, "The exertions of all the different kinds of labour that are directly involved in making it (a commodity) together with the abstinences or rather the waitings required for saving the capital used in making it, will be called the real cost of production of commodity."

In short, real cost is expressed not in money terms but in terms of efforts (of workers) and sacrifice (of capitalists) undergone in producing a commodity. For instance, if a potter has to work for eight hours to produce a toy, then this labour for eight hours will be the real cost of the toy. The concept of real cost is a subjective concept. It has got no practical significance.

○(3) Accounting costs refer to cash payments which firms make for factor and non factor inputs, depreciation and other book keeping entries."

○ Definition

In the words of Nicholson, "Accounting cost refers to out of pocket expenses, historical costs, depreciation and other book keeping entries."

○(4) Opportunity Cost

The doctrine of opportunity cost is extremely important in economic analysis. We know that the cost is the value of inputs used in the process of production. An input has got value because it is scarce or limited. If we use the input to produce one good, it is not available to produce something else. The cost of producing one thing is measured in terms of what was given up in terms of next best alternative that is sacrificed. When we spend a certain amount of money on a particular thing, the money itself is not the cost but merely a measure of the value of other opportunities foregone. If several opportunities are given up for producing a particular commodity, it is the value of the next best foregone opportunity that constitutes cost. Thus it is called opportunity cost (**The opportunity cost is the cost of next best alternative foregone. It is also called alternative cost.**) Supposing a farmer can grow both wheat and gram on a farm. If on a farm measuring one-hectare he grows only wheat, he foregoes the production of gram. If the price of the quantity of gram, that he foregoes is Rs. 1,000, then the opportunity cost of growing wheat will be Rs. 1,000. Thus, the price of gram which the farmer has to forego in order to produce wheat is called the opportunity cost of wheat. In this way, the opportunity cost to a firm of using resources in the production of a good is the revenue foregone by not using these resources in their next best alternative.

○ Definitions

(1) In the words of Leftwich, "Opportunity cost of a particular product is the value of the foregone alternative product that resources used in its production, could have produced".

(2) According to Ferguson, "The alternative or opportunity cost of producing one unit of commodity X is the amount of commodity 'Y' that must be sacrificed in order to use resources to produce X rather than Y."

○ Explanation

Fig. 1 illustrates the concept of opportunity cost. The production line PP shows that if a given quantity of resources is employed to produce both X and Y, it can produce (i) 12 units of Y and nothing of X or (ii) 6 units of X and nothing of Y or (iii) Any combination of X and Y along the line. This line shows that to produce X, we must forego the opportunity of producing some of Y. This is called the opportunity cost of X in terms of Y. In the diagram the opportunity

cost of one unit of X is $\frac{12}{6} Y = 2Y$; This means that the same amount of factors of production that can produce 1 unit of X can produce 2 units of Y . The opportunity cost of X in terms of Y is 2. Likewise, the opportunity cost of producing one unit of Y in terms

of X is $\frac{6}{12} X = 0.5X$. The same amount of factors of production employed in the production of 1 unit of Y can produce 0.5 units of X . The opportunity cost of Y in terms of X is 0.5. In short, the opportunity cost of using some resource in a particular way is defined as the value of that resource in its next best alternative use. **We should also note that the undercurrent of the concept of opportunity cost is not money payments but sacrificed opportunities or alternatives.**

For example, a firm does not make any cash payments to self owned and self employed resources, there is still an opportunity cost in using these resources, namely, other things that could have been produced, are sacrificed. The costs of self owned and self used resources are called implicit costs. On the other hand, the cash payments which firms make to outsiders for their services and goods are called explicit costs. The principle of opportunity costs refers to both explicit and implicit costs.

(5) Economic Cost

In economic analysis, economic cost includes both accounting costs and opportunity costs of self owned and self employed resources.

○ Definition

Economic costs may be defined as those monetary payments a firm must make to those outsiders who supply resources and non expenditure payments of self owned and self employed resources which they could have earned in their best alternative opportunities.

Thus the accounting cost refers only to explicit costs while economic costs refer both to explicit and implicit costs.

For example, consider the economic cost of a year's college education. Tuition, hostel and other expenses might come to Rs. 6,000 for the year. The accounting cost for the year is thus Rs. 6,000. But the economic cost includes the monetary outlay plus the foregone income from alternative uses of student time and money. Had he been employed for the year instead of attending college, the student could have earned Rs. 5,000. The amount of Rs. 6,000 which was paid to cover his expenses in college could have been deposited in a saving account at 5% interest, in which case it would have earned Rs. 300 for the year. Thus the economic cost of a year in the college (monetary outlays + foregone wages, + foregone interest) is, in this example Rs. $6,000 + \text{Rs. } 5,000 + \text{Rs. } 300 = 11,300$. Since economic costs include the accounting costs and opportunity costs, it comes much closer to giving the true value of the resources used in the process of production.

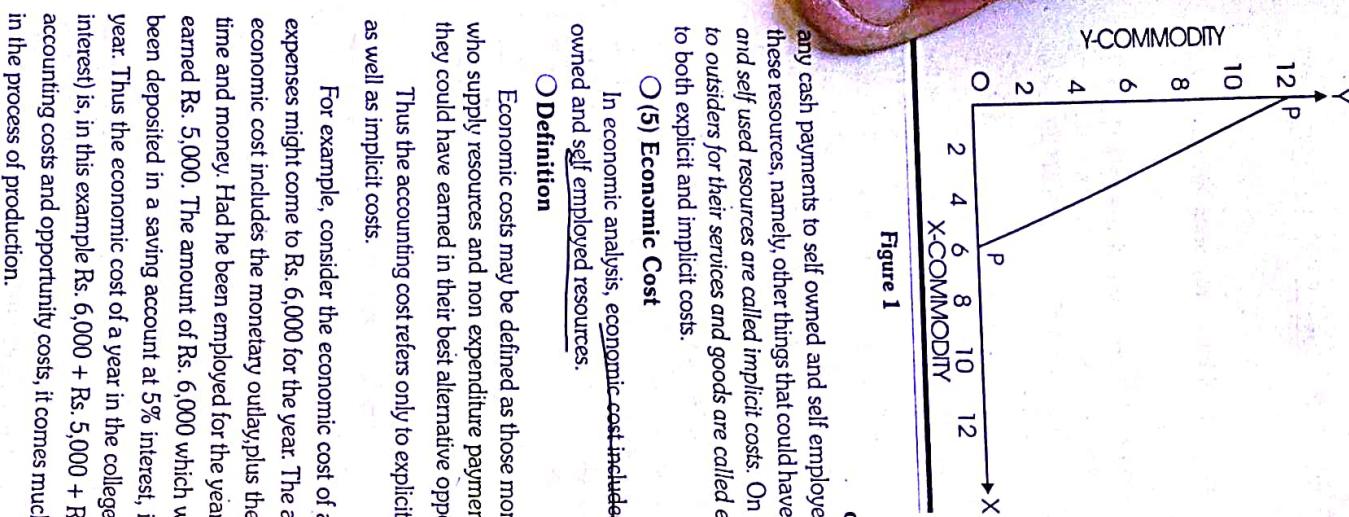


Figure 1

of $X = \frac{6}{12} X = 0.5X$. The same amount of factors of production employed in the production of 1 unit of Y can produce 0.5 units of X . The opportunity cost of Y in terms of X is 0.5. In short, the opportunity cost of using some resource in a particular way is defined as the value of that resource in its next best alternative use. **We should also note that the undercurrent of the concept of opportunity cost is not money payments but sacrificed opportunities or alternatives.**

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(6) Social Cost

According to **Dictionary of Modern Economics** "Social cost of a given output is defined as the sum of money which is just adequate when paid as compensation to restore to their original utility levels all who lose as a result of the production of the output."

In other words, social cost is the cost incurred by the whole society for producing a commodity. For instance, during the process of manufacturing cloth the smoke emitting from the chimneys of textile mills poll the garments worn by the people and so they have to spend more on laundry. Pollution of air tells upon the health of the people and they have to spend more on medical treatment. All these expenses are not incurred by a private firm. Their burden is borne by the society as a whole. That is why these expenses are called social costs. In other words the social costs of a good or service include both the costs incurred by the producers of the good or service (private costs) and the costs experienced by those suffering negative externalities or external costs.

○ Definition

(7) Private Cost

Private cost is the cost incurred by an individual firm for producing a commodity. It includes both explicit cost as well as implicit cost.

○ Definition

In the words of **Miller**, "Private costs are costs incurred by the firm or the individual producer as a result of their own decisions."

One of the major reasons why social costs differ from the observed private costs is the existence of external costs. External costs refer to the costs experienced by those suffer in negative externalities. In short private cost is equal to social costs minus external costs.

(8) Explicit Costs

Many inputs are bought or hired by the firm. The monetary payments which a firm makes to those outsiders who supply labour services, material, fuel, transportation services, power and so forth are called explicit costs.

○ Definition

In the words of **Leftwich**, "Explicit costs are those cash payments which firms make to outsiders for their services and goods."

Wages to the labourers, cost of raw-material or semi-finished goods, interest on loans, depreciation charges, etc., are the examples of explicit costs of a firm. These costs are also called "absolute costs" or "outlay costs" or "actual costs."

(9) Implicit Costs

Many inputs are self owned and self employed by the firm. The firm does not have to make any payment for them to anyone, but it foregoes the opportunity to receive payments from someone else to whom it could sell or lease out self owned resources. When a firm uses a building that it owns, it does not have to make payment to anyone, but it gives up the opportunity to receive payments from someone else

to whom it could rent the building. The cost of using resources owned by the firm or contributed by its owners is called implicit cost in economics.

O Definition

In the words of **Leftwitch**, "Implicit costs are costs of self owned or self employed resources."

To the firm, the implicit costs are the money payments which the self employed resources could have earned in their best alternative employment. Like explicit costs they represent sacrifices by the firm. Unlike explicit costs, however, they do not take the form of explicit payments to outsiders. Implicit costs are measured by imputing a value to the self owned and self employed resources equal to the returns they would get in their best or highest paying alternative. To an economist these implicit costs should be valued at the price that would have to be paid to replace their contribution to output. For example, suppose Ram operates a book store as a sole proprietor. He owns his store building and supplies all his own labour and money capital. Though his enterprise has no explicit rental, wage or interest cost, implicit rents, wages and interest are incurred. By using his own building for a bookstore, he sacrifices Rs. 400 rental income which could otherwise have been earned by renting it to someone else. Similarly by using his money capital and labour in his own enterprise, Ram sacrifices the interest which he otherwise could have earned by supplying these resources in their best alternative employments. And finally, by running his own enterprise, Ram foregoes the earnings he could realise by supplying his managerial efforts in someone else's firm. The minimum payment required to keep Ram's entrepreneurial talents engaged in this enterprise is called normal profit. Thus normal profit is an implicit costs and as such included in total cost. The total cost includes both the explicit cost and implicit costs. In short, the economists use as costs all payments — explicit and implicit, the latter including normal profit - required to retain resources in a given line of production.

□ 2.1 Cost Function

A firm's cost function is the functional relationship between its costs and its output. The firm's production function and the prices it pays for its inputs determine the firm's cost function. Since the production function can pertain to the short run or the long run, it follows that the cost function can also pertain to the short run or the long run. The **short run** is defined to be that period of time in which at least one or some of the firm's inputs are **fixed** and some are **variable**. More specifically since the firm's plant and equipment are among the most difficult inputs to change quickly, the short run is generally understood to mean the length of time during which firm's plant and equipment are fixed. They determine the firm's scale of production. Thus short run refers to a period of time too brief to permit an enterprise to alter its plant capacity, yet long enough to permit a change in the level at which the fixed plant is utilized. The firm's plant capacity is fixed in short run, but output can be varied by applying larger or smaller amounts of variable inputs like labour, raw material, power to that plant. In short run, output can be increased only upto the existing plant capacity. It can vary from zero, if the firm shuts down altogether, to some maximum permitted by the fixed factors.

The long run is defined to be time period in which all inputs are variable. There are no fixed inputs in the long run. From the view point of existing firm the long run refers to a period of time long enough for all these firms to establish new plants or discontinue the old ones. From the viewpoint of an industry the long run means enough time for the existing firms to close down and leave the industry and for new firms to enter the industry. In the long run; a firm's output can range from zero to an indefinitely large quantity. While short run is a "fixed plant time period," the long run is "a variable plant time period."

It is important to note that the short run and long run are not definite periods of calendar time. The short run may be of a few weeks or few years depending upon the time required to increase the supply of factors in the firm concerned.

3. Theories of Cost

Theories of cost can be divided into two parts :

THEORIES OF COST

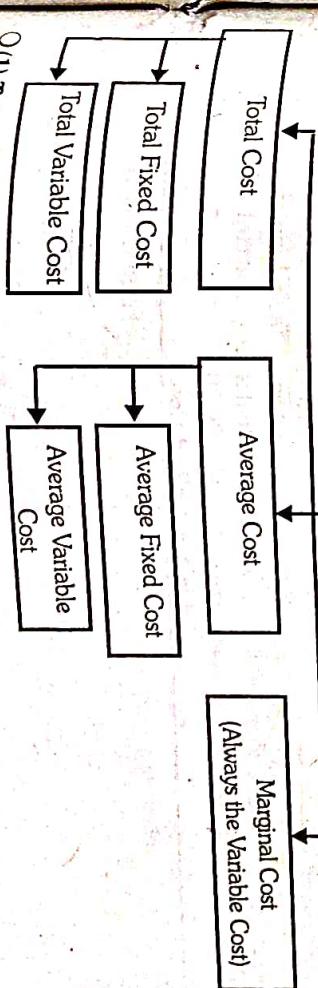


Main difference between traditional and modern theories of cost is that the traditional economists believe that average and marginal cost curves are 'U'-shaped while the modern economists believe them to be of 'L'-shaped. In both the theories costs are studied separately in the short run as well as in the long run.

3.1 Costs in the Short Run

Since short run costs are closely related to short run productivity, for each measure of short run productivity there is a cost counterpart. Just as there are fixed and variable inputs, there are fixed and variable costs. Just as there are total, average and marginal measures of productivity, there are total, average and marginal measures of costs. In short cost is the reciprocal of productivity. The short run costs may be classified as follows :

Short Run Cost



O 1) Total Cost

Total cost is the cost of all the resources necessary to produce any particular level of output. Since in the short run we classify factors into fixed and variable categories, we break up the firm's total cost of production in the same way. The cost of fixed factors are total fixed costs and those of variable factors are total variable costs. Thus total costs are the sum of total fixed costs and total variable costs.

Here

$$TC = TFC + TVC$$

TC is total cost ; TFC is total fixed costs and TVC is total variable costs)

O Definition

In the words of **Browning**, "Total cost (TC) is the sum of total fixed cost and total variable costs at each output level".

Total cost identifies the costs of all the inputs, fixed and variable used to produce a certain output.

Total cost always rises with output. This is because obtaining more output must always require more input.

(i) Total Fixed or Supplementary Costs

The costs of fixed inputs are called total fixed costs. The fixed cost is equal to the unit of fixed factor multiplied by its price.

$$\text{TFC} = \text{Units of Fixed Factors} \times \text{Price of the Factor}$$

"Fixed costs are costs which do not change with changes in the quantity of output." These costs do not vary as the level of output varies. Production may be maximum or of zero unit, fixed costs remain the same.

O Definition

In the words of **Ferguson**, "Total fixed cost is the sum of the short run explicit fixed costs and the implicit costs incurred by an entrepreneur."

The total fixed cost will be the same regardless of how much output the firm produces. Even if the firm shuts down and produces nothing, it still incurs its total fixed cost. A carpet-making factory can make at the most six carpets per day. Fixed cost of making carpets is Rs. 100. Even when no carpet is made cost is one which varies as the level of output varies." These costs undergo a change with change in output. On a given day, the fixed cost of the factory remains Rs. 100. And if, the factory produces six carpets next day, the fixed cost again remains Rs. 100. These costs are also called Supplementary costs or Indirect costs. Over-head costs, Historical costs or Unavoidable costs. Fixed costs generally include the following expenditure. (1) Rent (2) Salary of administrative staff (3) Interest on fixed capital (4) Insurance (5) Property taxes (6) Reward for entrepreneurial services or normal profit (7) Depreciation are explained with the help of Table 2 and Fig. 3.

Fixed costs are explained with the help of table 1 and fig. 2. Table 1 indicates that change in the quantity of output causes no change in fixed cost. When output is zero, fixed cost is Rs. 10. When output increases to 2 units or 4 units or 6 units, fixed cost remains Rs. 10.

Table No: 1 Fixed Cost

Quantity of Output	Fixed Cost (Rs.)
0	10
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10

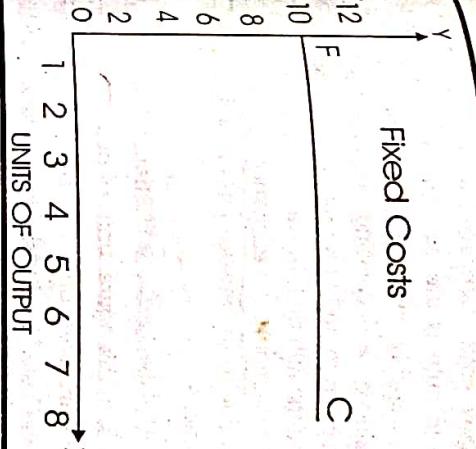


Figure 2

According to Ferguson, "Total variable cost is the sum of amounts spent for each of the variable inputs used."

Since the use of variable input varies in accordance with the level of output, variable costs also vary with the level of output. In other words "Variable costs are those costs which vary as the level of output varies." These costs undergo a change with change in output. If the output falls these costs also fall and if output rises these costs also rise. If the output is zero, variable cost is zero, and total cost will be equal to total fixed cost. These are also called, Prime Costs or Direct costs.

Variable costs generally include the following expenses. (1) Expenses on raw materials (2) Wages of labour (3) Electricity charges (4) Wear and tear expenses. Variable costs are explained with the help of Table 2 and Fig. 3.

Table 2 Variable Costs

Output	Variable Costs (Rs.)
0	0
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80

Table 2 shows that as the quantity of output is increasing, variable costs are also increasing. When output is zero, variable costs are also zero. When output is of 1 unit, variable costs are Rs. 10 and when output is of 6 units, variable costs increase to Rs. 60. It may be noted from the above table that the increase

Since TFC is a constant number it is graphed as a horizontal line. In fig. 2, units of output are shown on OX-axis and cost of production on OY-axis. FC line represents fixed costs. It is parallel to OX-axis, signifying that cost remains fixed whether output is more or less. FC line touches OY-axis at point F, it means even when output is zero, fixed cost remains Rs. 10.

(ii) Variable Costs

Variable costs are those costs which are incurred on the use of variable factors of production.

O Definition

"Fixed costs are costs which do not change with changes in the quantity of output." These costs do not vary as the level of output varies. Production may be maximum or of zero unit, fixed costs remain the same.

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Table No: 1 Fixed Cost

Quantity of Output	Fixed Cost (Rs.)
0	10
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10

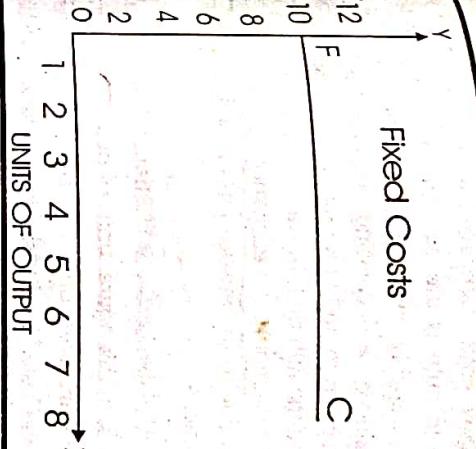


Figure 2

According to Ferguson, "Total variable cost is the sum of amounts spent for each of the variable inputs used."

Since the use of variable input varies in accordance with the level of output, variable costs also vary with the level of output. In other words "Variable costs are those costs which vary as the level of output varies." These costs undergo a change with change in output. If the output falls these costs also fall and if output rises these costs also rise. If the output is zero, variable cost is zero, and total cost will be equal to total fixed cost. These are also called, Prime Costs or Direct costs.

Variable costs generally include the following expenses. (1) Expenses on raw materials (2) Wages of labour (3) Electricity charges (4) Wear and tear expenses. Variable costs are explained with the help of Table 2 and Fig. 3.

Table 2 Variable Costs

Output	Variable Costs (Rs.)
0	0
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80

Table 2 shows that as the quantity of output is increasing, variable costs are also increasing. When output is zero, variable costs are also zero. When output is of 1 unit, variable costs are Rs. 10 and when output is of 6 units, variable costs increase to Rs. 60. It may be noted from the above table that the increase

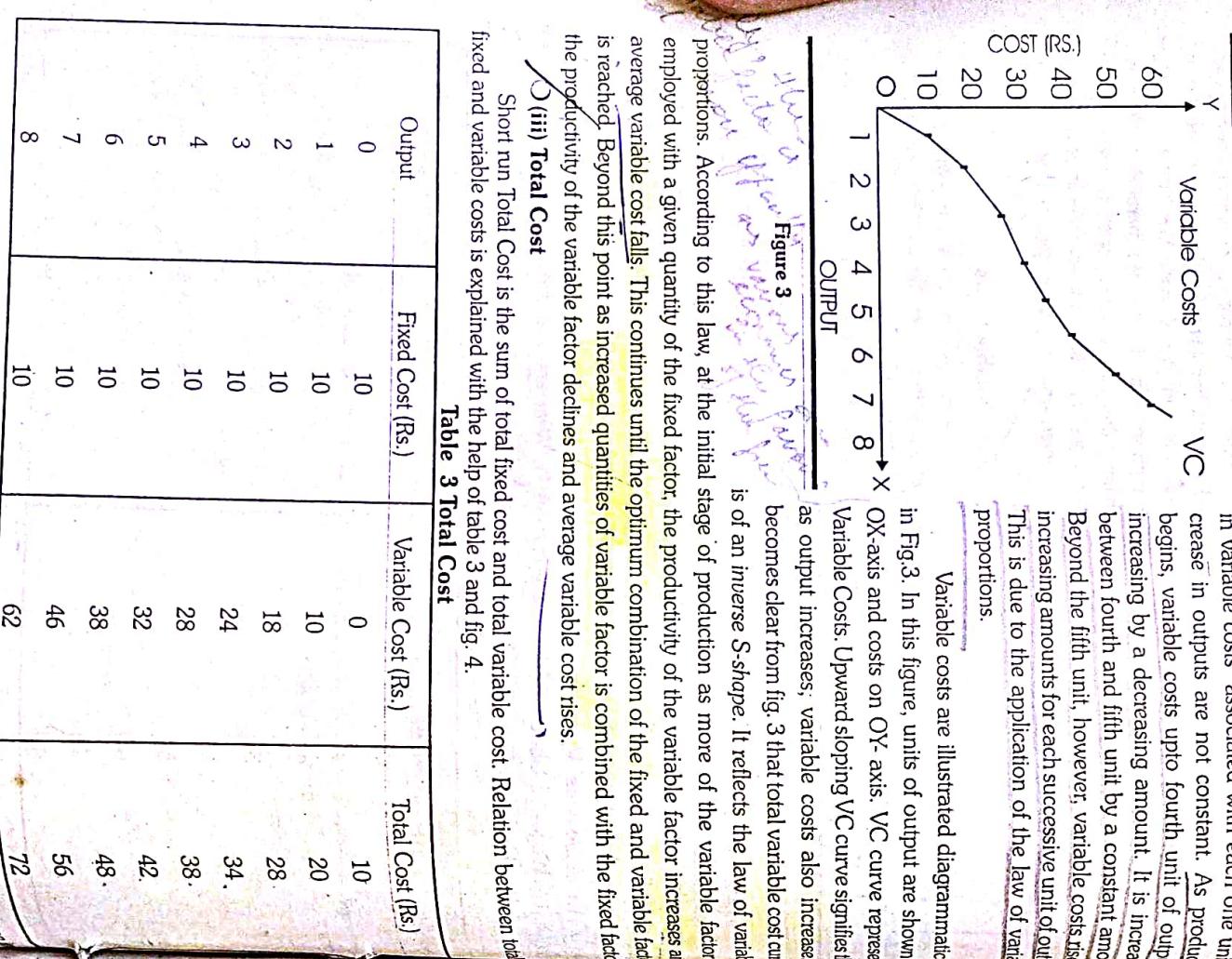


Figure 3

Variable costs are illustrated diagrammatically in Fig. 3. In this figure, units of output are shown on OX-axis and costs on OY-axis. VC curve represents Variable Costs. Upward sloping VC curve signifies that as output increases, variable costs also increase. It becomes clear from fig. 3 that total variable cost curve is of an inverse S-shape. It reflects the law of variable proportions. According to this law, at the initial stage of production as more of the variable factor is employed with a given quantity of the fixed factor, the productivity of the variable factor increases and average variable cost falls. This continues until the optimum combination of the fixed and variable factors is reached. Beyond this point as increased quantities of variable factor is combined with the fixed factor the productivity of the variable factor declines and average variable cost rises.

(iii) Total Cost
Short run Total Cost is the sum of total fixed cost and total variable cost. Relation between total fixed and variable costs is explained with the help of table 3 and fig. 4.

Table 3 Total Cost

Output	Fixed Cost (Rs.)	Variable Cost (Rs.)	Total Cost (Rs.)
0	10	0	10
1	10	10	20
2	10	18	28
3	10	24	34
4	10	28	38
5	10	32	42
6	10	38	48
7	10	46	56
8	10	62	72

In table 3, total costs can be known by aggregating fixed costs and variable costs. With increasing output, total costs are also increasing, in the above table. When output is zero, total costs are Rs. 10.

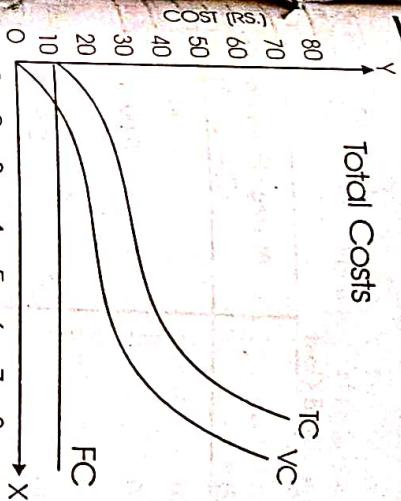


Figure 4

Difference between the fixed and variable costs has the following significance in the short period.

(i) Production decision during depression or Decision Regarding Shut Down: In the short period, on account of depression, there is fall in the demand for the commodity and its price. The firm, therefore, has to decide whether to continue production or shut down the plant during the period of depression. In the short period, even if the firm discontinues its production, it will have to bear fixed costs, like, rent of factory premises, interest on fixed capital etc. In other words, the firm will have to bear the loss equivalent to fixed costs in the event of closure of production for a short period. Hence, if during depression, price falls to such an extent as to meet only the variable costs, the firm will continue its production and bear the loss of fixed costs. As long as, the firm meets its variable costs from the prevailing low price, it will continue production. However it will stop production only when it fails to cover even the variable costs.

(2) Control over Costs: In the short period, firm has no control over fixed costs. Whether it increases or decreases production, it will have to bear the fixed costs. On the other hand, a firm has full control over variable costs. It can increase or decrease these costs. Consequently, in short period, a firm cannot achieve optimum combination of a given quantity of output, as some of its costs remain fixed costs.

(2) Average Cost (AC)
Average cost is the cost per unit of output. It is the total cost of producing any given output divided by the number of units produced. There are three aspects of average cost corresponding to the three aspects of cost. (i) Average Fixed Cost (ii) Average Variable Cost (iii) Average Total Cost.

(i) Average Fixed Cost (AFC)
Average fixed cost is per unit fixed cost. It is total fixed cost divided by output.

$$AFC = \frac{FC}{Q}$$

(Here AFC = Average Fixed Cost; FC = Fixed Cost, Q = Quantity of Output)
Since fixed cost is constant, the greater the output the lower will be the fixed cost per unit of output.
Average fixed cost can be explained with the help of table no: 4 and fig. no.5.

Table 4 Average Fixed Cost

Output	Fixed Cost (Rs.)	Average Fixed Cost (Rs.) $(3) = (2) \div (1)$
1	10	10.00
2	10	5.00
3	10	3.33
4	10	2.50
5	10	2.00
6	10	1.67
7	10	1.43
8	10	1.25

When production is of 1 unit, then average fixed cost is Rs. 10.00. When production is of 5 units, the average fixed cost comes down to Rs. 2.00. Thus average fixed cost goes on falling with increasing output.

In fig. 5, AFC curve represents average fixed cost. It is continually declining curve as total output increases. But it will not touch OX-axis, as that would mean zero average fixed cost, which is not possible because fixed cost can never be zero. Therefore, evident that with increase in output, average fixed cost goes on diminishing. The average fixed cost curve is a rectangular hyperbola, showing (at its points) the same level of total fixed costs.

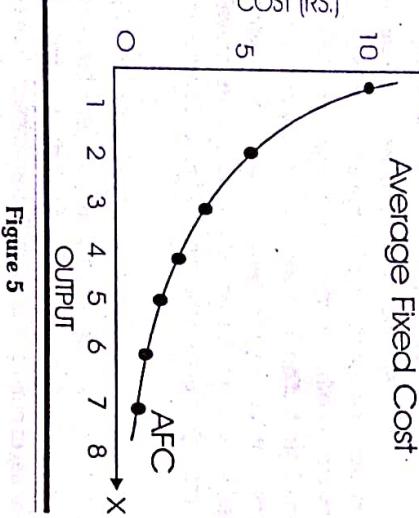


Figure 5

Output	Total Variable Cost (Rs.)	Average Variable Cost (Rs.)
1	10	10
2	18	9
3	24	8
4	28	7
5	32	6.4
6	38	6.33
7	46	6.6
8	52	6.5

It is clear from table 5 that, upto 6 units of

output, the average variable cost has been falling, but it begins to rise from the seventh unit. It is so, because in the initial stages of production law of increasing returns operates which causes the costs to diminish.

But after a point, law of diminishing returns sets in. When that happens, variable costs begin to increase.

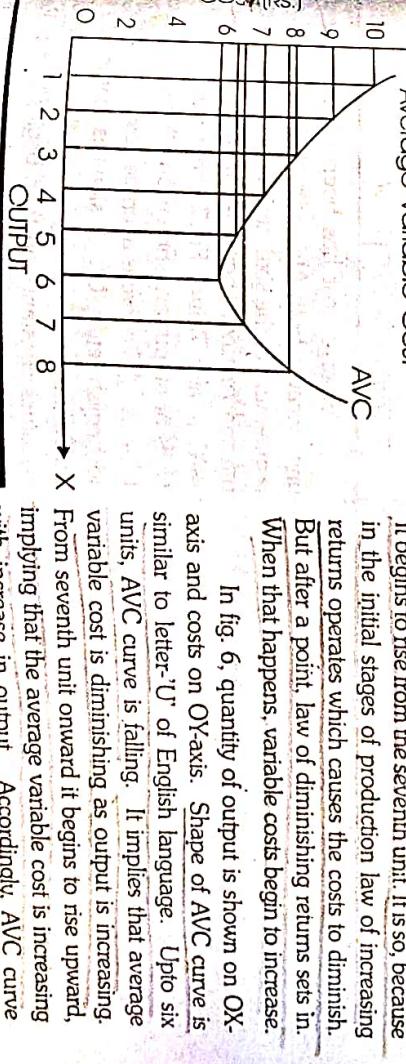


Figure 6

law of variable proportions accounts for the 'U'-shape of AVC curve. The AVC curve falls initially as the productivity of the variable factor increases, reaches a minimum when the plant is operated at the optimum level and rises beyond that point.

O (iii) Average Total Cost or Average Cost (AC)

The average total cost is the total cost per unit of output.

Definition:

In the words of Ferguson, "Average total cost (ATC) is total cost divided by the output." We can also define it as the sum of average fixed cost and average variable cost. It measures the average unit cost of all inputs, both fixed and variable. This can be expressed as

$$AC = \frac{TC}{Q} = AFC + AVC$$

(Here AFC = Average Variable Cost; TVC = Total Variable Cost; Q = Quantity of Output)
Average variable cost can be explained with the help of table 5 and fig.6.)

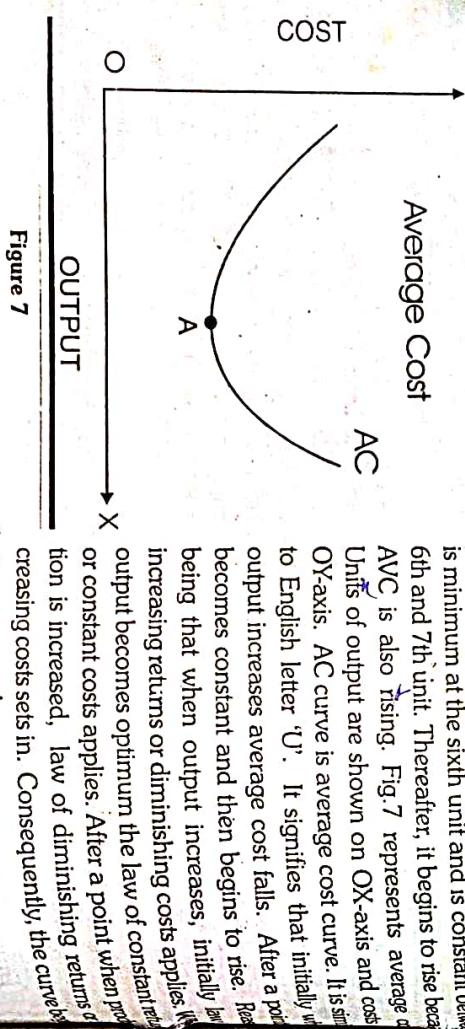
(Here AC = Average Cost; TC = Total Cost; Q = Output AFC = Average Fixed Cost; AVC = Average Variable Cost)

Supposing the total cost of six units of a commodity is Rs. 180. Average cost will be Rs. $\frac{180}{6} =$

30. Average total cost curve can be explained with the help of the following table 6 and fig. 7.

Table 6. Average Total Cost

Units of Output	AFC (Rs.)	AVC (Rs.)	AC = AFC + AVC (Rs.)
1	10	10	20
2	5	9	14
3	3.3	8	11.3
4	2.5	7	9.5
5	2.0	6.4	8.4
6	1.7	6.3	8
7	1.4	6.6	8
8	1.2	7.8	9



Average cost has been falling upto sixth unit, because both AFC and AVC are also falling is minimum at the sixth unit and is constant between 6th and 7th unit. Thereafter, it begins to rise because AVC is also rising. Fig. 7 represents average cost of output are shown on OX-axis and cost OY-axis. AC curve is average cost curve. It is similar to English letter 'U'. It signifies that initially with output increases average cost falls. After a point becomes constant and then begins to rise. Reason being that when output increases, initially law of increasing returns or diminishing costs applies. When output becomes optimum the law of constant returns or constant costs applies. After a point when production is increased, law of diminishing returns or increasing costs sets in. Consequently, the curve begins to move upward.

3.2 Why is the short-run Average Cost Curve 'U-Shaped'?

Short-run average cost curve is 'U'-shaped. In other words, it falls downwards initially and then reaches its minimum point it begins to rise upward. U-Shape of short run average cost curve can be explained in three ways as under:

(i) **Interaction of Average Fixed Cost and Average Variable Cost:** Average cost increases aggregate of average fixed cost (AFC) and average variable cost (AVC). As the production average fixed cost goes on falling. In the initial stages of production, average variable cost also goes

falling. Consequently, the aggregate of these two costs, i.e. average cost also falls and reaches its minimum points, as is shown in fig. 7. upto point 'A', average cost curve is falling. It is at its minimum at point 'A'. In this situation, the firm is making full use of its production capacity. The firm is having optimum output.

(ii) Optimum output refers to that level of output which corresponds to the lowest per unit cost of production as at point 'A' in fig. 7. If firm produces beyond this point, no doubt, average fixed cost will continue to fall, but average variable cost will begin to rise. Rising average variable cost makes the average cost to rise also. It is so because after reaching its minimum level, rate of increase in average variable cost is much more than rate of decrease in average fixed cost. The net effect is reflected in the upward rising AC-curve. In this way, average cost curve being the aggregate of average fixed cost and average variable cost, initially falls and having reached its minimum begins to rise.

(iii) Application of the Law of Variable Proportions: As already explained, if in the short-period variable factors are combined with a fixed factor, output increases in accordance with the law of variable proportions. Initially, when a fixed factor is combined with variable factors, then the former is used more efficiently and it leads to fall in average cost. It is clear from fig. 7 that before point 'A', output obeys the law of increasing returns or diminishing costs. At point 'A', average unit cost is the minimum and output is optimum. It proves that fixed factors of production are being utilized to their optimum limit. After point 'A' when fixed factors are utilized to their optimum extent, increasing use of variable factors leads to fall in their ratio compared to fixed-factors. As a result of it, rate of increase in production begins to diminish. In other words, law of diminishing returns or increasing costs sets in. Due to the operation of the law of increasing costs, average cost curve moves upward after point 'A'.

(3) Marginal Cost: Marginal cost is the increase in total cost when output is increased by one unit.

$$MC = Rs. 180 - Rs. 135 = Rs. 45$$

Definitions

- (i) In the words of **McConell**, "Marginal cost may be defined as the additional cost of producing one more unit of output."
- (ii) According to **Ferguson**, "Marginal cost is the addition to total cost due to the addition of one unit of output." Marginal cost can be determined by dividing change in total cost by change in output or by deducting total cost of $n-1$ units from total cost of n units. It can be written as

$$MC = \frac{\Delta TC}{\Delta Q} = TC_n - TC_{n-1}$$

(Here MC = Marginal Cost; $\Delta T C$ = Change in Total Cost; ΔQ = Change in Output; TC_n = Total Cost of n Units; TC_{n-1} = Total Cost of $n-1$ Units)

It may be pointed out since FC does not change with output, so $\frac{\Delta FC}{\Delta Q}$ is always equal to zero. Thus marginal cost is not affected by its fixed costs. However MC is affected by total variable costs. It can be defined as the change in total variable costs divided by the change in output or

$$MC = \frac{\Delta TC}{\Delta Q} = \frac{\Delta FC}{\Delta Q} + \frac{\Delta VC}{\Delta Q} = \frac{\Delta VC}{\Delta Q} \quad (\text{Since } \frac{\Delta FC}{\Delta Q} = 0)$$

The concept of marginal cost is further explained with the help of table 7 and fig. 8

Table 1 Marginal Cost

Unit of Output	Total Cost (Rs.)	Marginal Cost (Rs.)
1	20	$20 - 0 = 20$
2	28	$28 - 20 = 8$
3	34	$34 - 28 = 6$
4	38	$38 - 34 = 4$
5	42	$42 - 38 = 4$
6	48	$48 - 42 = 6$
7	56	$56 - 48 = 8$
8	72	$72 - 56 = 16$

Table 7 shows that total cost is Rs. 20 when only one unit is produced so the marginal cost will also be 20. Marginal Cost of the second unit will be Rs. 8 (Rs. 28 — Rs. 20).

Marginal cost of the third unit is Rs. 6 (Rs. 34 - Rs. 28). It is clear from the table that as production increases, at first marginal cost falls and later it begins to rise. The concept of marginal cost is expressed diagrammatically in fig. no. 8. In this diagram, units of output are shown on OX-axis and marginal cost on OY-axis. MC is marginal cost curve. It is also U-shaped signifying that initially it falls, becomes minimum

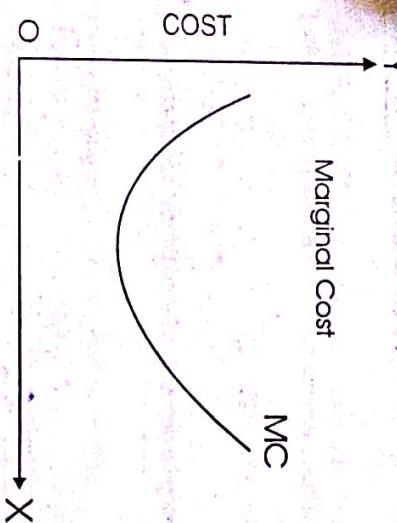


Figure 8

Figure 8

OUTPUT

Why is MC curve U-shaped?

Marginal cost refers to change in total cost variable cost caused by the production of one more unit of output. Initially when production is increased

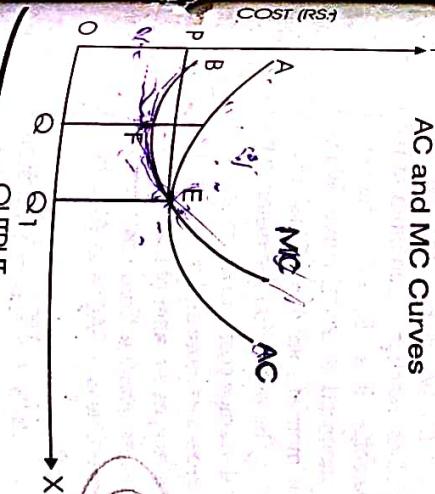
total cost and variable costs increase at a diminishing rate. It is because of the operation of increasing returns to a factor in the initial stage of production, a firm enjoys several economies. As a result, cost of every additional unit is less than the earlier units. This makes MC curve fall. After a given quantity of output, rate of increase in total and variable costs is the minimum. As such marginal cost is also minimum. Thereafter, total cost and variable costs increase at an increasing rate. It is because of the operation of diminishing returns at this stage. Firm suffers several diseconomies. Cost of each additional unit is more.

Output	TC	FC	VC	AFC	AVC	AC	MC
0	10	10	0	—	0	—	—
1	20	10	10	10	10	20	10
2	28	10	18	5	9	14	8
3	34	10	24	3.3	8	11.3	6
4	38	10	28	2.5	7	9.5	4
5	42	10	32	2.0	6.4	8.4	4
6	48	10	38	1.7	6.3	8	6
7	56	10	46	1.4	6.6	8	8
8	72	10	62	1.2	7.8	9	16

Table 8 Average Cost and Margin

(1) When AC falls, MC is less than AC:
When AC curve is falling, MC curve will be below it.
It is so because whereas average cost is the aggregate
of average fixed cost (AFC) and average variable cost.

(MVC), marginal cost refers only to change in variable cost (VC) corresponding to the stretch BF on MC curve, in figure 9 the rate of fall of the variable cost is faster than that rate of fall of both variable and fixed



Figure

When AC curve is falling, MC curve will be below it.
It is so because whereas average cost is the aggregate of average fixed cost (AFC) and average variable cost (AVC), marginal cost refers only to change in variable cost (VC) corresponding to the stretch BF on MC curve, in figure 9 the rate of fall of the variable cost is faster than that rate of fall of both variable and fixed cost together. Beyond point F additional variable cost or MC tends to rise, but the average of both fixed and variable cost continues to fall till point E on the AC curve when both AC and MC become equal.

(I.1) Does MC rise when AC is Decreasing?

Generally speaking, when AC falls, MC also

When AC curve is falling, MC curve will be below it.
It is so because whereas average cost is the aggregate of average fixed cost (AFC) and average variable cost (AVC), marginal cost refers only to change in variable cost (VC) corresponding to the stretch BF on MC curve, in figure 9 the rate of fall of the variable cost is faster than that rate of fall of both variable and fixed cost together. Beyond point F additional variable cost or MC tends to rise, but the average of both fixed and variable cost continues to fall till point E on the AC curve when both AC and MC become equal.

(I.1) Does MC rise when AC is Decreasing?

Generally speaking, when AC falls, MC also

which additional cost tends to rise (owing to the law of diminishing returns) is much faster than the rate at which fixed cost and variable cost together tend to rise. The element of fixed cost in AC (comprising of fixed as well as variable costs) acts as a check on the rate of rise of AC.

(3) **MC Cuts AC at its Lowest Point:** Marginal cost is equal to average cost when the latter is at its minimum. In other words the marginal cost curve cuts the average cost curve at the lowest point of average cost curve. In Table 8 it is shown that average cost is minimum i.e., Rs. 8 at the seventh unit and the marginal cost at the seventh unit is also Rs. 8. In fig. 9, it is shown that marginal cost curve is cutting the average cost curve at latter's lowest point E. It may however be noted that minimum point of marginal cost occurs earlier than the average cost. It is evident from Table 8 that marginal cost is minimum at the fifth unit while the average cost is minimum at the seventh unit. Why does this relationship occur? The reasons are mathematical rather than economic and the explanation is this. So long MC is less than AC then it will draw AC down towards it. But as soon as MC is greater than AC, then it will pull the AC curve up. In short MC is always to the left of AC and cuts AC at its lowest point. Thus, the MC curve must go through the bottom point of the AC curve.

□ 3.4 Relationship of Different Cost Curves in the Short Period

Short-period costs, such as, average fixed cost, average variable cost, average cost and marginal cost can be studied simultaneously with the help of a diagram as shown in fig. 10. In this figure (i) AFC is fixed cost. It slopes down continuously meaning thereby that as production increases average fixed cost goes on falling. Initially, it falls steeply but later on rate of fall slows down. AFC curve approaches both axes asymptotically, as shown in the figure. In other words it touches neither OX-axis nor OY-axis.

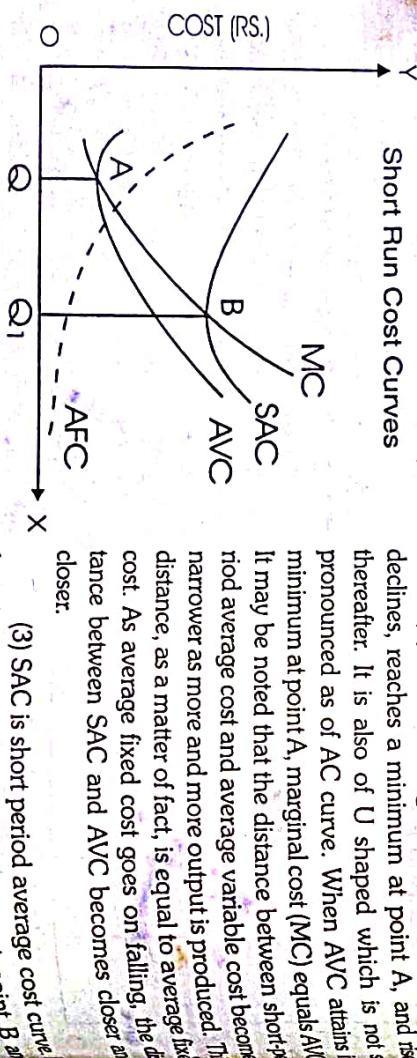


Figure 10

earlier than the minimum point 'B' of SAC.

(4) MC is short period marginal cost curve. It is also U shaped. It means it first declines, reaches minimum at point 'A' and rises thereafter. MC curve cuts both AVC curve and AC curve at their minimum points. Further more MC lies below both AVC and SAC when they are declining, it lies above them when they are rising.

□ 3.5 Relationship between Cost Curves and Productivity Curves

There is inverse relationship between cost curves and productivity curves. The relationship between cost and productivity curves may be explained with the help of the following figure.

In fig. 11 (A) productivity is shown on OX-axis and in fig. 11(B) cost is shown on OY-axis. Fig. 11(A) shows marginal product (MP) curve and average product (AP) curve. Fig. 11 (B) shows marginal cost (MC) curve and average cost (AC) curve. It becomes clear from fig. 11(A) and 11 (B) that

(1) As long as MP is rising MC is falling. If MP is falling, MC must be rising. And where MP is maximum (A), MC is minimum (C).

(2) As long as AP is rising AC is falling. If AP is falling, AC is rising. And where AP is maximum (B) AC is minimum (D).

(3) MP intersects AP at its maximum and continues to diminish faster than AP. MC intersects AC at its minimum and continues to rise faster than AC.

□ 4. Costs in the Long Run

The long run is the period of time in which all inputs are variable. The firm has sufficient time to adjust its use of all inputs to produce output in the least costly way. In other words there is another aspect of long run, i.e. it is a planning horizon. The long run refers to the fact that producers can plan ahead and choose many aspects of the short run, in which they will operate in future. Thus in a sense, the long run consists of all possible short run situations among which a producer may choose. In other words, the producer operates in the short run and plans in the long run. As in the case of short-run, there are three concepts of costs in the long-run also, namely, (1) Long-run total cost (LTC), (2) Long-run average cost (LAC) and (3) Long-run marginal cost (LMC).

4.1 Long-Run Total Cost (LRTC)

In the short-run, we may distinguish three total cost curves; total fixed cost, total variable cost and total (combined) cost. Since all inputs are variable in the long run, there is only one long-run total cost. The long-run total cost is the minimum cost at which each level of output can be produced.

LTC

In the words of **Leibhafsky**, "The long-run total cost of production (LTC) is the least possible cost of producing any given level of output when all inputs are variable."

In the long-run, firm can produce a given level of output at the minimum cost since it has sufficient time (i) to select the optimum plant size and (ii) to select the least cost factor proportion. This means that the long run total cost is always less than or equal to the short-run total cost, but it is never more than short-run total cost: $LTC \leq STC$.

Long-run total cost curve represents the least cost of different quantities of output. Thus, it is a tangent to any given point on short-run total cost, it can be explained with the help of fig. 12.

In fig. 12, STC_1 and STC_2 are short-run total costs associated with different plant sizes. The long run total cost curve is constructed by joining the lower points of various short-run total cost curves. For any given output the long-run total cost, is the minimum total cost chosen from all those plant sizes which are available. For any level of output LTC is a tangent to some short run curve. Thus **LTC envelopes the SRTC curves**.

The shape of long-run total cost as shown in figure 13 is of an inverse S. The following are main characteristics of this curve.

(i) Long-run total cost curve begins from the point of origin 'O', while short-run total cost, as shown in Fig. 12 begins from any point on OY-axis.

that all costs in long-run being variable when quantity of output is zero, total costs are also reduced to zero. But as regards short-run total costs they never fall to zero.

(ii) Long-run total cost curve has a positive slope. It costs more to produce more.

(iii) LTC curve first increases at a decreasing rate and remaining constant for a while it tends to increase at an increasing rate.

□ 4.2 Long-Run Average Cost Curve or Envelope Curve

Long-run average cost refers to minimum possible per unit cost of producing different quantities output in the long period.

Definition
In the words of **Mansfield**, "The long-run average cost curve is that curve which shows the minimum cost per unit of producing each output level, corresponding to different scales of productivity."

It is determined by dividing long-run total cost by the quantity of output produced. It is the lowest average cost attainable when all inputs are variable; that is, when any plant size can be constructed.

In the long period, each firm can make use of different sizes of plants. A given quantity of output can be had from a special sized plant appropriate to it. If such a plant is put to operation, goods will be produced at lowest average cost. A rational producer, in the long-run, will produce with the help of such a plant as may reduce the average cost to the minimum. With change in demand for the output, he will go on changing the size of plant. Each plant has its short-run average cost curve (SAC) with whose help we can estimate long-run average cost (LAC).

Supposing a firm can make use of two types of plants. One is a small plant and its short-run average cost curve is SAC_1 and second is a large plant and its short-run average cost curve is SAC_2 . Of the two plants, the firm can in the long run, plan to invest on the most profitable one. It can be known with the help of these two short-run average cost curves as to which plant will be suitable to produce different quantities of output at the minimum average cost.

In figure 14, short-run average cost curves of both

plants have been shown. If the firm is to produce OM units of output, the lowest per unit costs are attainable with the plant size 1 (SAC_1). The short run average cost of OM output will be BM as shown by SAC_1 curve. It will increase to AM, if output is produced by using the other plant 2 (SAC_2). However if the firm is to produce a large output i.e. ON it can achieve lower average costs by using plant 2 (SAC_2). The average cost will be CN, but if the same output will be produced by the old plant (SAC_1) the average cost will increase from CN to DN. Thus, OM output will be produced at the least average cost by using plant 1 (SAC_1) and ON output will be produced at the lowest average cost, when the firm uses plant 2 (SAC_2).

In fig. 15, long-run average cost (LAC) has been shown. Long-run average cost curve is tangent to each short-run average cost curve at some point. To the left of minimum point 'M' of long-run average cost, this point of tangency is on the falling part of short-run average cost

Figure 12

Figure 13

Figure 14

Figure 15

curves. The reason being that upto minimum point M, the slope of long-run average cost (LAC) curve is reducing (negative). As such, the slope of short-run average cost (SAC) curve will also be negative, because at the point of tangency slopes of both the curves are equal. To the right of minimum point 'M' the point of tangency will be on the rising part of short-run average cost curves. It is because to the right of point 'M' long-run average cost curve is rising. At point 'M' long-run minimum average cost and short-run minimum average cost are equal to each other.

○ Definition

In this context, Holland has aptly said, "The lowest point on each SAC curve, however, may not be the point of tangency with the LAC curve. The lowest point on an SAC curve is tangent to the LAC curve only at the lowest point of the LAC curve."

It is, therefore, at 'M' point alone that optimum use is being made of the short-run plant.

○ (i) Different names

Long-run average cost curves are also known by the following names:

(1) **Envelope Curve:** It is known as "envelope curve" because it encloses all short-run average cost curves. It implies that average cost in the long-run cannot exceed short-run average cost. Since in the long-run, indivisible factors can be used to their full capacity, so long-run average cost curve will be surrounding the short-run average cost (SAC) curves. It will not cut SAC curves and rise upward.

(2) **Planning Curve:** Long-run average cost curve is also called planning curve. With the help of this curve a firm can plan as to which plant it should use to produce different quantities of output, so that production is obtained at the minimum cost.

○ Definition

In the words of Koutsoyannis, "The long-run average cost curve is a planning curve, in the sense that it is a guide to the entrepreneur in his decision to plan the future expansion of his output."

○ (ii) Why is LAC Curve U-shaped?

Long-run average cost curve is like English letter 'U'. It means when a firm begins production, its LAC curve slopes downward, that is, as the production increases, LAC goes on falling. After some time it becomes constant. After a given amount of output LAC begins to rise. Long-run average cost curve is U-shaped because of economies and diseconomies of scale of production.

(1) **Economies of Scale:** Main cause of the falling LAC curve is the economies of scale that accrue when production is increased. These economies arise due to the following reasons :

(i) **Division and Specialization of Labour:** Large number of labourers working in a big plant have comparatively more opportunities of specialization. Owing to large-scale production, work can be divided into different processes and sub-processes. A labourer can specialize in a process or sub-process and become expert in it. Such a specialization will increase his efficiency. There will be saving of time and capital. Division of labour increases scope of new inventions. As a result of all this, cost of production per unit goes on falling.

(ii) **Technical Economies:** Increased scale of production leads to several technical economies in the long run, e.g. increased use of automatic machines. Cost of production can be reduced by the use of improved technique. Technical economies bring down average cost.

(iii) **Economies of Indivisibility:** Large-scale production leads to fall in average cost due to indivisibilities of factors of production. There are some factors of production which must be used in a given

quantity irrespective of the fact whether production is more or less. For example, a large firm can utilize services of a production manager to his full capacity but a small firm may not be able to utilize even one-tenth of his capacity. Thus as the quantity of output increases, indivisible factors are utilized to their full capacity. This causes fall in average cost.

(2) **Diseconomies of Scale:** Diseconomies of scale manifest themselves in the form of managerial constraints. Rising part of long-run average cost curve is mainly due to managerial diseconomies following large-scale production. In the smooth and efficient working and co-ordinating the affairs of a firm, there are limitations of the efficiency of management. These limitations are referred to as diseconomies of scale.

As the scale of production of a firm is increased management becomes more efficient on account of division of labour and specialization. But after a particular limit difficulties of management multiply. Top-management gradually loses contact with the day-to-day affairs of the firm. It adversely affects the efficient functioning of different departments. Decision-making responsibility is delegated to other persons who may not be so efficient. Paper work, travelling expenses, telephone bills and such like expenditure begin to increase. Sometimes plans of different decision-making agencies lack co-ordination. Consequently, productivity has a tendency to fall due to which average costs begin to rise.

04.1 Relation between Long-run Average Cost and Short-run Average Cost Curves

Relation between long-run average cost and short-run average cost curves is shown in fig. 16. In this figure

(1) SAC curve represents the average costs with reference to single plant, whereas LAC curve

represents the average cost with reference to several plants.

(2) LAC curve like SAC curve is also U-shaped, but it is relatively flatter. The U-shape of long-run cost curve is less pronounced than that of a short-run cost curve. It means rate of increase or decrease in costs in the long-run is relatively less than in the short-run. The main reason being that LAC curve represents the minimum average variable cost of different quantities of output. On the contrary, SAC curve represents the minimum average total cost. As the output of a firm increases, upto a point, LAC curve is tangent to the minimum point of SAC curve. After this point, LAC curve rises more steeply than SAC curve. Hence SAC curve is more pronounced than LAC curve.

(3) At a given amount of output, LAC cannot be more than SAC. It is because LAC curve is tangent to the minimum point of SAC curve at their minimum points.

(4) It may however be noted that excepting one SAC curve, LAC curve is not tangent to all other SAC curves at their minimum points. It will be tangent to that SAC curve at its minimum point, which coincides with the minimum point of LAC. This point will represent the optimum level of production.

Figure 16

□ 4.3 Long Run Marginal Cost

Change in the total cost, in the long-run, due to production of one more or one less unit of commodity, is called long-run marginal cost.

○ Definition

In the words of Ferguson, "Long-run marginal cost is the addition to total cost attributable to additional unit of output when all inputs are optimally adjusted."

The long run marginal cost is shown in fig. 17.

LMC is long run marginal cost curve. It first falls reaches a minimum and then rises.

(i) **Relation between Long-run and Short-run Marginal Cost:** A short-run marginal cost curve refers to effect on total cost due to production of one more or less unit of output on account of change in variable factors. On the other hand long-run marginal cost curve refers to change in total cost due to production of one more or less unit of output as a result of change in all factors including those factors which are fixed in the short period.

We have already noted that in the long period all factors are variable. The long run marginal cost is derived from short run marginal costs, but does not envelope them. The long run marginal cost (LMC) must be equal to SMC for the output at which the corresponding SMC is tangent to the LAC.

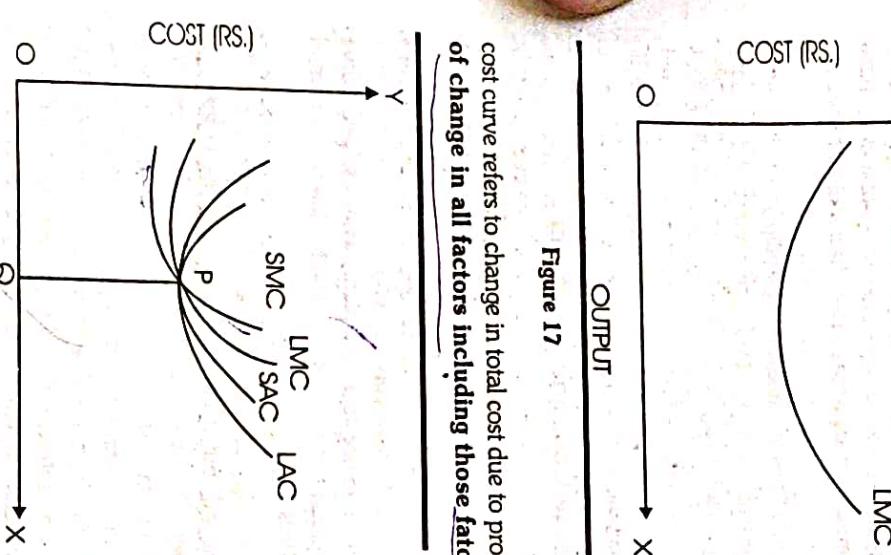


Figure 17

run marginal cost.

(ii) **Relation between LMC and LAC:** Relation between LMC and LAC is also explained with the help of fig. 18. It is clear from this figure that in the long-run marginal cost have same relation as short run marginal cost and average cost. When LAC is falling, LMC is less than it. It is equal to LAC at the minimum point of the latter i.e. P. When LAC is rising LMC is also rising. This figure also shows that LMC curve falls more rapidly than LAC curve. It also rises more rapidly than LAC curve.

At point 'P' of optimum output $SAC = SMC = LAC = LMC$.

run marginal cost.

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At point 'P' of optimum output $SAC = SMC = LAC = LMC$.

□ 5 Modern Theory of Cost Curves

Modern theory of cost curves has been propounded by economists like Stigler, Andrews, Sargent etc. According to traditional theory of cost curves, long-run cost curves are U-shaped. But according to modern theory, in real life long-run cost curves are L-shaped. The L-shaped cost curve implies that the production costs fall continuously with increases in output. According to modern theory long-run costs are mainly of two types: (1) **Production Cost** and (2) **Managerial Cost**. On account of increase in production, production cost goes on falling continuously due to technical economies of scale. On the contrary, as the scale of production is enlarged managerial costs may rise. Since fall in production cost is more than rise in managerial cost, long-run average cost curve falls smoothly or remains constant at very large scales of output.

Refer to fig. 19. Supposing a firm makes use of four types of plants with different dimensions. Their short-run average cost curves are SAC_1 , SAC_2 , SAC_3 and SAC_4 . According to modern theory of cost curves, statistics relating to long-run production reveal that a firm normally makes use of 2/3rd of its plant's production capacity. It does not make full use of production capacity of its plant. Thus, on the basis of SAC relating to 2/3rd utilisation of plant capacity, LAC can be estimated. In fig. 19, LAC has been drawn by joining together points indicating 2/3rd utilisation of production capacity of different short-run average cost curves, SAC_1 , SAC_2 , SAC_3 and SAC_4 . Fig. 19 shows that long-run average cost curve has two main characteristics:

- (1) Long-run average cost curve is not U shaped.
- (2) Long-run average cost curve is not envelope of SAC curves. Instead of enclosing, it intersects SAC curves.

Fig. 19, shows that long-run average cost curve is not envelope of SAC curves. Instead of enclosing, it intersects SAC curves.

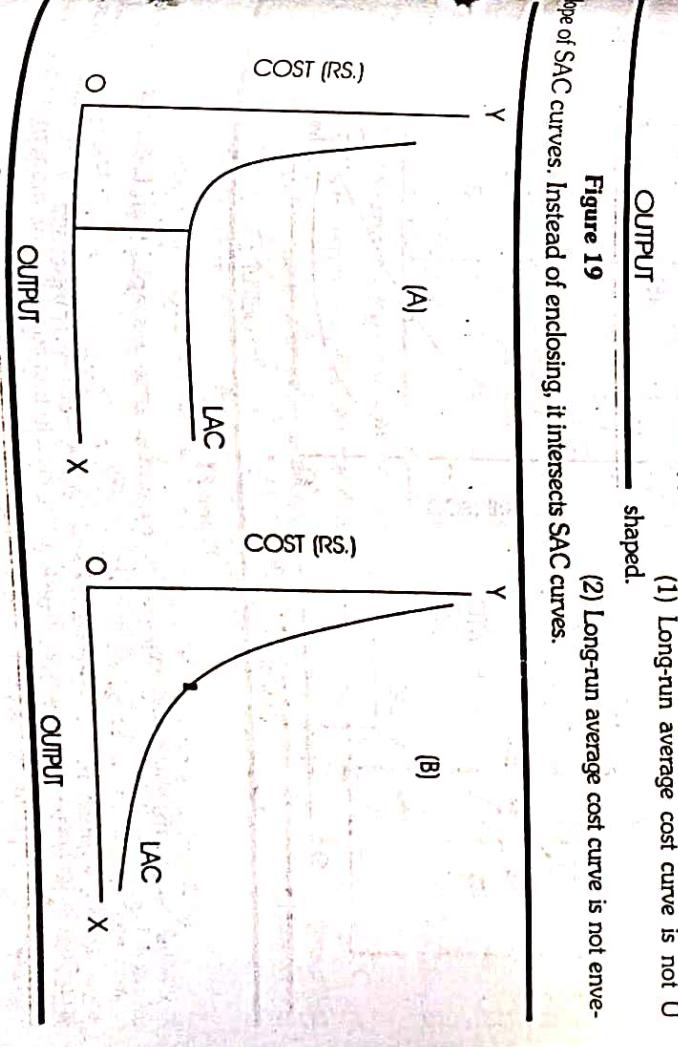


Figure 19

According to modern theory, LAC curve is either L-shaped or inverted J-shaped as shown in fig. no. 20 (A) and 20 (B) respectively.

(1) **L-Shaped LAC:** In fig. 20(A) L-shaped long-run average cost curve has been shown. The reason of its being L-shaped is that in the long-run there is a minimum optimum level of production at which all related economies are obtained. These economies result into fall in costs. After minimum optimum level of output, costs become constant.

(2) **Inverted J-shaped LAC Curve:** In fig. 20(B) inverted J-shaped long-run average cost curve has been shown. The reason of its being inverted J-shaped is that increase in output is followed by decrease in cost of production.

According to modern theory, on the basis of available cost-statistics, it cannot be said with certainty whether long-run average cost curve is L-shaped or inverted J-shaped. What can be said with certainty is that LAC is not U-shaped. It will be U-shaped only when large-scale production is ultimately accompanied with net of diseconomies of scale. But in real life large-scale production is seldom accompanied with net of diseconomies of scale.

□ 5.1 Long-run Marginal Cost Curve

According to modern theory, shape of long-run marginal cost curve corresponds to the shape of long-run average cost curve. Relation between LMC curve and LAC curve is shown in fig. 21 (A) and 21(B) respectively. (i) Fig. 21(A) shows that when LAC is L-shaped and LAC curve is falling then LMC curve will also be falling and its falling portion will be below the falling portion of LAC curve. LMC coincides with LAC when the latter becomes horizontal.

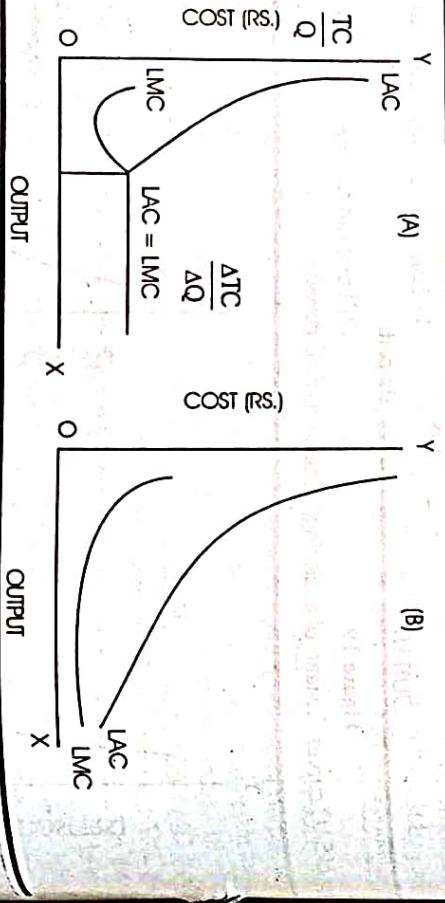


Figure 21

(ii) Fig. 21 (B) shows that when LAC curve is of inverted J-shaped then LMC curve is also inverted J-shaped and remains always below LAC curve.

In short, according to modern theory of cost curves, LAC curve is mostly L-shaped whereas according to traditional theory it is U-shaped. Compared to traditional theory, modern theory is more realistic.

QUESTIONS

- What is Total Cost, Average Cost and Marginal Cost? Explain the relationship between average cost and marginal cost with the help of a table and diagram.
- Why is the short-run average cost curve U-shaped? Also discuss the relationship between the short-run average cost curve and short-run marginal cost curve. Does this relationship hold good in the long-run?
- Distinguish between Average and Marginal Cost and show by examples and diagrams that marginal cost is less than average cost if average cost is falling and more than average cost if average cost is rising.
- Explain with the help of a diagram, the conditions under which a firm prefers to close down.
- Write a note on U-shaped long-run average cost curve.
- Complete the following table.

Quantity (Units)	TFC (Rs.)	TVC (Rs.)	TC (Rs.)	AVC (Rs.)	AC (Rs.)	MC (Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
0	60	—	—	—	—	—
1	—	30	—	—	—	—
2	—	—	100	—	—	5
3	—	—	—	—	—	—
4	—	—	—	—	—	28.75
5	—	—	—	—	15	—
6	—	—	—	—	—	45

- Distinguish between fixed costs and variable costs.
- How is long run average cost curve derived from short run average cost curves?
- Explain the relationship between average cost and marginal cost in the short run. Prove that marginal cost equals average cost at the minimum point of average cost curve. How do you derive the long-run average cost curve from the short run average cost curve?
- Why is the average cost curve U-shaped?
- Does marginal cost always fall when average cost is decreasing? Explain with the help of diagrams.
- Distinguish between prime and supplementary costs and discuss their role in price determination.

12. The output and total cost data for a firm are given below. Write out the following costs:
 Total fixed cost; Total variable cost; Average fixed cost; Average variable cost; Average total cost, and Marginal cost at various levels of output.

Units of Output	0	1	2	3	4	5	6
Total Cost (Rs.)	120	180	200	210	225	260	330

14. Increase in output of a firm the average total cost and average variable cost curves come closer and closer to each other but they never meet, why?

15. What is shape of the long run average cost curve and why?

16. Explain the following

- (1) Why is average cost curve of a firm U shaped?

- (2) Derivation of long run average cost curve from short run average cost curve.

CONCEPTS OF REVENUE

Q1. What is Revenue ?

You have a factory manufacturing ice cream. You produce one thousand cups of ice cream daily. By selling the same you receive rupees one thousand. In economics, this amount of rupees one thousand is called revenue. Thus, the total amount of money that a firm gets by the sale of its products is called its revenue. In the words of Dooley, "The revenue of a firm is its sale receipts". A firm's revenue is the amount it receives by selling goods or services in a given period. There are three main concepts of revenue.

(i) Total Revenue

Total revenue may be defined as the amount of money that the firm receives from the sale of its output.

Definition :

It is price times quantity:

$$TR = P \times Q$$

For example if at price of Rs. 5, six units of a commodity are sold, the total revenue will be Rs. 5 \times 6 = Rs. 30. To calculate total revenue either average revenue (price per unit) is multiplied by the number of units sold or marginal revenue of all the units is added up. In other words,

$$TR = \Sigma MR$$

(Here TR = Total Revenue; Σ = summation; MR = Marginal Revenue)

(ii) Average Revenue

Average Revenue is defined as the per unit revenue.

Definition :

In the words of Mc Connell, "Average Revenue is the per unit revenue received from the sale of one unit of a commodity." Average revenue is the ratio of the total revenue to the quantity sold of the product." It is calculated by dividing total revenue by total number of units sold.

$$AR = \frac{TR}{Q} = \frac{P \times Q}{Q} = P$$

(Here AR = average revenue; TR = total revenue; Q = quantity sold and P = Price)

Thus **Average revenue is the same as the price of the commodity**. If total revenue obtained by selling 6 units is Rs. 30, the average revenue or price will be $Rs. 30 \div 6 = Rs. 5$ irrespective of the number of units sold.

(iii) Marginal Revenue

Marginal Revenue is defined as the change in total revenue on account of the sale of one more unit of the commodity.

Definition:

In the words of Ferguson, "Marginal revenue is the change in total revenue which results from the sale of one more or one less unit of output."

To calculate marginal revenue, either change in total revenue (ΔTR) is divided by change in quantity (ΔQ) of the good sold or out of total revenue of ' n ' units, total revenue of $n-1$ units is deducted.

$$MR = \frac{\text{Change in Total Revenue}}{\text{Change in Quantity Sold}} = \frac{\Delta TR}{\Delta Q}$$

$$\text{or } MR = TR_n - TR_{n-1}$$

(Here, $MR = \text{Marginal Revenue}$; $\Delta = \text{Change in}$; $TR = \text{Total Revenue}$; $Q = \text{Output}$; $TR_n = \text{Total revenue of } n \text{ units}$; $TR_{n-1} = \text{Total revenue of } n-1 \text{ units}$; $n = \text{number of units sold}$)

For example, when 4 units of a commodity are sold, total revenue is Rs. 28 and when 5 units are sold total revenue increases to Rs. 30. Thus marginal revenue of the 5th unit is $Rs. 30 - Rs. 28 = Rs. 2$. It may also be defined as the rate of change in total revenue.

□ 2. Concepts of Revenue Under Different Market Conditions

The nature of different concepts of revenue depends on the nature of the competition prevailing in the markets in which the goods are sold. The principal forms of the market situations are (i) Perfect Competition (ii) Monopoly and (iii) Monopolistic Competition.

□ 2.1. Concepts of Revenue Under Perfect Competition

Perfect competition is the market situation in which there are large number of buyers and sellers. Commodity is homogeneous and is sold at uniform price. All the three concepts of Revenue viz (i) Total Revenue (ii) Average Revenue and (iii) Marginal Revenue under perfect competition are described in Table 1 and Figure 1.

Table 1. Different Concepts of Revenue Under Perfect Competition

Output/Sale Q	Total Revenue $TR = AR \times Q$	Average Revenue or Price $= \frac{TR}{Q}$	Marginal Revenue $MR = TR_n - TR_{n-1}$
1	5	5	5
2	10	5	5
3	15	5	5
4	20	5	5

□ 2.2. Concepts of Revenue Under Monopoly

Monopoly is a market situation in which there is a single seller of a commodity with no close substitutes. The monopolist has complete control over price. All the three concepts of revenue viz (i) Total Revenue (ii) Average Revenue and (iii) Marginal Revenue under monopoly are described in Table 2 and Figure 2.

(ii) Average Revenue : As shown in Table 1, average revenue or price under perfect competition does not change with the change in output sold. It is Rs. 5 whether the firm sells one unit or 4 units. It is because under perfect competition price (average revenue) is determined by the industry and the firm can sell any amount at the given price.

(iii) Marginal Revenue

Table 1 indicates that under perfect competition, the firm has the same marginal revenue i.e., Rs. 5 however much it sells. In fact if AR is fixed, MR must also be fixed because the firm is getting the same price for every additional unit it is selling. Consequently it implies that $AR = MR$.

MR is calculated by dividing change in total revenue by change in quantity sold ($\frac{\Delta TR}{\Delta Q}$). For the second unit, the change in total revenue ΔTR is $Rs. 10 - Rs. 5 = Rs. 5$ and change in quantity ΔQ is $2 - 1 = 1$. Consequently average revenue is $\frac{5}{1} = Rs. 5$. Likewise for the third unit and fourth unit it is Rs. 5.

Fig. 1 shows the behaviour of TR, AR and MR under perfect competition.

In Fig. 1 (A) and 1(B) revenue is shown on OY-axis and output on OX-axis. In Fig. 1(A) TR represents total revenue curve. It is a straight line sloping upward, indicating that TR is increasing at a constant rate. In Fig. 1 (B) horizontal straight line PP' (parallel to OX-axis) shows both AR and MR. It indicates that AR is constant i.e., OS and that $AR = MR$.

Revenue Curves Under Perfect Competition

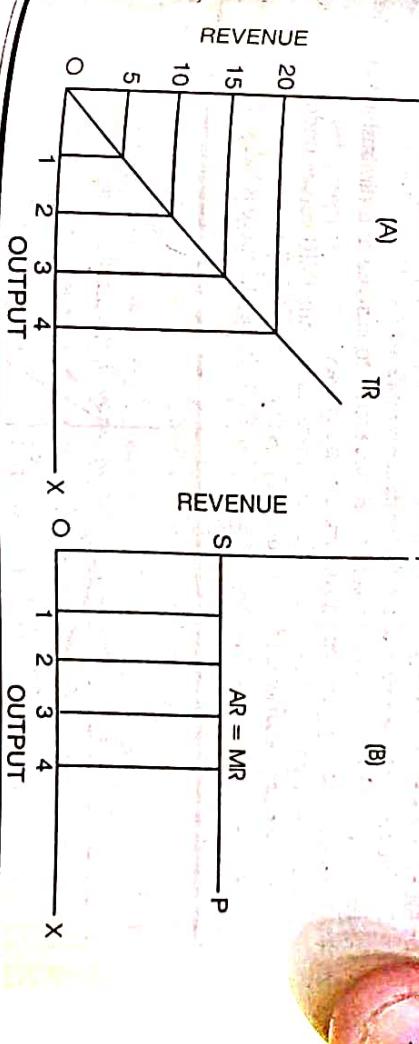


Figure 1

Table 2. Different Concepts of Revenue Under Monopoly

Output/Sales Q	Total Revenue $TR = AR \times Q$	Average Revenue $AR = \frac{TR}{Q}$	Marginal Revenue $MR = TR_n - TR_{n-1}$
1	10	10	10
2	18	9	8
3	24	8	6
4	28	7	4

(i) **Total Revenue** : In table 2, we see that total revenue under monopoly is increasing at a decreasing rate. In what follows will explain the reason for it. We have already noted in the previous paragraph that under perfect competition a producer can sell any amount of the commodity at a given price, hence TR increases at a constant rate. But the monopolist can sell more of the commodity only by lowering its price. Accordingly as sale increases price or AR tends to reduce. If AR is reducing MR must also reduce, hence it follows that TR under monopoly increases at a decreasing rate.

(ii) **Average Revenue** : As shown in table 1, average revenue or price under monopoly tends to fall with increase in sales. Thus when the monopolist is selling one quintal of the commodity average revenue is Rs. 10, it reduces to Rs. 9 when 2 quintals, are sold and Rs. 8 when 3 quintals and sold and so on. The fall in AR is explained in terms of the fact that monopolist cannot control both, the sale as well as the price of his product. If he wishes to sell more, he must reduce the price.

(iii) **Marginal Revenue** : Table 2 indicates that under monopoly the marginal revenue is declining It is Rs. 8 for the 2nd quintal sold and declines to Rs. 6 for the 3rd quintal and to Rs. 4 for the fourth quintal. Unlike perfect competition where $MR = AR$ under monopoly, MR is different from AR . It is less than AR ($MR < AR$). This is because of the fact that when AR declines MR must also decline and faster than AR .

Fig. 2 shows the behaviour of TR , AR and MR under monopoly. In fig. 2 (A) TR represents total revenue. TR curve tends to increase at a diminishing rate. This implies that the slope of TR curve tends to decline as sale increases.

Fig. 2(B) represents average revenue (AR) and marginal revenue (MR) curves under monopoly. Both curves are separate and sloping downwards. It implies that in order to sell more units, the monopolist will have to lower the price per unit (average revenue). Fig. 2 (B) shows MR curve is below the AR curve. It implies that MR declines at a faster rate than AR .

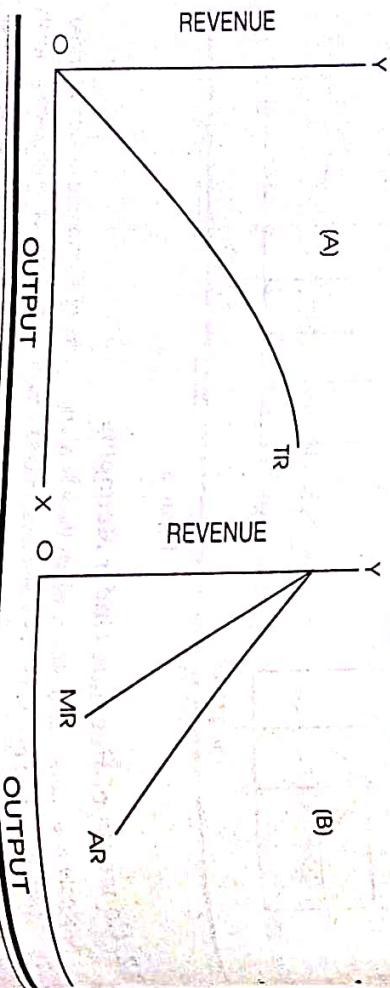


Figure 2

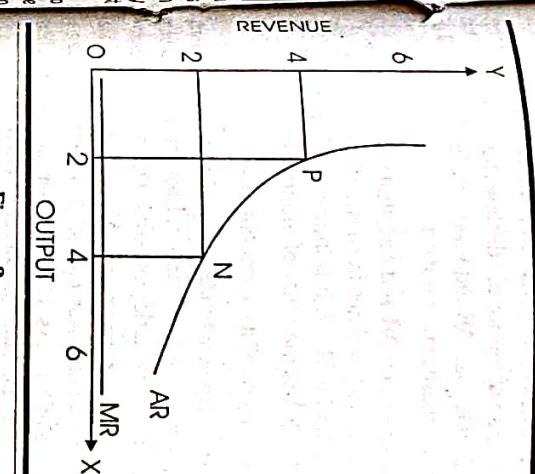


Figure 3

(1) **Total Revenue** : Similar to the monopoly situation TR under monopolistic competition decreases at the diminishing rate because MR tends to reduce with the increase in sales.

In case of monopoly, average revenue curve, as shown in Fig. 3 may be a rectangular hyperbola. Under pure monopoly, a producer can be so powerful that by selling his output at different prices he exploits entire income of the consumer meant for the commodity .

In this case average revenue curve is a rectangular hyperbola. It means the total revenue of the monopolist will remain the same, whatever the price he may fix for his products. Area below each point of the average revenue (AR) curve will be equal to one another. When total revenue is constant, marginal revenue is zero. As such marginal revenue (MR) curve will be represented by OX-axis. AR curve in Fig. 3 is a rectangular hyperbola. Supposing a consumer has Rs. 8 to spend on the goods produced by a monopolist. When the monopolist fixes a price of Rs. 4.00, he sells 2 units of the output, as shown by point 'P' on AR curve and earns Rs. 8.00 as total revenue. When he fixes a lower price of Rs. 2.00, he sells 4 units of the output as shown by point 'N' on AR curve and yet earns Rs. 8.00 as total revenue.

All the three concepts of revenue under monopolistic competition viz. (i) Total Revenue (ii) Average Revenue and (iii) Marginal Revenue are illustrated in Table 3 and Fig. 4.

Table 3. Different Concepts of Revenue Under Monopolistic Competition

Output / Sales (Quintals) Q	Total Revenue $TR = AR \times Q$	Average Revenue $AR = \frac{TR}{Q}$	Marginal Revenue $MR = TR_n - TR_{n-1}$
1	10	10	10
2	19	9.5	9
3	27	9	8
4	34	8.5	7

(2) Average Revenue : As in case of monopoly AR tends to decrease with increase in sales. But a glance at table 2 and 3 simultaneously will show that AR in case of monopoly declines faster than in case of monopolistic competition. When 2nd quintal of the product is sold, AR reduces from Rs. 10 to Rs. 9.5 in case of monopoly and from Rs. 10 to Rs. 9.5 in case of monopolistic competition.

(3) Marginal Revenue : It is a standard relationship between AR and MR, that when AR declines MR must also decline and faster than AR. Thus in table 3, while AR declines from Rs. 10 to Rs. 9.5, to Rs. 9 and to Rs. 8.5, MR declines from Rs. 10 to Rs. 9, to Rs. 8 and to Rs. 7. It is important to note that the rate of decline in case of MR under monopolistic competition is less than that of monopoly.

Fig. 4 shows the behaviour of TR, AR and MR under monopolistic competition. In Fig. 4 (A), TR represents total revenue curve. Like monopoly it tends to increase at a diminishing rate. Fig. 4(B) represents average revenue (AR) and marginal revenue (MR) curves. Like monopoly, under monopolistic competition, AR and MR curves are separate and sloping downwards. The main difference between these two market situations is that under monopolistic competition AR and MR curves are relatively more elastic while under monopoly the same are relatively less elastic. It means that when a monopolist raises the price, demand for his product will fall relatively less. On the other hand when a firm under monopolistic competition raises the price, demand for its product will fall relatively more.

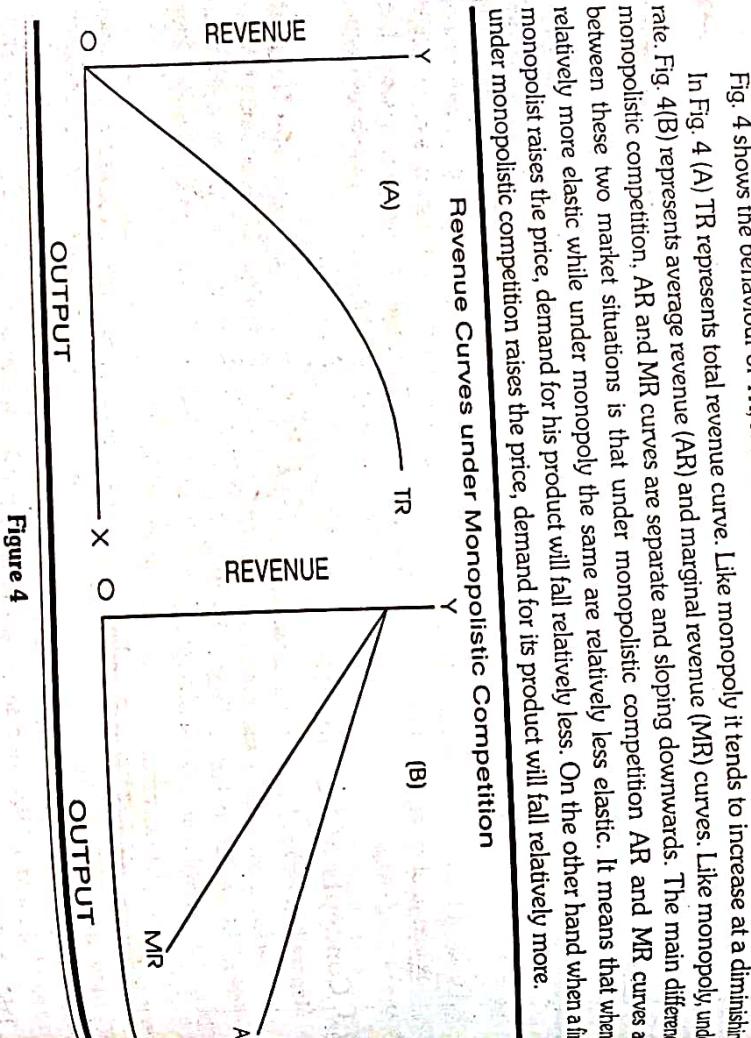


Figure 4

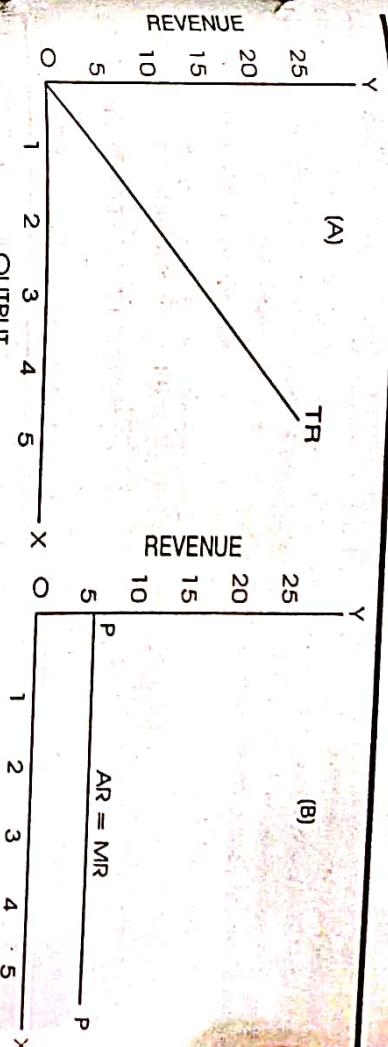


Figure 5

Fig. 5(A) shows total revenue curve of a firm. Fig. 5(B) shows average and marginal revenue curves. Fig. 5(A) indicates that total revenue curve is an upward sloping straight line starting from the origin. Sale of each unit of output increases total revenue at the same rate. In Fig. 5(B) PP line represents average and marginal revenue. It is parallel to OX-axis, signifying that average revenue is equal to marginal revenue ($AR = MR$)

(2) If Both Average Revenue and Marginal Revenue Curves are Straight Lines Sloping Downward :- In fig. 6 average revenue (AR) curve and marginal revenue (MR) curve are shown as straight lines sloping downward.

In this situation, MR curve will be mid-way between AR curve and OY-axis. It implies that $AB = BC$. This situation relates to monopoly and monopolistic competition. In a situation like this, relationship between total revenue (TR), average revenue (AR) and marginal revenue (MR) is illustrated with the help of Fig. 7. It is shown in Fig. 7 that,

$$TR = AR \times Q = OA \times OQ (= AP) = OAPQ$$

$$\text{or } TR = \Sigma MR = OCNQ$$

$$\text{Hence } \Sigma MR = AR \times Q$$

$$\text{or } OCNQ = OAPQ$$

□ 3. Graphical or Geometrical Relation between Total, Average and Marginal Revenue

Total, average and marginal revenues of a firm have the following main relations.

(1) If Average Revenue and Marginal Revenue Curves Coincide and Presented by Horizontal straight line parallel to OX-axis :- In case, average revenue and marginal revenue coincide, it means both average and marginal revenue are equal, i.e. $AR = MR$. The reason being the firm can sell any amount of the commodity at the given price. Since AR is constant MR is also constant. Accordingly TR will increase at a constant rate.

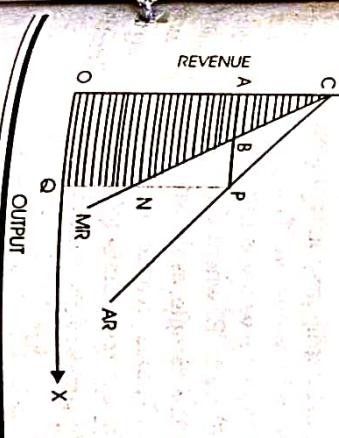


Figure 6

Figure 7

In this situation, MR curve will be mid-way between AR curve and OY -axis. It implies that $AB = BC$. This situation relates to monopoly and monopolistic competition. In a situation like this, relationship between total revenue (TR), average revenue (AR) and marginal revenue (MR) is illustrated with the help of Fig. 7. It is shown in Fig. 7 that,

$$TR = AR \times Q = OA \times OQ (= AP) = OAPQ$$

$$\text{or } TR = \Sigma MR = OCNQ$$

$$\text{Hence } \Sigma MR = AR \times Q$$

$$\text{or } OCNQ = OAPQ$$

(Here $TR = \text{Total Revenue}$; $AR = \text{Average Revenue}$; $MR = \text{Marginal Revenue}$; $Q = \text{Quantity of output}$; Σ = summation)

Area of ΔACB and ΔBPN is equal since both are obtained by subtracting OABNQ from TR. In other words,
 $\Delta ACB = \Delta BPN$
(Both are congruent because Area of ΔACB = Area of ΔBPN)

Vertical $\angle ABC = \angle PBN$
Rt. $\angle CAB = \angle BPN$
 $\therefore AB = BP$

(3) Relation between Total Revenue, Marginal Revenue and Average Revenue curves if AR and MR curves are separate and falling downwards.

Table 4 and Fig. 8 illustrates graphically the relationships among total revenue, marginal revenue and average revenue.

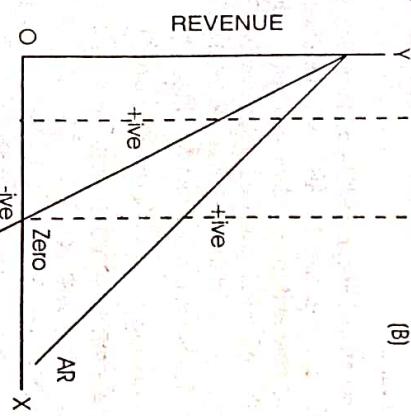
Table 4. Different Concepts of Revenue

Units	Total Revenue	Average Revenue	Marginal Revenue
0	0	0	0
1	10	10	10
2	18	9	8
3	24	8	6
4	28	7	4
5	30	6	2
6	30	5	0
7	28	4	-2

Table 4 shows that total revenue increases upto 6th unit. Thereafter it begins to decline. As more and more units are sold both average revenue and marginal revenue go on diminishing.

Average revenue always remains positive but marginal revenue may be positive, zero or negative.

Thus, the marginal revenue of 6th unit is zero and that of 7th unit is negative. In Fig. 8(A) total revenue curve and in Fig. 8(B) average and marginal revenue curves are shown. In these figures, units of output are shown on OX-axis and revenue on OY-axis. It is clear from Fig. 8(A) that total revenue is rising from point O to point 'B'. At point 'B' where total revenue is maximum, marginal revenue, as shown in Fig. 8(B), is zero. After point 'B', total revenue begins to fall. It means even after selling more units, total revenue becomes negative. In this situation, marginal revenue becomes negative. In Fig. 8(B), it is evident that AR, average revenue curve, is sloping downward. It means average revenue, or price, falls as more and more units are sold.



(A)

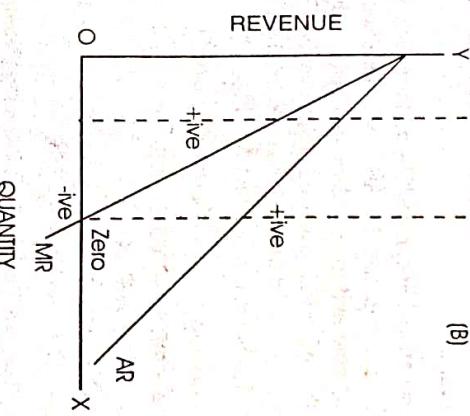


Figure 8

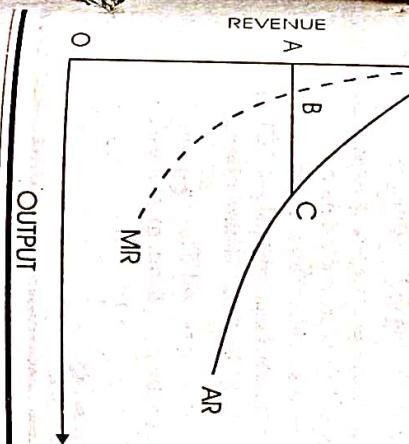


Figure 9

(4) If both Average Revenue Curve and Marginal Revenue Curves are Convex:—In Fig. 9, average revenue curve and marginal revenue curve are shown as convex to the point of origin. In this situation, marginal revenue curve will intersect a horizontal line drawn from any point on average revenue curve to OY-axis, at a point B which is situated at less than the mid point. It means that marginal revenue curve will be nearer to OY-axis than average revenue curve, i.e., AB is less than BC.

(5) If both Average Revenue and Marginal Revenue Curves are Concave:—Average revenue and marginal revenue curves shown in Fig. 10 are concave to the point of origin. In this case, marginal revenue curve will intersect any perpendicular drawn from any point on AR curve to OY-axis, at a point farther away from the mid-point. In other words, AB is greater than BC.

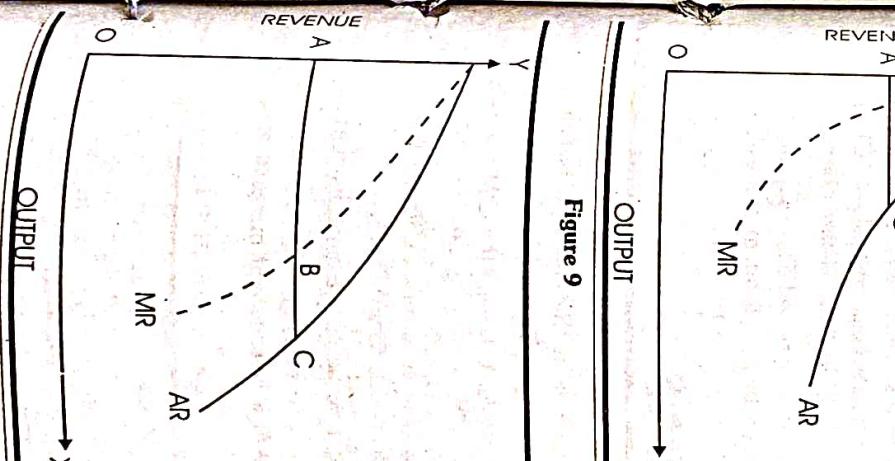


Figure 10

□ 4. Significance of the Concept of Revenue in Price Analysis

Different concepts of revenue have the following significance in price analysis:

- (1) **Change in Price**: It is from the concept of total revenue that a firm learns whether it will gain more profit by raising or lowering the price per unit of the product or it will have no profit at all by effecting change in price. If total revenue increases by lowering the price, as in case of elastic demand, then it will be profitable to lower the same. On the contrary, if total revenue increases by raising the price per unit, as in case of inelastic demand, then it will be profitable to raise the same. If change in price has no effect on total revenue, then it will not be worth while for the firm either to raise or lower the same.

- (2) **Condition of Equilibrium**: Concept of marginal revenue helps the firm in knowing the condition of equilibrium, i.e., the condition of maximum profit. A firm is in equilibrium when it produces the goods upto a point where marginal revenue is equal to marginal cost ($MR = MC$)

- (3) **Estimate of Profit and Loss**: A firm makes use of the concept of average revenue to calculate profit and loss. Whether a firm will earn profit or incur loss by selling its products depends on the relation between its average revenue and average cost. If average revenue is greater than average cost ($AR > AC$), the firm will earn supernormal profit. If average revenue is less than average cost ($AR < AC$), the firm will earn normal profit. If average revenue is equal to average cost ($AR = AC$), the firm will earn minimum losses. Concept of average revenue also informs us that if in the short period a firm's average revenues is equal to its average variable cost (AVC), even then the firm will be in equilibrium as it will, in that case suffer minimum losses.

QUESTIONS

1. Derive Average Revenue and Marginal Revenue from Total Revenue with the help of a Table.
2. Explain the relationship between Average Revenue and Marginal Revenue.
3. Distinguish between AR and MR. Discuss the relation between AR and MR and elasticity of demand.
4. Distinguish between total, average and marginal revenue curves. What is the relationship of average and marginal revenue curves under perfect competition?
5. Write note on the relationship between average revenue and marginal revenue under monopoly and monopolistic competition.

19

MAIN FORMS OF MARKET - PERFECT COMPETITION, MONOPOLY, OLIGOPOLY

QUESTION

1.1 Definitions

(1) In the words of Cournot, "Economists understand by the term market not any particular market place in which things are bought and sold but the whole of any region in which buyers and sellers are in free intercourse with each other that the price of same good tends to equality easily and quickly."

(2) In the words of Prof. Chapman, "The term market refers not necessarily to a place but always to a commodity and the buyers and the sellers who are in direct competition with one another."

(3) According to Prof. J.C. Edwards, "A market is that mechanism by which buyers and sellers are brought together. It is not necessarily a fixed place."

1.2 Main Features of Market

The above definitions underline the following features of market:

- (i) **Area**: Market in economics does not mean any particular place where buyers and sellers meet, after it means the entire area over which buyers and sellers are spread and have close contact with one another. For instance, Dalda has its market all over India because its buyers and sellers are found in every state and city.

(ii) **Buyers and Sellers**: Both buyers and sellers are needed in the market. If one of the two does not exist in any region it will not be called a market. It is not necessary that buyers and sellers be physically present to bargain or transact business. They may establish contact among themselves on phone or other mode of communication.

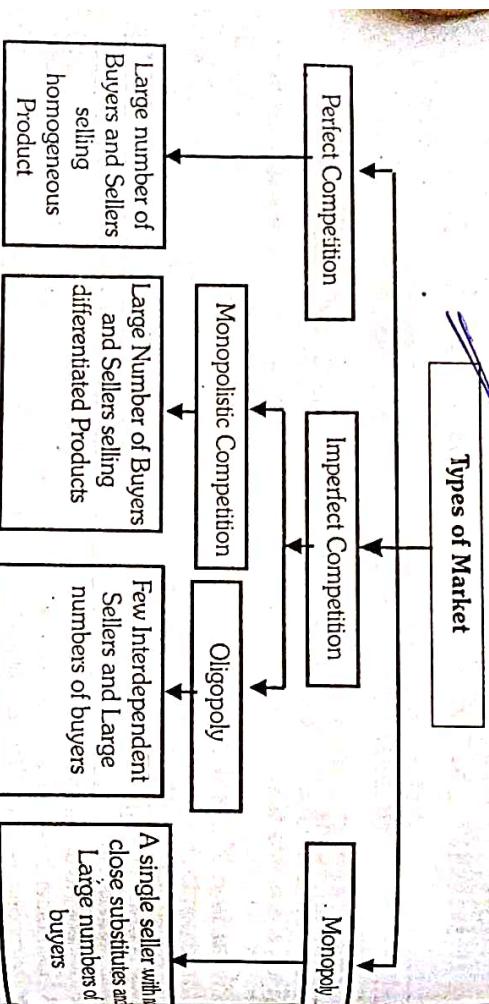
(iii) **One Commodity**: In Economics, every commodity has its own market e.g., wheat market, sugar market etc. As many commodities, so many markets.

(iv) **Free Competition**: There should be free competition between buyers and sellers. In such market buyers try to buy at the cheapest rate and the sellers try to sell at the highest rate. As a result of it there will be one price for one commodity throughout the market.

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2. Main Forms of Markets

We have studied that in economics the term market refers not necessarily to a particular place, number of sellers and buyers, a homogeneous product, free entry of firms into the industry, perfect to the mechanism by which buyers and sellers are brought together. Economists have classified markets on the basis of two ideas (i) Number of firms in an industry and (ii) the homogeneity and differentiation of the firm's products. Following these two basis, markets have generally been classified into three: (i) Perfect competition (ii) monopoly (iii) Imperfect competition which includes monopolistic competition, oligopoly and duopoly.



In this chapter, we shall study determination of price and output and the condition of equilibrium under perfect competition.

3. Meaning of Perfect Competition

Perfect competition refers to a market situation where there is a large number of buyers and sellers.

The sellers sell homogeneous product at a uniform price and enjoy freedom of enterprise. The price is determined not by the firm but by the industry. It may be noted here that the word competition is used with regard to their buying and selling of any product. There is no agreement between buyers and sellers economics in a different sense than it is being used in common parlance. In everyday use the term competition means competitive behaviour of the firm which implies rivalry among themselves. But in economics, the term competition refers to the competitive market structure. The competitive nature of market structure refers to the extent to which individual firms have the power to influence the market price. The less is the power of the firm to influence the market price, the more competitive is the market structure. In the extreme case, of zero market power of the firm, the market structure is called to be perfectly competitive. In this situation, there is absence of rivalry (opposite to its meaning in common parlance) since no firm can affect the market price by its actions.

3.1 Definitions

(1) According to Prof. Leftwich, "Perfect competition is a market in which there are many sellers identical products with no firm large enough relative to the entire market to be able to influence the market price."

(2) In the words of Bilas, "The perfect competition is characterized by the presence of many firms all sell identical products. The seller is a price taker, not price maker."

3.2 Characteristics or Features of Perfect Competition

Main characteristics or assumptions of perfect competition are as follows:

(1) **Large Number of Buyers and Sellers:** There are large number of buyers and sellers of a

product in a perfectly competitive market, but each buyer and seller is so small compared to the entire market that he cannot influence the price of the product bought or sold by him. An individual seller sells so small a quantity of the total supply that if he withdraws from the market, total supply will not fall to such an extent as to raise its price. Or if a seller decides to sell the entire supply he possesses, then total supply will not increase to such an extent as to bring down the price. It means a firm under conditions of perfect competition cannot influence the market price by changing the quantity of its product. **The firm is price taker rather than price maker.**

The price taker is that firm which is unable to affect the price of the output it sells and must take the price determined by the industry for the market as a whole. In other words, the actions of the firm have no effect on market price. The demand curve of a perfectly competitive firm is perfectly elastic because the firm can sell any amount of output at the prevailing price. However, the firm can determine the volume of the output it has to sell at the market price. Thus it is **price taker and quantity adjuster.** Likewise, an individual buyer buys such a small quantity of the total supply of the product that he can't influence its price by changing his demand. **Save product and save quality**

(2) **Homogeneous Product:** The other assumption of perfect competition is that all sellers sell homogeneous units of a given product. The units sold by Ram & Co. are exactly identical to the units sold by Sharm & Co. Consequently, buyers have no reason to prefer the product of one seller to the one of another seller. The products of one seller is perfect substitute for another firm's. If one firm tries to raise its price of its output above the market price, it would lose all of its sales to other firms selling their output at the market price. Since the output of all the firms is identical they have not to incur any **selling costs** e.g. costs on advertisement and publicity.

(3) **Independent Decision Making:** Buyers and sellers are free from any barriers or restrictions with regard to their buying and selling of any product. There is no agreement between buyers and sellers of the product, quantity or price of a good. Nor have the buyers any attraction to buy the product from a particular seller. Government also imposes no restrictions in this matter.

(4) **Free Entry and Exit of Firms:** Under perfect competition, any new firm can enter any industry and any old firm can withdraw from any industry. There is no legal or social barrier on the entry of new firms into any industry. It means that new firms can easily enter industry if it appears profitable.

(5) **Perfect Knowledge:** Perfect competition requires that buyers and sellers have perfect knowledge of the relevant price. The buyers must be aware of all prices. They would not pay a price higher than the price dictated by the market. Consequently, uniform price will prevail in the market. In its purest sense perfect competition requires that all the buyers and sellers have an accurate knowledge of the future together with the past and present. There will therefore be no uncertainty in the market.

(6) **Perfect Mobility:** Another characteristic of perfect competition is that all resources are perfectly mobile. It means that all the resources must be able to enter or leave the market. They must be able to

(3) According to Lim Chong Yah, "Perfect competition is a market situation where there is a large number of sellers and buyers, a homogeneous product, free entry of firms into the industry, perfect knowledge among buyers and sellers of existing market conditions and free mobility of factors of production on the basis of two ideas (i) Number of firms in an industry and (ii) the homogeneity and differentiation of the firm's products. Following these two basis, markets have generally been classified into three: (i) Perfect competition (ii) monopoly (iii) Imperfect competition which includes monopolistic competition, oligopoly and duopoly."

switch from one use to another. Labour must be able to move from one region to another and from job to job. Raw materials must not be monopolised.

(7) Absence of Transport Costs or Transactions are Costless: Another feature of perfect competition is that buyers and sellers incur no costs in making exchanges. In other words, there is no competition of transport. Since it is assumed that under perfect competition all firms have equal access to the market, they have not to incur any transport cost. This assumption is necessary to maintain uniform prices throughout the market.

(8) Lack of Selling Costs: Under perfect competition, a seller does not spend on advertising and publicity etc. It is so because all firms sell homogeneous product. Hence, there is no need on the part of a firm to incur selling cost.

(9) Same Price: Under perfectly competitive market, each seller charges the same price for the same product. Price is determined by the industry. Firms have to sell their products at this price. Average revenue and marginal revenue of the product are equal.

Firms under perfect competition are price taker and not price-maker. Because no individual seller can change the price of the product in the market, average revenue (or the price) of the product becomes equal to the marginal revenue.

revenue is the addition to total revenue by selling one unit of the product is sold, the price (AR) is Rs. 5. demand goes up to two or three units, even then price will remain Rs. 5. Hence, marginal revenue coincides with average revenue remaining constant at Rs. whatever be the size of output.

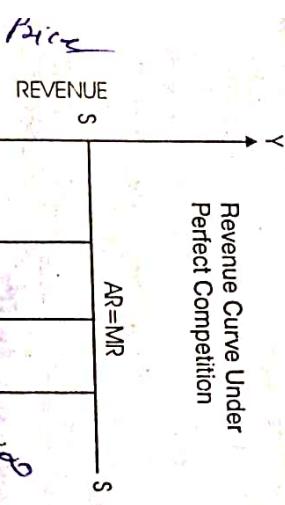


Figure 1

Economists usually distinguish between 'pure' and 'perfect' competition. The difference between the two is merely that of degree. The concept of pure competition has mainly been propounded by Chamberlin. As five of the seven conditions of perfect competition listed above are satisfied, there is supposed to prevail pure competition in the market. A market having the following characteristics is a pure competitive market:

- (i) Large number of buyers and sellers
- (ii) Homogeneous product
- (iii) Free entry and exit of firms
- (iv) Independent decision making and
- (v) Lack of transport costs.

○ Definition

Baumol thus defined pure competition in these words: "An industry is said to be operating under conditions of pure competition when there are many firms, homogeneity of products, freedom of entry and exit, independent decision making."

Besides the above mentioned five conditions of pure competition, perfect competition includes two additional conditions viz (i) Perfect Knowledge and (ii) Perfect Mobility. Apparently, pure competition seems to be more realistic concept than perfect competition.

14. Monopoly

The term monopoly is derived from the Greek word monopoli which means exclusive sale.

monopolist seller

Thus pure monopoly is market structure in which a single firm is the sole producer of a product for which there are no close substitutes. Since the monopoly is the only seller in the market, it has neither rivals nor direct competitors. For example, you get your electricity supply from one agency, that is, State Electricity Board; you travel by railway train owned and run by government of India. All these are examples of monopoly. Further more no other seller can enter the market. In monopoly, there is no distinction between firm and industry. The firm is the industry since it is the only producer in the market. The monopolist is the price maker. He determines the price and this price will determine how much he is able to sell. Its demand curve slopes downward to the right.

ex: Railways, metro,

14.1 Definitions:

(1) According to Koutsoyannis, "Monopoly is a market situation in which there is a single seller, there are no close substitutes for commodity it produces, there are barriers to entry."

(2) in the words of Baumol, "A pure monopoly is defined as the firm that is also an industry. It is the only supplier of some particular commodity for which there exists no close substitute."

14.2 Main Features or Main Characteristics of Monopoly

Main features of monopoly are as follows

(1) One Seller and Large Number of Buyers : Under monopoly there should be a single producer of the commodity. He may be a sole-proprietor or there may be a group of partners or a joint-stock company or a state. Thus there is only one firm in monopoly and there is no distinction between firm and industry. But the buyers of the product are in large number. Consequently, no buyer can influence the price but the seller can.

(2) Monopoly is also an Industry :- Under monopoly situation, there is only one firm and the difference between firm and industry disappears. There is no difference between the study of a firm and the study of the industry.

(3) Restrictions on the Entry of the New Firms : Under monopoly, there are some barriers to entry.

There are restrictions on the entry of new firms into monopoly industry. These barriers may take several forms as patent rights, government laws, economies of scale etc. There is no competitor of a monopoly firm.

(4) No Close Substitutes: The commodity produced by the firm should have no close substitute. Otherwise the monopolist will not be able to determine the price of his commodity as per his discretion. According to Boulding, "A pure monopoly firm is one that produces such a commodity as has no effective substitute in the production of other firms."

(5) Price Maker : A monopolist is a price maker. A price maker is one who has got control over the supply of the product. A monopolist has full control over the supply of the commodity. On the other hand, there are large number of buyers, but the demand of a single buyer constitutes only a small portion of the total market demand. Hence, the buyers have to pay the same price as fixed by the monopolist. In

other words, price of the commodity is fully under the control of the monopolist. In case, the monopolist increases the supply of the commodity, the price of it may fall. If he reduces the supply, the price of it may rise.

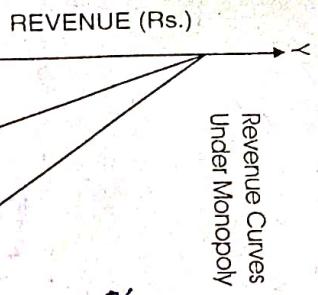


Figure 2

(6) **Price Discrimination** :- A monopolist may be able to charge different prices for the same product from different customers. Thus monopolists can practise price discrimination.

(7) **Absence of Supply Curve** :- The monopolist does not have a supply curve independent of demand. The monopolist simultaneously examines demand (hence marginal revenue) and cost (hence marginal cost) when deciding how much to produce and what to charge.

(8) Different Average and Marginal Revenue Curves:

Under Monopoly, average revenue and marginal revenue curves are separate and downward sloping, as shown in Fig. 2. AR curve represents price of different units and MR curve represents marginal revenue.

□ 3.3 Imperfect Competitive Market

Imperfect competition is the real situation of the market. In practical life, perfect competition and pure monopoly are rare situations. Real markets are imperfectly competitive. They have some features of both perfect competition and monopoly. In economics, imperfect competitive market situation became a subject of study only after the year 1933, when Mrs. Joan Robinson published her book "Economic Theory of Imperfect Competition in England" and Prof. Chamberlin published his book, "Theory of Monopolistic Competition in America." With the publication of these two books, price and equilibrium determination under imperfect competition assumed great importance.

In the words of Fairchild, "If a market is not organised, if contact between the buyers and sellers is established with great difficulty and they are not in a position to compare the goods and prices, then we face a situation of imperfect competition." Thus, imperfect competition is a wide term which includes, the following situations of market: (1) **Monopolistic Competition**, wherein the number of sellers is quite large; (2) **Oligopoly**, wherein the sellers are few in number; (3) **Duopoly**, where there are only two sellers.

□ Monopolistic Competition

The concept of monopolistic competition was presented by American Economist Prof. Elmer Chamberlin in his book, "Theory of Monopolistic Competition" published in 1933. It is that situation of market in which there are many sellers of a commodity, but the product of each seller differs from that of the other sellers in one respect or the other. Thus product differentiation is the hallmark of monopolistic competition. This product differentiation manifests itself in several ways, for example, different brands of the product; different trade marks, difference in shape, colour and quality. It can also be in the form of difference in services and facilities offered to the consumers by the sellers. Many examples can be cited.

Definitions

Some of the definitions of monopolistic competition are as under:

- According to J.S. Bains, "Monopolistic competition is found in the industry where there is a large number of small sellers, selling differentiated but close substitute products."
- In the words of Leftwitch, "Monopolistic competition is a market situation in which there are many sellers of a particular product, but the product of each seller is in some way differentiated in the eyes of consumers from the product of every other seller."
- According to Lim Chong Yah, "Monopolistic Competition is a market situation where there are many producers but each offers a slightly differentiated product."

Main Features or Characteristics of Monopolistic Competition

Main features of monopolistic competition are as under:

- Large number of Firms and Buyers:** Under monopolistic competition there are large number of firms producing the product and also large number of buyers, as in case of perfect competition. The size of each firm is small. It means that each firm has only limited control over the market. Each can decide its own price policy independently.
- Product Differentiation:** Product differentiation is a salient feature of monopolistic competition. Product differentiation refers to that situation wherein the buyers can distinguish one product from the other. Number of firms is large but their products differ in one respect or the other. However their products are close substitutes. Product differentiation arises due to the characteristics of the products, e.g., shape, colour, durability, quality, size, etc. There are many instances of product differentiation, such as, Godrej, Hamam, Rexona, etc. among bathing soaps. Similarly, Cibac, Colgate, Choice, Prudent, among the toothpastes.
- Freedom of Entry and Exit of Firms:** As in case of perfect competition, firms are free to enter and leave the industry under monopolistic competition, but this freedom of entry into industry is absolute on the part of new firms. They are to face so many difficulties. Production of some firms are depleted. New firms cannot produce them. For instance, no other firm can produce Campa-Cola.
- Selling Cost:** Each firm spends a lot of funds on advertisement and publicity of its products in a view to selling more and more units of the product it gives wide publicity of its products in papers, cinemas, journals, radio, T.V. etc. The expenses so incurred are called selling costs.

ginal revenue curve which is below the more elastic portion DK of the average revenue curve, is positive. It proves that if a firm lowers its price, its total revenue will increase. On the contrary, RM portion of marginal revenue curve which is below the inelastic portion KD₁ of the average revenue curve, is negative. It means that if a firm lowers its price, its total revenue will not increase. PR gap in the marginal revenue curve arises because average revenue curve has suddenly changed from more elastic to inelastic curve.

4. Comparison between Monopoly and Perfect Competition

Comparison between monopoly and perfect competition is made on the basis of following features:-

- Nature of Product:** All firms produce homogeneous products under perfect competition. Product may or may not be homogeneous under monopoly. Total supply originates only from one firm under monopoly.
- Number of Sellers and Buyers:** There are large number of buyers and sellers of homogeneous product under perfect competition. No single seller by changing his supply and no single buyer by changing his demand can influence the price. A group of firms producing homogenous goods is called industry under perfect competition. Under monopoly there is a single seller and difference between firm and industry does not exist.
- Restriction on Entry:** New firms are free to enter and old ones are free to quit the industry under perfect competition. On the contrary, there are restrictions on the entry of new firms in case of monopoly.

4. Price and Output of the Commodity:

A firm is a price-taker under perfect competition and so cannot influence the price. The only decision that a firm takes is how much to produce at the price which is determined by the industry so that it should be in equilibrium. Under monopoly, a monopolist himself is price-maker. He may determine either price or output, but he cannot determine both. It is so because when one of the two is determined the other also gets determined automatically.

5. Difference Regarding Output and Price: Price under monopoly is higher in the long-run than under perfect competition but output is lower. It is so because in long-run equilibrium situation price is equal to minimum average cost under perfect competition corresponding to normal profits. But under monopoly it is not so because the monopolist earns super normal profits even in the long run.

6. Difference regarding Profit: Under conditions of equilibrium in the short period, both perfect competition and monopoly, a firm may earn normal profit, super-normal profit or suffer losses but in the long-run, a competitive firm earns normal profit whereas monopoly firm continues to earn super-normal profit.

7. Shape of the Demand Curve: Under perfect competition, demand curve is parallel to X-axis as shown in Fig. 5(A). In other words, average revenue and marginal revenue are equal. Under monopoly, it slopes downwards from left to right, as shown in Fig. 5(B). So that, average revenue and marginal revenue are not equal.

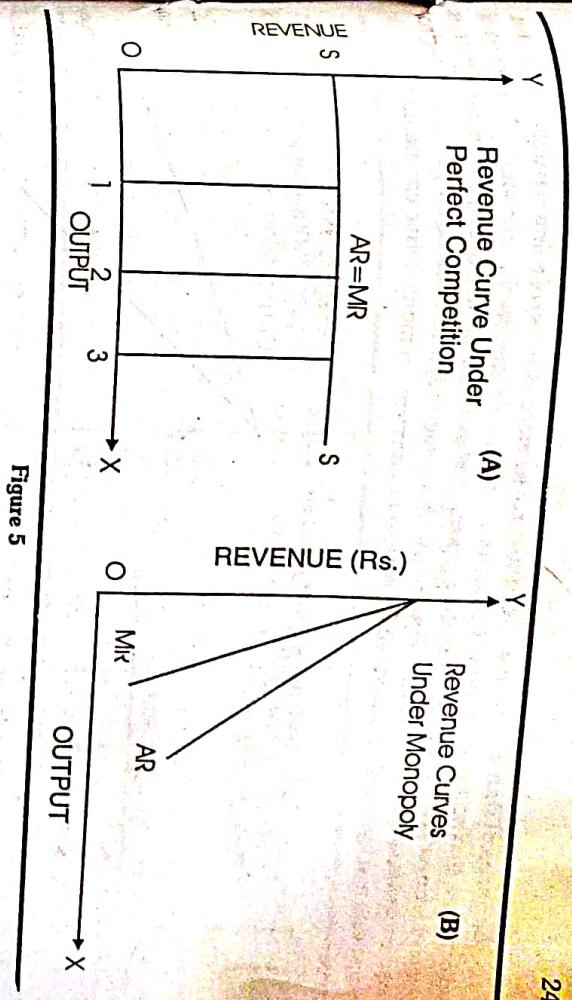


Figure 5

5. Comparison between Monopolistic Competition and Perfect Competition

Following observations may be noted while comparing perfect competition with monopolistic competition:
Under monopolistic competition, firms produce differentiated goods. Due to product differentiation, every firm has limited control over price.

1. Nature of the Product: Under perfect competition all firms produce homogeneous product. Whereas under monopolistic competition, firms produce differentiated goods. Due to product differentiation, every firm has limited control over price.

2. Determination of Price: Both under perfect competition as well as monopolistic competition, price of the commodity is determined by the forces of market supply and market demand. However, under perfect competition, a producer has absolutely no control over price, under monopolistic competition partial control of price becomes possible through product differentiation.

3. Selling Costs: Under perfect competition a producer incurs in addition to cost of production, selling costs as well. Under monopolistic competition a producer incurs in addition to cost of production, selling costs as well.

4. Difference regarding Degree of Knowledge: It is assumed under perfect competition that buyers and sellers have perfect knowledge about market conditions. Under monopolistic competition, the buyers and preferences of the consumers are influenced through product differentiation and advertisement.

(5) Shape of Demand Curve: Demand curve (average revenue) of a firm is parallel to OX-axis under perfect competition. Under monopolistic competition average revenue (demand curve) slopes downward. Under perfect competition average revenue and marginal revenue are equal. Under monopolistic competition they are different. Figure 6(A) shows the shape of revenue curves under perfect competition and figure 6(B) shows the shape of revenue curves under monopolistic competition.

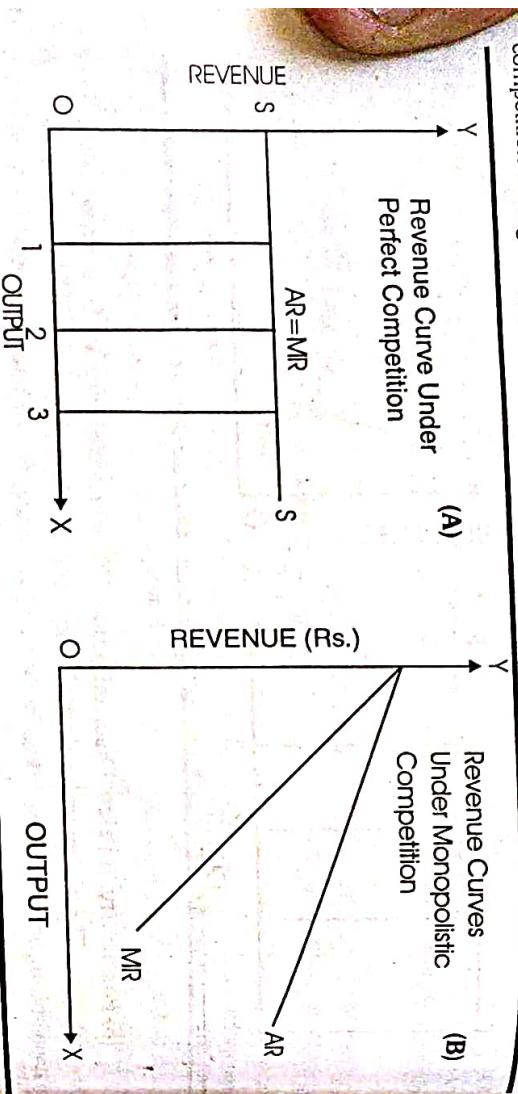


Figure 6

(6) Difference regarding Level of Price and Output: In the long period, under perfect competition the price is generally low and output is more in comparison to the price and output under monopolistic competition.

(7) Decision of the Firm: Under perfect competition a firm can take decision only with regard to the quantity of output to be produced. It can only decide as to how much to produce at the price determined by the industry so as to be in equilibrium. On the other hand, a firm under monopolistic competition can determine either the output to be produced or the price to be charged.

Q6. Comparison between Monopoly and Monopolistic Competition

The following are the main differences between monopoly and monopolistic competition:

(1) Nature of the Product: Product differentiation is not essential under monopoly competition but it is not essential under monopoly.

(2) Number of Sellers: There is a single seller producing close substitutes under monopolistic competition.

(3) Entry of New Firms: In the long-run entry of new firms is possible under monopolistic competition; but it is not possible under monopoly.

(4) Selling Costs: A monopolist has to incur cost of production alone, but a firm under monopolistic competition incurs selling costs in addition to production costs. However, while introducing product in the market, a monopolist might have to incur some advertisement expenditure.

(5) Average and Marginal Revenue Curves: Both marginal revenue and average revenue curves lie below the demand curve.

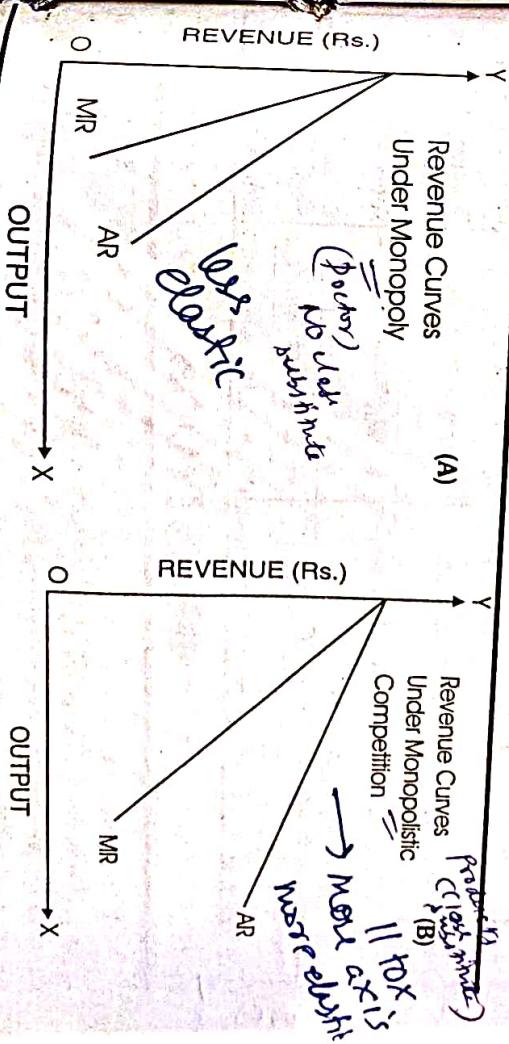


Figure 7

(6) Difference Regarding Profits: In the short period, firms under both market situations may earn normal or super-normal profits, but in the long period a firm under monopolistic competition will earn normal profits alone, whereas a monopoly firm will be getting super-normal profit.

Possibility of Price Discrimination: Under monopoly price discrimination is possible. A monopolist can charge different prices for the same commodity from different persons or for different units from the same person. In monopolistic competition price discrimination is generally ruled out going

Possibility of Price Discrimination: Under monopoly price discrimination is possible. A monopolist can charge different prices for the same commodity from different persons or for different units from the same person. In monopolistic competition price discrimination is generally ruled out going

Difference	Perfect Competition	Monopolistic Competition	Monopoly
1. No. of Sellers	Large	Large	One
2. Product	Homogeneous	Product differentiation	(Homogeneous or differentiated)
3. Price	Uniform	Not uniform because of product differentiation	Not uniform because of Price Discrimination
4. Entry of firms	Free entry	Not absolute freedom	Not possible
5. Knowledge of market conditions	Perfect knowledge	Imperfect knowledge	Imperfect knowledge
6. Mobility	Perfect mobility	Imperfect mobility	Imperfect mobility
7. Price Elasticity of demand	Perfectly elastic	Relatively more elastic	Relatively less elastic
8. Average and marginal revenue	AR = MR	AR > MR	AR > MR
9. Selling Costs	Not Required	Very Significant	Seldom
10. Degree of Price Control	Firm is a Price Taker	Partial control over price	Firm is a Price maker

QUESTIONS

- Define Market and explain various types of Markets.
- What are the main forms of a Market? Discuss the main features of a perfectly competitive market.
- What do you understand by monopoly? Explain the main features of monopoly competition.
- What do you understand by perfect competition? Give the main characteristics of perfect competition.
- Define Monopolistic Competition. What are its main features?
- What is meant by perfect competition? Distinguish between perfect competition and monopolistic competition.
- Define monopoly. Distinguish between (i) monopoly and perfect competition (ii) Monopolistic competition.
- What is meant by oligopoly? Give the main features of oligopoly.

SUPPLY AND LAW OF SUPPLY

20
Lesson 10.

1.1. Definitions

By supply of commodity is meant that quantity of the commodity which a seller is prepared to sell at a given price and at a given period of time. In the ordinary language, the terms **Supply** and **Stock** are used in the same sense. In economics, these terms have different meanings. Stock of a commodity refers to the total quantity of that commodity which at any given time is available in the market with the seller. Supply refers to that part of the stock that the seller is prepared to sell at a given price and at a given time. It should be noted that economists differentiate between the terms quantity supplied and supply. The term quantity supplied refers to a particular quantity of a good which is supplied at a particular price whereas supply refers to different quantities supplied at various prices.

(i) In the words of **Thomas**, "The supply of goods is the quantity offered for sale in a given market at a given time at various prices."

(ii) In the words of **Samuelson**, "Supply refers to the amounts of a good that producers in a given market desire to sell, during a given time period at various prices, ceteris paribus".

1.2 Supply Function or Determinants of Supply

Supply function studies the functional relationship between supply of a commodity and its various determinants. The supply of a commodity mainly depends on the goal of the firm, price of the commodity, prices of inputs, technology, price of related goods, number of suppliers, expectations of producers and government policies. In other words, supply is a function of several factors expressed in the form of the following equation.

$$S = f(G_f, P, I, T, P_r, N, E, G_p)$$

(Here S = Supply; G_f = Goal of the firm; P = Product's own price; I = Prices of inputs; T = Technology; P_r = Prices of related goods; N = Number of suppliers; E = Expectation of producers; G_p = Government Policy)

Following are the main factors influencing supply:

1) Learn market strategy

Willing to supply. The goal of the firms may be profit maximisation or sales maximisation. A firm which aims at maximising its profits will generally supply a less quantity of a good at a given price than a firm aiming at sales maximisation.

(2) Good's own Price: As the price of a good rises, with costs and the prices of all other goods unchanged, production of that good becomes profitable. Existing firms are likely to expand their outputs and eventually new firms will be attracted into the industry. Hence total supply expands when price increases and contracts when price decreases.

(3) Prices of Inputs: The prices of inputs such as labour, machines, raw materials, determine the cost of production. If input price rises, cost of production increases and profits are reduced. This will cause supply to fall at the given price. On the other hand, a fall of input prices will reduce costs, resulting in an increase in profits. This will induce producers to increase the supply at the given price.

(4) Technology: Technology refers to ways in which inputs can be combined to produce a given output. Technological improvements such as invention of a new machine will reduce costs and increase the profits. Increased profitability induces the producers to produce more and increase the supply.

(5) Price of Related Goods: Another major determinant of supply is the price of related goods. The related goods may be (i) Substitutes: If the price of one production substitute rises, the supply of another substitute will decrease. For example wheat and corn are substitutes. A rise in the price of wheat may cause a farmer to produce and supply more wheat at each possible price. Conversely a decline in the price of wheat may induce the farmer to produce and supply more corn in the market. (ii) On the other hand, when goods are complements or joint products like petrol and paraffin or like car and petrol, an increase in the price of one complement or joint product yields an increase in the supply of the other.

(6) The Number of Suppliers: Other things being equal, the larger the number of suppliers, the greater will be the market supply. The smaller the number of firms in an industry, the less the market supply will be.

(7) Expectations of Producers: Producer expectation about future market prices affect the supply of any good. When firms expect the price of their products to be lower in the future, supply in the current time period increases. On the other hand, if the producers expect the prices of the goods they produce to rise in the future, they may store the current production for later sale, reducing their supply.

(8) Government Policies:- The policies of the governments are also important determinants of supply. A reduction in quotas and tariffs on foreign goods will open up the market to foreign producers and will tend to increase the supply. The policy of liberalisation may increase the supply.

(9) Taxes and Subsidies: The changes in the taxes and subsidies also influence the supply. The producers treat most taxes as costs. Therefore, an increase, in say, sales tax will increase costs and reduce supply. Conversely subsidies will reduce the costs and induce the producers to increase the supply.

(10) Weather: This is particularly important for the supply of agricultural products. For example a drought will cause a decrease in the supply of wheat and a normal monsoon can cause an increase in the supply of wheat.

2. Law of Supply

Law of Supply expresses the relation between the price of a commodity and its supply. When price rises, supply extends and when price falls, supply contracts, other things being equal.

Definitions

(i) In the words of Dooley, "The law of supply states that other things being equal the higher the price, the greater the quantity supplied or the lower the price, the smaller the quantity supplied."

(ii) According to Lipsey, "The law of supply states that other things being equal, the quantity of any commodity that firms will produce and offer for sale is positively related to the commodity's own price, rising when price rises and falling when price falls."

In other words, there is positive relation between the price and quantity supplied. But this relation need not be proportionate, i.e., it is not necessary that supply should double if the price doubles, or that supply should halve if the price falls by one-half. Law of supply simply indicates the direction in which supply will move as a result of change in price.

2.1 Supply Schedule

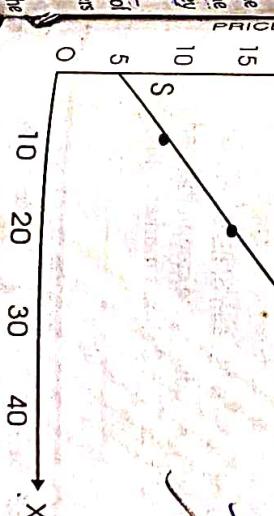
Supply schedule is a table showing various quantities of a good that sellers would supply at various prices during some time period, other things being equal. It has two aspects (1) Individual Supply Schedule and (2) Market Supply Schedule.

(1) Individual Supply Schedule: Individual Supply Schedule is defined as the table which shows quantities of a given commodity which an individual producer will supply at all possible prices at a given time. Table 1 shows individual supply schedule. It indicates different quantities of ice cream, that are supplied by a producer at different prices.

The law of supply can be explained with the help of a supply schedule and supply curve. It is clear from this Table that as the price rises, supply extends. At Rs. 5 per ice cream, the supplier is not willing to sell any unit. When price rises, supply schedule expresses the functional relationship between price and quantity supplied.

Price of Ice Cream (in Rs.)	Quantity
5	0
10	10
15	20
20	30

Figure 1



It is clear from this Table that as the price rises, supply extends. At Rs. 5 per ice cream, the supplier is not willing to sell any unit. When price rises, supply schedule expresses the functional relationship between price and quantity supplied.

(2) Market Supply Schedule: Market supply schedule is the table which indicates the total supply of a commodity all producers would supply at each market price per period of time. Table 2 shows market supply schedule. The schedule is based on the assumption that there are in all two producers 'A' and 'B' of commodity 'X'. By aggregating the individual supply schedules, the market supply has been constructed.

Table 2. Market Supply Schedule

Price of Ice Cream (in Rs.)	Supply by firm 'A'	Supply by firm 'B'	Market Supply
5	0	0	0
10	10	5	$10 + 5 = 15$
15	20	10	$20 + 10 = 30$
20	30	20	$30 + 20 = 50$

Above schedule indicates that when price of ice cream is Rs. 5, the producers will not supply any quantity. When price increases to Rs. 10, firm 'A' supplies 10 units and firm 'B' supplies 5 units. Thus market supply is $10 + 5 = 15$ units. As the price rises, market supply also increases.

□ 2.2 Supply Curve

The supply curve is that curve which shows the quantity of product the producers are willing to supply at different prices. It generally slopes upward, indicating that output will increase at higher prices. The supply schedules supply curve can be (1) Individual Supply Curve (2) Market Supply Curve.

(1) **Individual Supply Curve:** On the basis of the individual supply schedule, supply curve is drawn. In Fig. 1, SS is the supply curve. It has a positive slope meaning thereby that as price rises, there is an increase in supply. The quantity supplied extends also. It is evident from this diagram that if price is Rs. 5 or less than that, the seller will not be prepared to sell any unit. **The price below which the seller is not prepared to sell any unit is called Reserve Price.**

(2) **Market Supply Curve:** The market supply curve is the sum of the separate supply curves of all the producers in a market. If 'A' and 'B' are the only firms producing ice cream, the market supply curve is the sum of the amounts each would supply at each price. Fig. 2 shows market supply curve as based on table 2.

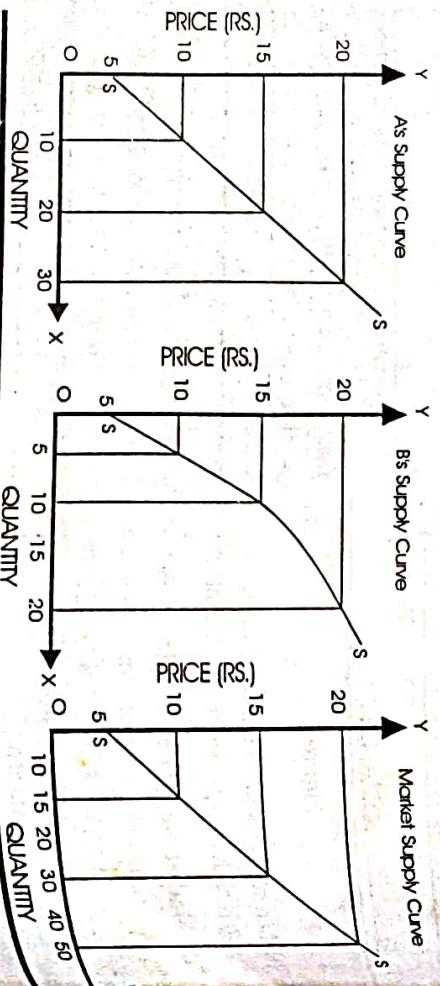


Figure 2

□ 2.3 Exceptions to the Law of Supply

Like the Law of Demand, there are some exceptions to the Law of Supply. These exceptions are:
(1) This law does not apply rigorously to agriculture products whose supply is governed by climatic factors. If due to natural calamities, the production of wheat is low then its supply will not increase however high the price may move.
(2) Supply of goods having social distinction will remain limited even if their price may rise high.

(3) Seller will be ready to sell more units of perishable goods although their price may be falling.
However, for non-perishable goods, such as, dairy products (e.g., butter, cheese, milk, etc.), food items (e.g., flour, rice, etc.), etc., supply is termed an **extension** (Rise in supply due to rise in price) and **contraction** (Fall in supply due to fall in price) of supply.

(2) A change in supply is caused by change in the determinants other than product's own price. It results in the shift of the entire supply curve either to the right or to the left. Changes of this kind are referred to as changes in supply or shifts in supply. The first type of change expresses movement along the supply curve or changes in the quantity supplied. Such changes in supply are termed as **extension** and **contraction** of supply. In the change of the second type the supply curve shifts either to the right or to the left. Changes of this kind are termed as **increase in supply** or **decrease in supply**.

□ 3.1 Movement Along Supply curve or Extension and Contraction of supply

When change in quantity supplied is caused by change in price, it is called Extension or Contraction of supply.

(1) **Extension of Supply:-** Other things being equal, when supply of a commodity rises due to rise in price it is called extension of supply. It is shown in the following Table and Fig. 3.

Extension of Supply	+
Price (Rs.)	Quantity

In the above table, it is shown that when Price is Re. 1 the quantity supplied is 1 unit. When price rises to

Rs. 5, the supply extends to 5 units. Extension in supply is also illustrated in Fig. 3. SS is the supply curve of Ice Cream. When price of Ice Cream is Re. 1, supply is of 1 ice cream. When price rises to Rs. 5, the supply extends to 5 units. The producer moves from point 'A' to point 'B' on the same supply curve. The movement from the lower point on the supply curve to the higher point is called extension of supply.

(2) **Contraction of Supply**:- Other things being equal, when supply of a commodity falls due to fall in price, it is called Contraction of Supply.

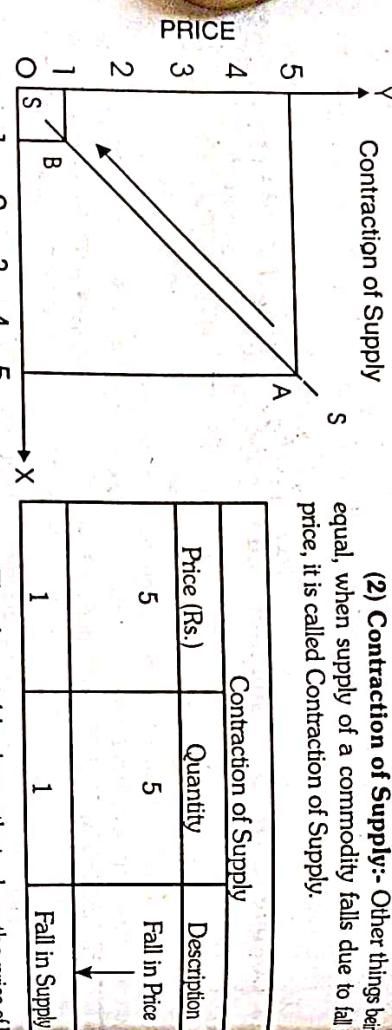


Figure 4

The above table shows that when the price of ice cream is Rs. 5 the supply is of 5 units of Ice Cream. When price falls to Re. 1 then, the supply contracts to 1 unit of Ice Cream.

Contraction of Supply is also illustrated with the help of Fig. 4. SS is the supply curve of Ice Cream. When the price is Rs. 5, supply is of 5 units. The supply is shown by point 'A' on SS curve. Conversely, when the price falls to Re. 1, the supply contracts to 1 unit. The supply fall down from point A on SS curve to point B. This movement from a higher point to a lower point on the supply curve is known as contraction of supply.

□ 3.2 Shift of Supply Curve or Increase in Supply and Decrease in Supply

When supply of a commodity changes due to change in factors other than its price, such as, change in the state of technology or input prices then it is called increase or decrease in supply.

(1) **Increase in Supply**:- Increase in supply refers to the downward shift to the right of the supply curve. More supply at same price or same supply at less price is called increase in supply. Thus increase in supply manifests itself in two ways:

- (a) **Same Price More Supply**:- Supposing when price of Ice Cream is Rs. 3 per cup then supply is of 3 cups. If price remains at Rs. 3 but supply increases to 4 cups, then it will be case of increase in supply to Rs. 2 and there is no consequent fall in supply i.e., it stays at 3 cups, then it will also be a case of increase in supply.
- (b) **Less Price Same Supply**:- When price of Ice Cream is Rs. 3, the supply is of 3 cups. If price falls to Rs. 2 and there is no consequent fall in supply i.e., it stays at 3 cups, then it will also be a case of increase in supply.

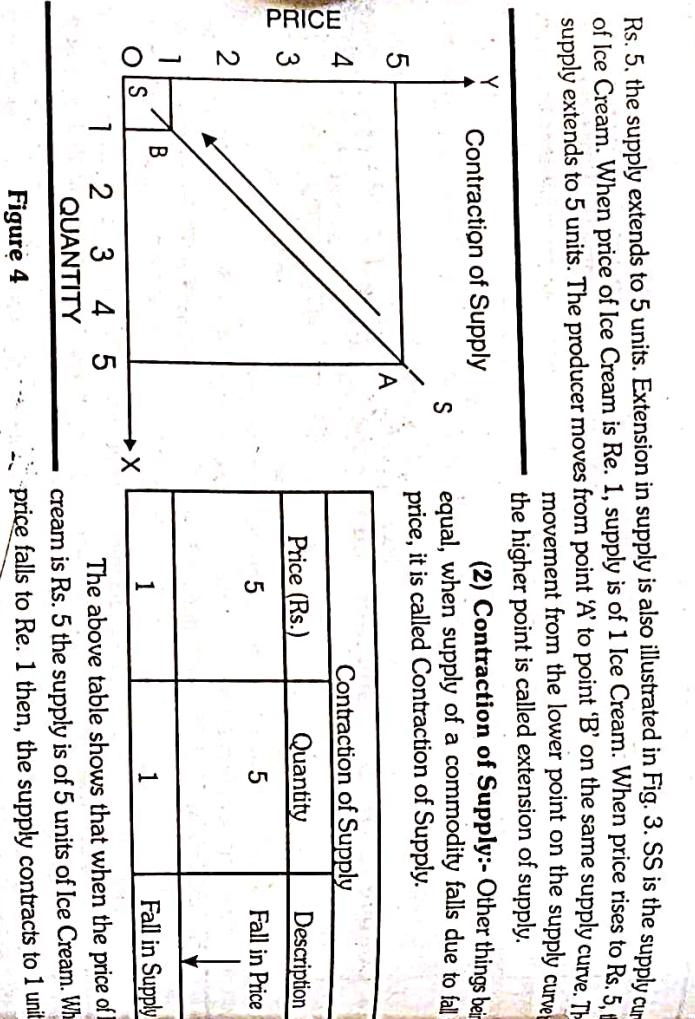


Figure 5

(a) **Same Price-Less Supply**: Supposing price of Ice Cream is Rs. 3 per cup and supply is of 3 cups. Price remaining the same i.e., Rs. 3, if supply falls to 2 cups, then it will be case of decrease in supply.

(b) **More Price Same Supply**: When price is Rs. 3, the supply is of 3 cups of Ice Cream. If price rises to Rs. 4, but the supply remains at 3 cups, it will also be the instance of decrease in supply.

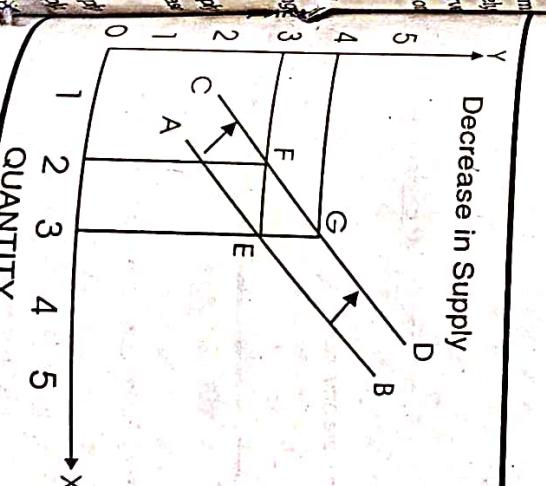


Figure 6

Decrease in supply is shown with the help of diagram in Fig. 6. Supposing AB is the original supply curve. At Rs. 3/- the supply is of 3 cups of Ice Cream; as indicated by point 'E' on it. When due to change in "other factors" than the price supply decreases, the new supply curve shifts upwards to the left and takes the form of CD. Point F on the new supply curve indicates that at the same price of Rs. 3/- the new supply has fallen down to 2 units. Point 'G' on the new supply curve means that even at a higher price of Rs. 4/- the supply remains at 3 cups.

Thus, new supply curve CD represents decrease in supply.

Increase in supply can be illustrated with the help of a diagram as shown in Fig. 5. Supposing the original supply curve is AB. Point 'E' indicates supply of 3 cups of Ice Cream at Rs. 3 per cup. Under the influence of change in factors other than the price, supply curve AB will shift downwards to the right as CD. Point 'F' on the new supply curve shows same price of Rs. 3. Likewise, Point 'G' on the new supply curve shows that although price has fallen to Rs. 2 per cup yet the supply remains at 3 cups, i.e., as before. New supply curve CD represents increase in supply.

Caution
Shifts in Supply Curve may seem confusing.
the shift from S_1S_1 to S_2S_2 in fig. 7 is vertically
downward even though supply is rising. Where
though supply is decreasing. Thus always think
horizontal movements away from the OY [price]
axis as increases and shifts towards OY' [price] axis
as decreases.

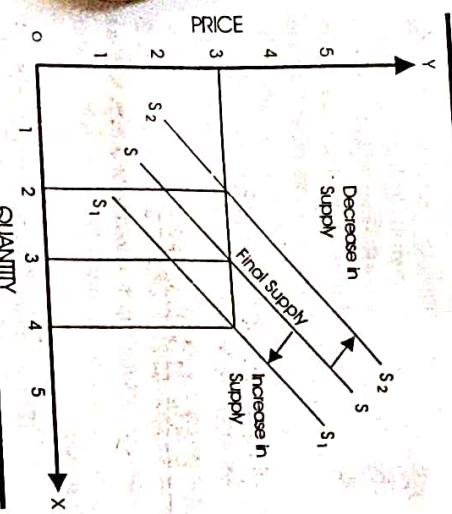


Figure 7

QUESTIONS

- What do you mean by the term "Supply"? Discuss the Law of Supply.
- Differentiate between:
 - Extension and Contraction of Supply.
 - Increase and Decrease of Supply.
- What is meant by Supply? Which factors do influence the Supply? Explain the law of supply with the help of a supply curve and supply schedule.
- State and explain the Law of supply. Are there any exceptions to it?

21

Session - D.

ROLE OF DEMAND AND SUPPLY IN THE DETERMINATION OF PRICE

i. Introduction

The price of a commodity is determined by the interaction of its demand and supply. A price is the amount Paid for a specified quantity and quality of any good or service. Ordinarily, determination of price of a commodity is studied under conditions of perfect competition. Perfect competition is that situation of the market in which there are large number of buyers and sellers selling a homogeneous product and charging a uniform price throughout the market as determined by the interaction of market demand and supply. Economists prior to Dr. Marshall had some difference of opinion regarding price determination under perfect competition. According to classical economists, like Ricardo, it is cost of production of a good or its supply that had major role in the determination of its price. On the other hand, marginalist economists like Jevons asserted that it was marginal utility of a good that played the upper role in the determination of its price. But according to Marshall price of a good is determined both by its cost of production (supply) and marginal utility (demand). Supply of a good is influenced by its cost of production and demand by its marginal utility. Thus, price of a good is determined by the interaction of the relative forces of demand and supply.

ii.1 Equilibrium Price

Equilibrium price is the price at which the quantity of a good demanded in a given time period equals the quantity supplied. At equilibrium price, all buyers fully satisfy their demand and all sellers need in selling quantity of commodity that they wish to sell in the market. Once an equilibrium is achieved, there is no tendency for producers or consumers to move away from it. At equilibrium price, quantities tend to stay the same, as long as other things remain equal. Thus an equilibrium price is the price at which can be maintained. Any price that is not an equilibrium price cannot be maintained for long. There are basic forces at work to stimulate a change in price. The equilibrium price, therefore, is the price at which demand and supply equal each other or the purchases and sales of buyers and sellers respectively coincide. At equilibrium price there is no tendency for change.

Definition.

In the words of Nicholson, "Equilibrium price is the price at which quantity demanded equals the quantity supplied". At such a price there is no incentive for either buyers or sellers to change their behaviour.

a thing that motivates or encourages

1.2 Equilibrium Price and Demand

Demand for a good is made by the buyers. Buyers demand a commodity because it has the capacity to satisfy their want. Want-satisfying capacity of a good is called its utility. A commodity is, therefore, demanded because of its utility. A consumer is prepared to pay a price for a good because it has some utility. As a consumer consumes more and more units of a commodity, its marginal utility goes on diminishing. The maximum price that a consumer will be prepared to pay for a good will be equal to its marginal utility. The marginal utility is the change in total utility due to consumption of one more unit of the commodity. Price of a commodity cannot be fixed higher than its marginal utility. A such, marginal utility sets the highest price limit of a commodity.

1.3 Equilibrium Price and Supply

When a seller supplies a commodity, he has to incur some expenditure on it. This expenditure is the money cost of producing that commodity. Aim of the seller is to secure profit. He must, therefore, get at least that much price for the commodity which is equal to its marginal cost of production. Marginal cost is, therefore, the lowest limit of the price. Marginal cost is the addition to total cost due to production of one more unit. A seller will not be prepared to accept a price that is less than the marginal cost.

In short, price of a commodity is determined by the relative forces of demand and supply on the strength of marginal utility and marginal cost.

1.4 Role of Demand and Supply in the Determination of Price

Or

Importance of Time Element in the Determination of Price

It is evident from the above discussion that price of a good is determined at a point where demand is equal to supply. Whether the price of a good will be influenced more by demand or supply depends on the time taken by demand and supply to adjust themselves. Importance of time element in the determination of value has been examined by Marshall. According to him shorter the period greater will be the influence of demand on price; and longer the period greater will be the influence of supply on the determination of price. Marshall has divided time element necessary to bring about equilibrium between demand and supply into four periods:

(1) Very Short Period: It refers to the time period in which supply of a commodity cannot be increased beyond its existing stock even if the demand has increased. In other words very short period is that period in which supply is fixed. The firm does not have time to increase its stock.

Supposing your college canteen has a stock of 100 rasgullas at 10'o clock on Monday. The canteen 200 rasgullas are demanded by the students for their party by 11'o clock. Obviously, The canteen contractor cannot prepare additional 100 rasgullas within one hour at his disposal. He is helpless. He can supply 100 rasgullas only of which he has the stock. In very short period supply can, at best, increase upto the existing stock which consists of 100 rasgullas in this example. Since supply is fixed in the very short period, demand plays greater role in the determination of price. The price that comes to prevail in the very short period is called Market price.

(2) Short Period: It refers to that time period in which supply of a commodity can be increased only up to its existing production capacity, if demand has increased, there is no

enough time for a firm to install new machines nor for the new firms to enter the industry. Supposing you have a carpet manufacturing factory. If you run your factory for full 24 hours, you can produce 10 carpets at the most. Supposing demand for carpets increases to 20 carpets per day for two days only. You will be unable to meet this additional demand. Your maximum production capacity is limited to 10 carpets only. You do not have time to install new looms to increase your production. Thus, even in short-period, demand plays greater role than supply in the determination of price. The price that is determined in the short period is called Sub-normal price.

(3) Long-period: It refers to that time period in which supply of a commodity can be increased or decreased according to the changed conditions of demand. The increased demand can be met with increasing the supply by installing new machines. Or new firms can enter the industry. On the contrary, if demand has gone down, some firms will discontinue their production. Price in the long-period is, therefore, more influenced by supply than demand. Price that comes to prevail in the long-period is called Normal price.

(4) Very Long-period: It refers to that time period in which basic changes can be effected both in demand and supply. Demand is influenced by changes in the size of population, its tastes and habits etc. Supply is influenced by changes in the techniques of production, new inventions etc. Very long-period price is called Secular Price. This period is marked with Trade Cycles.

2. Assumptions of Equilibrium Price

Concepts of equilibrium price is based on the following assumptions:

(1) Slope of demand curve is negative, that is, it slopes downward from left to right. In other words the consumer will demand more at lower price and less at higher price.

(2) Slope of supply curve is positive, that is, it slopes upwards from left to right. In other words the firm will supply more at higher price and less at lower price.

(3) Excess of supply in relation to demand leads to fall in price and excess of demand in relation to supply leads to rise in price.

On the basis of the above assumptions, it can be concluded that demand and supply are equal at one level of price only. If demand and supply undergo change, then there will be change in equilibrium price as well as equilibrium quantity.

3. Equilibrium of Demand and Supply

Or

Determination of Equilibrium Price

It is evident from the above discussion that the maximum price of a commodity is equal to its marginal utility (Demand) and minimum price is equal to its marginal cost (Supply). As a buyer buys more units of a commodity its marginal utility goes on diminishing. Besides, it is not necessary that different consumers may get the same utility from the consumption of a given commodity. Thus, price of a good is not determined by its marginal utility alone. As a matter of fact, through marginal utility we can have an estimate of the demand for a commodity at different prices. Demand schedule is constructed on the basis of marginal utility. Likewise marginal cost may decrease or increase for different levels of output.

So, it is not possible to determine the price of a product on the basis of its marginal cost alone, but it must be carefully noted that the supply of a good is determined by its marginal cost. Hence, it is neither demand alone nor supply alone that determines the price of a product. Price of every commodity is determined by both demand and supply. Just as, both the upper and the lower blades of scissors are necessary to cut a piece of cloth, similarly forces both of demand and supply are essential to determine the price of a commodity. In this way, two forces work to determine the price i.e. demand and supply. Both market demand and market supply determine the price of a product and the quantity that is bought and sold. Both market demand and market supply limit the quantity of product that is traded. The amount of product that is sold or supplied at a certain price cannot exceed the demand for it at that price. Nor can more of a product be bought or be demanded at a particular price that firms are willing to supply at that price. Therefore the price tends to change whenever it does not equate the quantities of market demand and market supply. The price that does equate quantity demanded with quantity supplied in the market is called the equilibrium price and the accompanying quantity is called the equilibrium quantity. Will the market for a good automatically be in equilibrium? If so, what mechanism brings this about? The whole thing is made clear with the help of Table 1 and Fig. 1.

Table 1. Interaction between Demand and Supply

Determination of Equilibrium Price				
Quantity Supplied of Ice Creams	Price (Rs.)	Quantity Demanded of Ice Creams	Surplus (+) Shortage (-) Ice Creams	Pressure on Price
(1)	(2)	(3)	(4)	(5)
1	50	10	+ 40 Surplus	↓ Downward
40	4	20	+ 20 Surplus	↓ Downward
30	3	30	Equilibrium	Neutral
20	2	40	- 20 Shortage	↑ Upward
10	1	50	- 40 Shortage	↑ Upward

In Table: Column (1) Lists the quantities supplied at various prices. Column (2) Lists prices which are common to both supply and demand quantities. Column (3) is the quantity demanded. Column (4) characterizes the differences between quantity supplied and quantity demanded. Column (5) characterizes the effect on price of the difference between quantity supplied and quantity demanded. At any moment one of the three conditions prevail in the market.

(1) **Equilibrium : Equilibrium is that situation at which the quantity supplied equals the quantity demanded.** It is evident from Table 1 that at price Rs. 3, the quantity demanded is equal to the quantity supplied. This price Rs. 3 per ice cream is the **equilibrium price** and 30 is the **equilibrium quantity.**

(2) **Excess supply or surplus : The excess supply or surplus is that situation in which demand being more than supply, there will be a tendency for the price to rise.** MN represents **excess demand** or shortage in the diagram. This excess demand will push the price up to its equilibrium level Rs. 3. This denotes the situations of stable equilibrium. Equilibrium is stable if a system which is moved

a surplus of $(50 - 10) = 40$ ice creams. This non-equilibrium price will not be stable because there will be a built-in tendency for price to change. To get rid of their excess supplies, the firms will tend to lower the price. The falling price level does two things (i) **it increases the quantity demanded** and (ii) **it decreases the quantity supplied.** The price level continues to fall—thereby continuing to encourage purchases and discourage supplies—until the price settles at the equilibrium level. Once the price reaches an equilibrium level, no further change occurs because the quantities demanded and supplied becomes equal.

(3) **Excess Demand or Shortage:** Excess demand is that situation in which quantity demanded exceeds the quantity supplied at the current price. In other words shortage exists when the current price is less than the equilibrium price, causing quantity demanded to be greater than quantity supplied. Table shows, that at a price of Rs. 2 which is below the equilibrium price of Rs. 3, only 20 ice creams are supplied whereas 40 ice creams are demanded. There is a shortage of $(40 - 20) = 20$ ice creams. This non-equilibrium price will not continue, because there will be a built-in tendency for price to change. The excess demand will cause the buyers to compete with one another for the limited supply, thereby raising the price. As the price rises, two things follow (i) the quantity demanded contracts and (ii) the quantity supplied expands. The price level continues to rise thereby continuing to discourage the purchases and encourage supplies—until the price settles at the equilibrium level. Once the price reaches at equilibrium level, no further change occurs because the quantities supplied and demanded become equal.

This is a situation of unique equilibrium. A position of unique equilibrium arises if there is a single set of prices and quantities which fulfil the conditions of equilibrium.

Equilibrium price determination is explained diagrammatically by Fig. 1. OX-axis expresses the quantity demanded/supplied and OY-axis the price. DD is demand curve and SS is supply curve. They cut each other at point 'E', that is, demand for and supply of Ice Cream are equal at point E. Thus point 'E' is the equilibrium point. This point signifies that equilibrium price is Rs. 3 and equilibrium quantity is 30. If price rises to Rs. 5 then Supply (50) will become more than the demand (10). It is clear from the diagram that at Rs. 5, the excess supply or surplus is equal to AB. In this situation, supply being more than demand, there will be a tendency for the price to fall and it will revert back to equilibrium price of Rs. 3. In case, price falls to Re. 1, then supply (10) will be less than demand (50).

Figure 1 shows the effect of change in price on demand and supply. At price Rs. 3, there is no shortage in the market. At price Rs. 5, there is a shortage of 20 units. At price Re. 1, there is a shortage of 40 units. This denotes the situations of stable equilibrium. Equilibrium is stable if a system which is moved

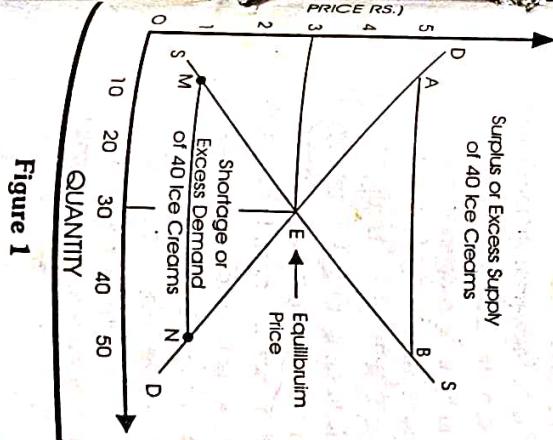


Figure 1

4. Change in Equilibrium

In real world prices are going up and down all the time. The markets do not stick to any single equilibrium for long. The reason being that we live in a very dynamic world where the determinants of supply and demand are continuously changing. When the determinants change, the demand curve or supply curve shifts or both shift. These shifts cause a change in previously attained equilibrium. New equilibrium points, generate in turn new equilibrium price and quantity combination. Once a new equilibrium is reached, it will remain stable until a determinant of demand or supply changes. Thus the changes in equilibrium emerges from (i) Shift in demand or (ii) Shift in supply or (iii) Shift in both demand and supply.

4.1 Effects of Changes in Demand on Price

If supply remains constant, increase in demand raises and decrease in demand lowers the price. In short, price changes directly with change in demand. It is clear from fig 2., that DD is demand curve and SS is supply curve, OP is equilibrium price and OQ equilibrium demand and supply.

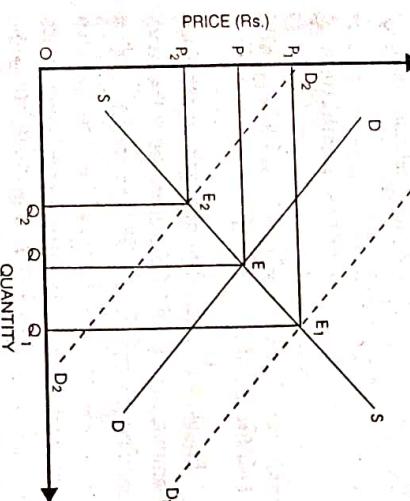


Figure 2

Supposing, due to increase in demand, the demand curve shifts to the right as D_1D_1 . At the initial equilibrium price OP , the demand increases to OQ_1 , but the supply stays at OQ as before. Hence, a rightward shift in demand curve, other things being equal, due to increase in demand relative to supply, the price will rise to OP_1 . At this new price OP_1 new demand curve D_1D_1 cuts supply curve SS at point E_1 . In this way, E_1 will be new equilibrium point OQ_1 new equilibrium quantity and OP_1 new equilibrium price. It is clear, therefore, that increase in demand, results into increase in price. Conversely, due to decrease in demand, the demand curve shifts to the left as D_2D_2 and consequently price falls from OP to OP_2 . At this low price, new demand curve D_2D_2 cuts supply curve SS at point E_2 . Thus E_2 will be the new equilibrium point. At this point, OP_2 will be new equilibrium price and OQ_2 new equilibrium quantity.

In short, we can conclude that while supply remains constant and demand increases, equilibrium price rises and equilibrium quantity also increases. Conversely, when demand decreases, equilibrium price falls and equilibrium quantity also decreases.

The effects of change in demand on price can also be explained with the help of the following diagrams.

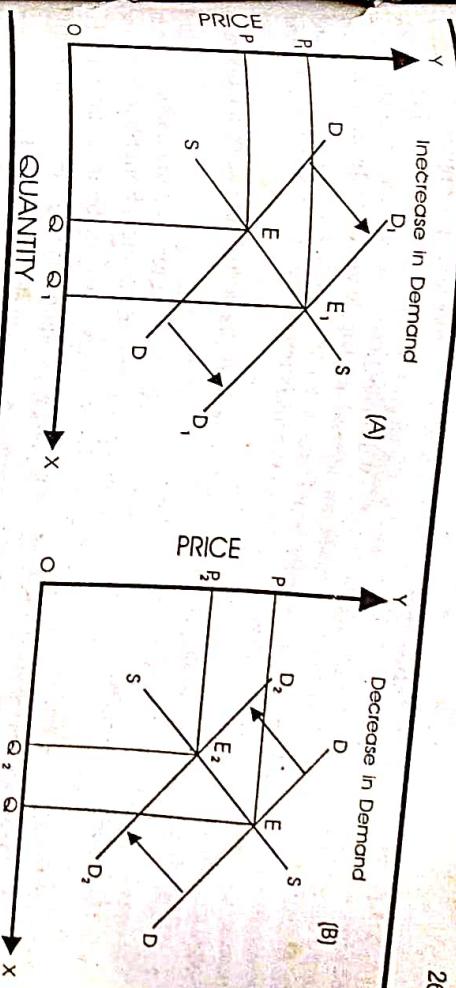


Figure 3

4.2 Effects of Changes in Supply

Demand remaining constant, increase in supply causes fall in equilibrium price and decrease in supply causes rise in equilibrium price. In brief, price changes inversely with supply. In fig. 4, DD is initial demand curve and SS is initial supply curve. OP is initial equilibrium price and OQ initial equilibrium supply and demand.

Supposing, due to increase in supply, the supply curve shifts to the right as S_2S_2 . At the original equilibrium price OP supply increases to more than demand, price falls to OP_2 and new equilibrium demand and supply is OQ_2 . New supply curve S_2S_2 intersects demand curve DD at point E_2 . Hence point E_2 will be the new equilib-

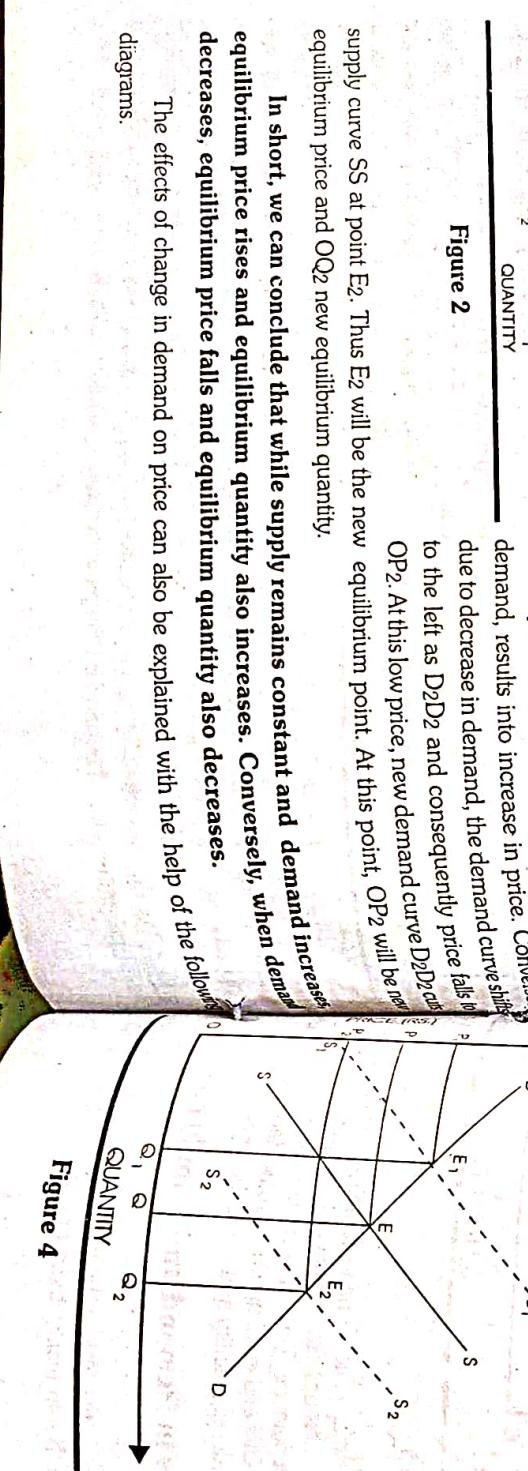


Figure 4

(1) **Increase in Demand:** Fig. 3 (A) shows that while supply remains unchanged due to an increase in demand, the demand curve shifts upwards (rightwards) from DD to D_1D_1 . This new demand curve intersects supply curve SS at point E_1 . The new equilibrium point will be E_1 . At this point E_1 , the equilibrium price will increase from OP to OP_1 and equilibrium quantity increase from OQ to OQ_1 . In this way, a rightward shift in demand curve, other things being equal, lowers the market to a new equilibrium at higher price and quantity.

(2) **Decrease in Demand:** Fig. 3(B) shows that while supply remains unchanged due to decrease in demand, the demand curve will shift downward (leftward) to D_2D_2 . This new demand curve intersects supply curve SS at point E_2 . This E_2 will be new point of equilibrium. At point E_2 , the equilibrium price will fall from OP to OP_2 and equilibrium quantity falls from OQ to OQ_2 .

rium point. At this point, price will be OP_2 and equilibrium demand and supply OQ_2 . Conversely, if supply decreases, supply curve shifts to the left as S_1S_1 . At the original price OP , supply will be OQ_1 . In this case, supply being less than demand, price will rise to OP_1 . At this new price, new equilibrium point will be E_1 . At new equilibrium price OP_1 the new equilibrium demand and supply will be OQ_1 . In short, it can be concluded that when supply increases, equilibrium price falls and equilibrium supply and demand increase. On the contrary, decrease in supply means rise in equilibrium price and decrease in equilibrium supply and demand.

The effect of changes in supply on price can be explained with the help of the following diagrams also.

(1) Increase in Supply:- Figure 5 (A) shows that while demand remains unchanged, due to increase in supply there will be a surplus. The curve shifts downwards (rightwards) from SS to S_1S_1 . The new supply curve S_1S_1 intersects the demand curve at point E_1 . Thus new equilibrium point will be E_1 . At point E_1 , the equilibrium price will fall from OP to OP_1 and equilibrium quantity increases from OQ_1 to OQ_1 . In short, a rightward shift in the supply curve results in a new equilibrium where the price is lower and quantity is higher.

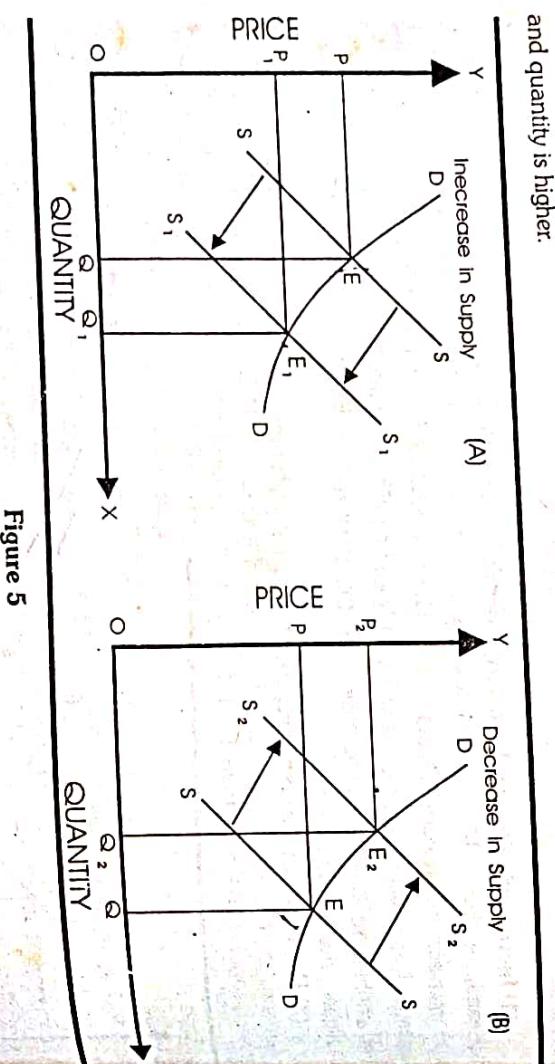


Figure 5

(2) Decrease in Supply:- Figure 5 (B) shows that while demand remains unchanged, due to decrease in supply there will be a shortage. The curve shifts upwards (rightwards) from SS to S_2S_2 . The new supply curve S_2S_2 intersects the demand curve at point E_2 . Thus new equilibrium point will be E_2 . At point E_2 , the equilibrium price will rise from OP to OP_2 and equilibrium quantity decreases from OQ_1 to OQ_2 . In short, a leftward shift in the supply curve reduces quantity and raises the price.

□ 4.3 Effect of a Simultaneous Changes in Demand and Supply on Equilibrium Price

In order to simplify our study, we have confined ourselves to the effects on equilibrium price due to simultaneous changes in demand alone or change in supply alone. But in reality, there are simultaneous changes in demand and supply on equilibrium price.

demand and supply. With the help of the following diagrams we can study the effect of simultaneous changes in demand and supply on equilibrium price.

We know that increase in demand and supply results into ~~inevitable~~ increase in quantity of production. But would there be any change in price or not depends on whether demand increases more than, equal to, or less than, supply. Consequently, there can be three situations in this respect. These are diagrammatically expressed below:

(1) In Fig.6 (A) D_1D_1 is the original demand curve and S_1S_1 original supply curve. P_1 is equilibrium price and OQ_1 equilibrium quantity. Due to increase in demand new demand curve takes the shape of D_2D_2 and due to increase in supply new supply curve takes the shape of S_2S_2 . In this situation, demand has increased more than supply. Hence, price increases to OP_2 and quantity to OQ_2 . Consequently, when demand increases more than supply, price will rise.

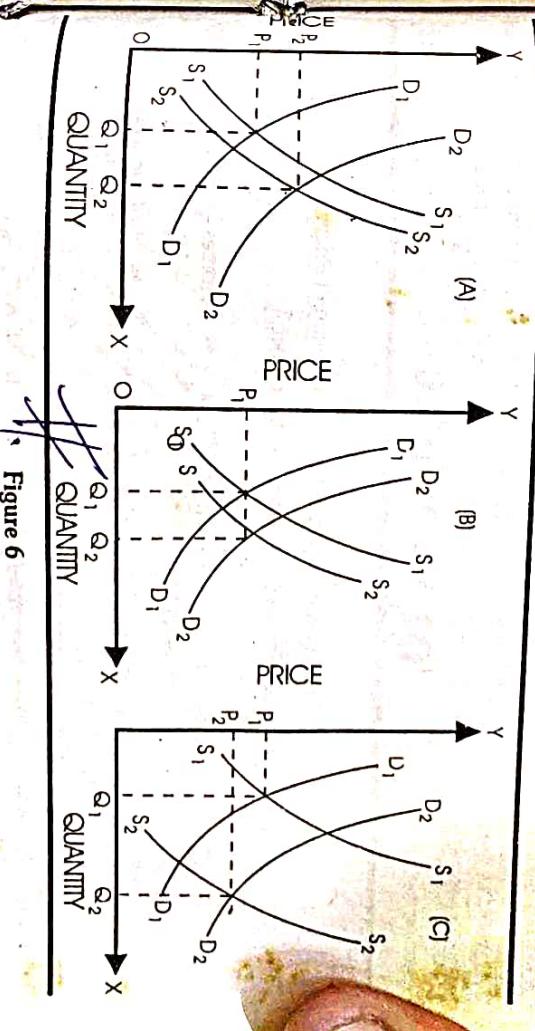


Figure 6

(2) In Fig.6 (B) it is clear that increase in demand and supply is equal. Hence price remains unchanged i.e. OP_1 but the quantity of output increases from OQ_1 to OQ_2 . Thus when demand and supply increase equally, no change in equilibrium price takes place.

(3) In Fig.6 (C), increase in supply is more than increase in demand. Hence, price falls from OP_1 to OP_2 but the quantity increases from OQ_1 to OQ_2 . Thus when supply increases more than demand, the price tends to fall.

5. Conclusion

We can conclude that:

- (1) When demand increases (decreases) and supply remains constant, both price and quantity increases (decreases)

- (2) When supply increases (decreases) and demand remains constant, **price falls (rises)** and **quantity rises (falls)**.
- (3) When both demand and supply increase (decrease) quantity increases (decreases) but price can either **increase or decrease, depending on the relative magnitude of the shift in demand and supply curves.**

- (4) When supply and demand shift in opposite directions, **the change in quantity is indeterminate, but price always changes in the same direction as the shift in demand.**
- In short, it is interaction of demand curve and supply curve which determines the equilibrium price. At any particular instant, the market price may not be the equilibrium price. If not, there will be either excess supply or excess demand, depending on whether the price is above or below the equilibrium price. But these forces themselves will push price towards its equilibrium level. Once the equilibrium is reached, the price and quantity tend to persist until there is a change in some underlying supply or demand condition. This would be represented by a shift in the supply or demand curve. The market price and quantity would then move towards the new equilibrium. In this sense markets are a self-correcting mechanism.

QUESTIONS

1. Discuss the role of demand and supply in the determination of Price.
2. What is meant by equilibrium price? How is it determined?

Or

1. What do you understand by equilibrium price? How does the forces of demand and supply determine the equilibrium price?
2. Does equilibrium price always remain constant? What is the effect of the following on the equilibrium price?
 - (i) demand for the commodity changes.
 - (ii) supply of the commodity changes.
3. What is the effect of equal increase in demand and supply on equilibrium price? Explain with diagram.
4. How does an equilibrium market price get determined?

22

NATURE OF INDIAN ECONOMY

Introduction

The term Indian economy is the outcome of two words, Indian plus economy. "Indian" refers to most concerning India. "Economy" refers to all those activities and arrangements which the citizens of a country, either individually or collectively, undertake to satisfy their wants of food, clothing, shelter, T.V. set, refrigerator, etc. Indian economy is not just a study of facts and figures relating to economic life of India after it undertakes to analyse the causes and effects of the problems pertaining to economic life. Help is taken from the facts and figures in this analysis but they are used for verifying the economic theories only. Nature of Indian economy becomes clear from the following characteristics:

1. Indian Economy is an Underdeveloped Economy. 2. Indian Economy is a Mixed Economy. 3. A comprehensive study of all the above three characteristics of Indian economy will be beneficial for

1. Indian Economy is an Underdeveloped Economy

Per capita income of some countries of the world like America, England, Japan, etc., is much higher than that of some other countries like India, Pakistan, Sri Lanka, Bangladesh, etc. Economies of the former countries are called **developed economies**. On the other hand, there are countries like India, Bangladesh, Pakistan, etc. whose per capita income is much less than that of the developed ones. Economies of such countries is called **underdeveloped economies**. In the words of Nobel Laureate Amerson, "A less developed country is simply one with real per capita income that is low, relative to present day per capita income of such nations as Canada, the United States, Great Britain and Western Europe generally. Optimistically, a less developed country is one regarded as being capable of substantial improvement in its income level."

1.1 Theory of Underdevelopment

There are two theories explaining why an underdeveloped country fails to achieve economic development.

- I. **Theory of Vicious Circle of Poverty:** According to Nurkse, the main cause accounting for underdevelopment of these economies is the **vicious circle of poverty found therein**. Such countries are afflicted with low income, low saving, low capital and low productivity. All these have a relationship as shown in Fig. 1. Theory of Vicious Circle of Poverty explains that in order to break this, underdeveloped countries should increase the rate of saving and capital formation.

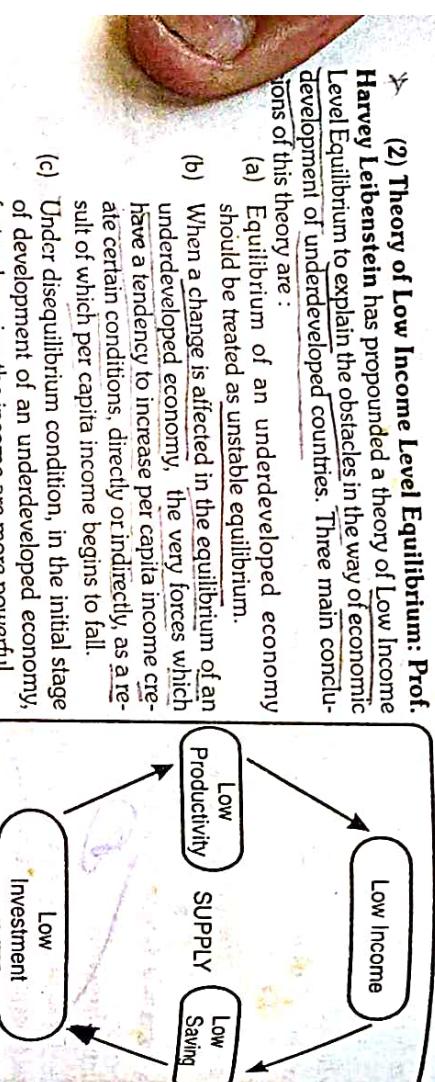


Figure 1
Factors Lowering Income

In relation to the underdevelopment of Indian economy, theories of both Nurkse and Leibenstein are applicable. Before

the dawn of independence, growth-rate of Indian economy was almost zero, although fair amount of capital investment had taken place in the construction of roads, railways, textile industry, iron and steel industry, mines and factories, etc. This investment did lead to rise in national income, but as proved by Leibenstein's theory, this increase in national income could not sustain itself for long. As a result of investment worth millions of rupees during Five Year Plans, there has been some progress in the economy, but many opposing forces causing fall in the rate of this progress have also been at work simultaneously. Consequently, three main opposing forces have been as follows:

(1) Population Explosion, (2) Less Capital Formation (3) Rising Expectation of the people. These forces led to rise in demand for goods and services and consequently gave birth to inflationary situation. Indian economy as an underdeveloped economy has the following main features:

(1) Stagnant Per Capita Income: During fifty years prior to Independence (1947) growth rate of per capita income per annum has been less than 1 per cent. After independence, no doubt, as a result of planning Indian economy got a stimulus, yet the rate of increase in per capita income remained around 1 per cent per annum. Rather, in the Third Plan it declined to 0.2 per cent. During the period between 1950-51 to 2004-05 annual rate of increase in per capita income was 2.3 per cent. This stagnant per capita income is an index of underdeveloped nature of Indian economy.

(2) Low Level of Per Capita Income: In the words of Kurihara, "Low per capita real income is the main feature of an underdeveloped economy." Per capita income of India is low as compared to most countries of the world.

Country	Per Capita Income (in US Dollars) (Year 2005-06)
USA	43,740
Japan	38,980
UK	37,600
China	1,740
Sri Lanka	1,160
India	720
Pakistan	690

(Source: World Development Report, 2006)

From the above table it is clear that per capita income of India is very less in comparison to other nations. India's ranking in terms of per capita income is 92nd in all the nations of the world. Low per capita income is the symptom of an underdeveloped economy.

(3) Low Standard of Living: On account of low per capita income, level of consumption of suc-

cessaries of life as food, clothing, shelter, etc. is very low. In India, in 1999 average intake of an individual was 2496 calories per day. As against it in developed countries average intake of an individual was 3,410 calories. Thus, in India most of the people do not get balanced diet. On account of low standard of living people, their efficiency remains low. Per capita low productivity is mainly due to low efficiency of labour. Consequently, per capita income is low. It is because of low income that poor countries continue to be poor.

(4) Unequal Distribution of Income and Wealth: In India, on the one hand, per capita income is low and on the other, there is large inequality in the distribution of wealth and income. According to Human Development Report 2006, in India the poorest 20 per cent population gets only 8.9 per cent of national income. As against it, the richest 20 per cent population enjoys 43.3 per cent of national income. It may be noted that in many countries of the world like Japan, America, England, etc. due to equality in the distribution of wealth and income, rich people saved large part of their income and invested the same to increase capital formation. As a result, growth rate of the economy got accelerated. However, in India, rich people spend their wealth on conspicuous consumption, like jewellery, gems and gold and silver. They spend lavishly on social and religious functions. Consequently, very little amount of wealth is left for capital formation. During the period of planning in India, instead of reduction in the disparities in the distribution of wealth and income, the same have actually increased.

(5) Excessive Dependence on Agriculture: In India, about 54 percent of population depends on agriculture. In 2006-07, agriculture contributed 18.5 per cent to national income. It means that 46 per cent of population that depends on agriculture generates just 18.5 percent of national income, as against it, 46 per cent of population that is engaged in non-agricultural pursuits produces 81.5 percent of national income. It clearly proves that productivity of agricultural labourer is far less than the productivity of non-agricultural labourer. Too much dependence on agriculture is another sign of underdeveloped nature of Indian economy. Historically, it is proved that as a country develops

economically the percentage of its population depending on agriculture goes on diminishing. For instance in 1810 in America, 75 per cent of population was dependent on agriculture. Currently, about 3 per cent of population of America is dependent on agriculture. It is this 3 per cent of population living on agriculture that meets all agricultural needs of the remaining 97 per cent of population. It proves that agriculture in America is very much advanced. On the contrary, 54 per cent of population of India depending on agriculture is not in a position to meet the entire agricultural needs of the remaining 46 per cent of population engaged in non-agricultural sectors. It is one of the main symptoms of the underdeveloped nature of a country that a large part of its national income comes from agriculture.

Economically, the percentage share of agriculture in national income goes on falling. Although in India the contribution of agriculture to the national income of USA, England and Japan is only 1 per cent, the percentage share of agriculture in national income is decreasing but not as much as in other countries. Contribution of agriculture to the national income of USA, England and Japan is only 1 per cent.

(6) Lack of Proper Industrialisation:

Rate of industrial development has been very slow in India. Many important industries are lacking in India. Although in the post-independence era many consumer goods industries like textile, sugar, pharmaceuticals, etc. have developed sufficiently, yet basic producer goods industries like machine tools industry, chemical industry, fertiliser industry, etc. have not developed satisfactorily. No doubt large-scale industries were set up in the country some 100 years back but they could provide employment to 75 lakh persons only, till this day. It comes to just 4 percent of the gross national income. There were many changes in the total employment. In 2006-07, manufacturing industries and construction activities had 26 per cent and lack of investment opportunities, etc. In 2005-06, the level of investment has increased to 33.8 per cent. In India capital output ratio is also high. Keeping in view the low level of economic development, the present rate of savings and investment are not sufficient.

(7) Lack of Proper Banking Facilities: One of the causes of underdevelopment of India is the results in low productivity and low per capita income. Pressure of population on agriculture increases and consequently improvement of agriculture is hindered.

(8) Less Development of Means of Transport: In India present position of means of transport like railways, roads, air and waterways is not adequate in view of the vast geographical area. These means being far less than the requirements have an adverse effect on the mobility of goods and labour. It is difficult and expensive for the poor farmers to carry their farm produce to the mandis. They are compelled to sell the same in the village at uneconomic prices. Industries also face difficulty in getting raw material, coal, etc. to shortage of means of transport. As a result, industrial production falls and cost of production rises.

There are 9 km. of railway lines per one lakh population, as against 465 km. of railway lines per one population in Canada. Besides, in India, there are 34 km. roads per 100 sq. km of area as against 270 in 1810 in America. Roads per 100 sq. km of area in Japan.

(9) Pressure of Population: Of the total World Population 16.87 per cent lives in India whereas it is just 2.4 percent of world area. Thus, in India, per capita availability of land is very less. In India, growth of population is also very high. Because of high growth rate of population problems like food shortage, employment, etc. raise their ugly head. This pressure of population is a great obstacle in the way of economic development.

(10) Unemployment and Under-employment: India suffers from large-scale unemployment and under-employment. In December 2005, the number of unemployed registered in 947 employment exchanges of the country are 3.93 crore. On account of unemployment, there is wastage of labour power.

(11) Lack of Capital:

Capital formation plays a very important role in the economic development

of a country. In the words of Kuznets, "Low ratio of capital formation is the cause of low rate of growth of national output." In 1950-51 about 9 per cent of gross national income was saved. Level of investment was the same. In 2005-06, rate of saving was 32.4 per cent of the gross national income. There were many changes of the country are 3.93 crore. On account of unemployment, there is wastage of labour power.

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(12) Underdeveloped Natural Resources:

Although India is rich in natural resources, yet the sources have been utilised. Barely one-fifth of country's water

sources have been utilised. Consequently, on the one hand, agricultural and industrial production of the

country are adversely affected and on the other, floods play havoc in the country. India has not been able to

fully utilise its mineral wealth like iron, coal, petrol, mica, etc. Due to shortage of irrigation, agricultural land

not get loans and credit facilities at cheap rates of interest at appropriate time and in adequate quantities.

They depend on indigenous bankers for their credit requirements. A large part of the income of farmers and

small entrepreneurs goes into the payment of interest and repayment of the principal. They are left with little power to save. For want of saving there is no investment. As a result, there is no development of agriculture or industries. Thus, due to inadequate banking facilities, large number of entrepreneurs of the country

(13) Shortage of Able and Efficient Entrepreneurs:

According to eminent economist

Shumpeter, able and efficient entrepreneurs are the essential pre-requisites of economic development.

In India there is a great shortage of such entrepreneurs. Entrepreneurs here want to get rich quick by indulging in speculative activities. They are least interested in undertaking risks and setting up of new

businesses. That is the reason why development of industries has not taken place in a proper manner.

(14) Outdated Social Institutions:

Main social institutions of India, like caste system, joint family system, law of succession, customs, religious rites, etc. are proving a hindrance to economic development. Under their influence, people do not like to abandon out-moded methods of working, they apply scientific methods. The result is that modern techniques are not adopted and the resources of the

(15) Low Grade Human Capital: Modern economists consider labourers as a form of capital developed by the private sector. However, to promote the welfare of poor and middle classes and for overall economic development of the country, the government has adopted the following three measures of Indian economy. When the standard of living of the labourers of a country is low, their health is poor, they are illiterate then their efficiency too becomes low. Because of low efficiency, cost of production becomes high and quality of the product poor. As a result, income of the labourers remains low. In this way, they remain caught up in the vicious circle of poverty.

(16) Low Level of Technology: It is low level of out-moded technology that prevails in most industries and a very large sector of agriculture in India. In many industries like Cotton Textile, Sugar, etc., old and inferior machines are still in use. The product of these machines is not only inferior but the cost of production is also high. Consequently, our industrial products fail to compete in international market and adversely affect our exports. In the agricultural sector, use of modern equipments, high yielding variety seeds, chemical fertilisers, etc. is very little. Low level of technology accounts for low productivity and less than optimum use of resources.

(17) Dualistic Economic Structure: Indian economy is a dualistic economy. In it two types of economic structures prevail. **(i) Highly developed Sector:** It includes export-oriented units of multinational corporations working in India, business units owned by big industrial houses, etc. This sector has very high income. Their style of working is like that of developed nations. **(ii) Subsistence Sector:** This sector includes agriculture, small business units, village industries, etc. This sector is quite undeveloped. The income of this sector is very less. Most of the people engaged in this sector are just barely earning. Characteristics of this sector are more akin to a capitalistic economy. In the words of eminent economist Dr. K.N. Raj, "Although Indian economy is a mixed economy, yet the ingredients of the mixture are making it conform more closely to a capitalist economy than a socialist pattern."

Above account endorses the view of Reddaway that "Poverty is the main characteristic of Indian economy. It is the most prominent sign of the underdeveloped nature of India's economy."

2. Indian Economy is a Mixed Economy

According to Lord Keynes, mixed economy is one that has the merits of both capitalism and socialism. In this kind of economy, both public and private sectors take active part in the economic development of the country. **Indian economy is a mixed economy.** The sole aim of Industrial Policy of 1948, 1956, 1977 and 1991 is to achieve the economic development of the country on the basis of mixed economy. Main features of mixed economy of India are as follows:

(1) Public Sector: According to Industrial Policy 1991, number of industries reserved for the public sector is reduced to 3. These include (i) Atomic Energy, (ii) Atomic Minerals, (iii) Railways, All other industries are now open for private sector.

(2) Licensed Sector: Industrial licensing provisions have been made very liberal. Now only industries are covered under licensing, i.e., one will have to obtain licence before setting such industrial unit. These 5 industries are - alcoholic products, tobacco products, defence equipments, explosives and hazardous chemicals.

(3) Private Sector: Except the three industries reserved for public sector, all other industries will be controlled by the private sector. However, to promote the welfare of poor and middle classes and for overall economic development of the country, the government has adopted the following three measures to control the private sector:

(i) Industrial Development and Regulation Act, 1951: Under this Act, the government controls the private sector industries in a manner that it may not be possible for private sector to exploit the people and the labourers for its vested interests.

(ii) Development of Co-operative Sector: In order to further the economic development of poor and middle class people, cooperative sector has been setup.

(iii) Production Reserved for Small-scale Industries: With a view to removing employment and inequality in the distribution of wealth and income, special encouragement is being given to the development of small and cottage industries. Under policy initiatives in SSI sector in January 2007, production of as many as 239 items has been reserved for small-scale sector.

As a result of the policy of mixed economy, public sector has played a significant role in the setting up of many basic industries like Iron and steel, machine tools, chemicals, etc. to promote economic development. In 1951, capital worth Rs 29 crore was invested in the public sector. It rose to Rs 250 crore in 2005-06. Importance of public sector in Indian economy is less than the private sector. The adoption of liberal economic policy after 1991, the significance of private sector has further increased. Characteristics of this sector are more akin to a capitalistic economy. In the words of eminent economist Dr. K.N. Raj, "Although Indian economy is a mixed economy, yet the ingredients of the mixture are making it conform more closely to a capitalist economy than a socialist pattern."

3. Indian Economy is a Planned Developing Economy

Under the dynamic leadership of late Prime Minister Jawaharlal Nehru, India has adopted the system of economic planning in order to achieve the goal of rapid economic development. Following five plans have so far been made in India:

Plan	Period	Plan	Period
First Five Year Plan	1951-56	7. Seventh Five Year Plan	1985-90
Second Five Year Plan	1956-61	8. Eighth Five Year Plan	1992-97
Third Five Year Plan	1961-66	9. Ninth Five Year Plan	1997-2002
Fourth Five Year Plan	1969-74	10. Tenth Five Year Plan	2002-2007
Fifth Five Year Plan	1974-78	11. Eleventh Five Year Plan	2007-2012
Sixth Five Year Plan	1980-85		

Progress made by the Indian economy during the period of planning so far, is discussed as under:

(I) Economic Development or Increase in National Income: Increase in national income in index of economic development. During the period prior to economic planning, national income in

India was growing at the rate of just 0.5 per cent per annum. Indian economy was therefore a stagnant economy. During the period of Five Year Plans, national income has increased at an average rate of 4.7% per annum at constant prices from the period 1950-51 to 2005-06. The plan-wise growth rate of national income is shown in the following table:

Table 1. Percentage Rate of Growth of National Income at Constant Prices

Plans	% growth of National Income	Plans	% growth of National Income
First Plan	3.6	Seventh Plan	5.8
Second Plan	4.1	Eighth Plan	6.7
Third Plan	2.5	Ninth Plan	5.5
Fourth Plan	3.3	Tenth Plan	7.6
Fifth Plan	5.0	Eleventh Plan (Target)	9.0
Sixth Plan	5.4		

(Source : Economic Survey, 2006-07)

It reflects that now national income has started increasing at a much faster rate.

(2) Increase in Per Capita Income: Before independence, increase in per capita income was almost negligible; but during the period of planning it increased at the rate of 2.5 per cent per annum 1993-94 prices. In the Tenth Plan, growth rate of per capita income was about 6 per cent p.a.

(3) Increase in Rate of Capital Formation: Capital formation plays a significant role in the economic development of a country. During the period of Five Year Plans, rate of capital formation increased appreciably. Rate of capital formation depends on the rate of saving and investment. During the period of Five Year Plans, rate of saving and investment has increased very much. In the year 1950-51, rate of capital formation was 8.7% of GDP. In the year 2005-06, this rate has increased to 33.8% of GDP.

(4) Institutional Reforms in Agriculture and Green Revolution: Contribution of plans in the development of agriculture has been of two kinds: (a) land reforms and (b) technological development. Although land reforms could not be implemented fully, yet it must be acknowledged that even limited land reforms have created a congenial atmosphere for scientific cultivation. In 1966, great stress was laid on technological development of agriculture. It culminated in Green Revolution. During the period of planning, production of foodgrains has increased three-fold. In 1951-52, production of foodgrains was 550 lakh tonnes. In 2005-06, it increased to 2,086 lakh tonnes. In 1950-51, the area under irrigation was 17% and increased to 42.2% in 2003-2004. During the period of planning, growth rate of agricultural production increased to 2.6 per cent per annum on the average. During plans, agricultural production has increased very much due to improved variety of seeds and chemical fertilizers.

(5) Development of Industries: Plans have succeeded a lot in industrial sector. Basic and capital goods industries like iron and steel, machinery, chemical fertilizers etc. have been developed considerably in the country. Public sector has expanded. Country has become almost self-sufficient in the matter of consumer goods industries. There has been diversification and modernisation of industries. Industrial production capacity has increased tremendously. As a result of planning, substantial development has taken place in industrial field. There has been tremendous increase in the production of industrial products in the country. In short, industrial production has witnessed considerable rise during the period of planning. In the year 2006-07 industrial production growth rate was 10.0 per cent.

(6) Development of Infrastructure: Economic infrastructure mainly includes means of transport and communication, irrigation facilities and power generation capacity. During the planning period, infrastructure has developed considerably. Power generation capacity has increased significantly. There has been a lot of improvement in roads, railways, sea-ports, airports, airways, tele-communication, banking, insurance etc. All this has helped in achieving faster economic growth rate.

(7) Social Services: During the period of planning, social services like education, health, medical, family planning, etc. have also developed appreciably. (i) Death rate in 2005 has come down to 7.6 per thousand as against 40.8 per thousand in 1951. (ii) Average expectancy of life has gone up to 65.4 years in 2003-04 as against 32 years in 1960. (iii) Many dangerous diseases like polio have nearly been eradicated. (iv) Research: A chain of national laboratories and research centres has been established. (v) Education: Number of school-going students has increased manifold. Number of colleges, universities, professional colleges, management institutes has increased significantly. (vi) Health: There has been good increase in the number of hospitals, beds, doctors, nurses and medical facilities like family planning units, etc.

(8) Increase in Employment: Several measures have been taken to increase employment opportunities during the period of economic planning. Government has launched various employment generation schemes in urban and rural areas. Small and cottage industries and other labour intensive industries have been given emphasis so as to promote employment. In the Eleventh Five Year Plan, government has fixed the target of creating 70 million employment avenues.

(9) Modernisation: Technological upgradation took place in almost all the areas in the period of economic planning. During Five Year Plans, efforts have been made for promoting research and development activities in all sectors viz., agriculture, industries, service sector, infrastructure, etc. This has led to reduction in capital-output ratio in the economy, i.e. now more production has become possible with the same amount or lesser amount of capital. Modernisation of Indian industries has helped our economy to export its industrial products to many nations of the world. Modernisation in agriculture has led to increase in agricultural productivity.

(10) Export Promotion, Diversification and Import Substitution: During planning period, exports have not only significantly increased, but there has also been diversification of export items. The composition of exports has also got diversified. Now in addition to primary products, manufactured goods, engineering goods, jewellery, information technology services,

also a great achievement of planning. Large-scale import substitutes of iron and steel, machinery, fertilizers have reduced the import of these items. It has reduced our dependence on foreign countries. It has also helped to improve balance of payment position.

(11) Development of Science and Technology: During planning period, significant growth of science and technology has been achieved. In the field of information and technology, significant progress has been made. Now India supplies manpower to foreign countries for their information and technology sector. In year 2005-06 India controlled 65 per cent of global market in IT-services.

(12) Structural and Institutional Changes: Many positive structural and institutional changes have been introduced during planning period. It includes expansion of public sector, introduction of price support system, public distribution system, development of financial institutions etc. Adoption of liberalisation, globalisation and privatisation is also a positive institutional and structural change.

(13) Less Cyclical Fluctuations: There are less economic fluctuations in the economy as a result of economic planning. Economy is less confronted with situations like boom, depression, unemployment, over-production etc. Economic planning is instrumental in bringing about and maintaining economic stability. All economic activities are properly coordinated.

(14) Production According to Needs: Economic planning leads to need-oriented production of goods and services. In economic planning, the planning authority formulates the plan. It coordinates the natural, human and physical resources in such a manner that resources are properly utilised and result in production according to requirements of the economy.

(15) Balanced Economic Growth: Economic growth is sought to be achieved in a balanced manner by the planning authority. It aims at securing balanced regional and sectoral growth. There are several advantages of balanced growth, such as, agricultural development, proper industrialisation, increase in the total production of wealth and income, increase in demand of goods or services of one sector by the persons of other sectors, etc.

(16) Right Use and Conservation of Natural Resources: Government ensures proper use and conservation of natural resources under economic planning. While making use of these scarce resources it is ascertained that there is least possible wastage. These are used for the benefit of the entire society and not a particular class. Use of minerals such as coal, oil etc. is made keeping in view not only the present but also the future generation.

In short, India has undoubtedly made perceptible economic progress during the period of planning. The country has succeeded in laying the foundation of growth in the field of industries, power, multipurpose projects and agricultural production. A super structure for the comfort and prosperity of the poor people can easily be constructed on this dependable foundation.

QUESTIONS

- What are the main characteristics of Indian Economy?
- Explain the following :
 - Indian Economy is an under-developed one.
 - Indian Economy is a planned developing one.
 - Indian Economy is a mixed one.
- Discuss the basic features of Indian Economy and state to what extent those have been responsible for the slow growth rate of our national economy.
- Discuss main features of mixed economy. How do you view its future in India in the light of New Economic Policy 1951?
- Indian Economy is an underdeveloped economy. Give arguments in support of your answer.
- Give the salient features of Indian Economy. Is India still an under-developed economy?

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PRIVATISATION - MERITS AND DEMERITS

□ 1. Introduction

In the wake of disintegration of Russia and other socialist economies at the beginning of the last decade of the twentieth century, the tendency of privatisation among world economies has been gaining ground. Among the economic problems of India, privatisation of public sector industries has become a debatable issue today. From the beginning of the process of economic development in India, public sector has been receiving greater attention than private sector. In 1993-94, of 246 public sector enterprises, 240 were in operation. Capital worth Rs. 1,59,307 crore was lying invested in these units. They provided employment to 23 lakh labourers. Of these, 120 enterprises were earning profit. They earned profit of Rs. 4,35 crore. On the contrary, 120 enterprises were incurring losses, aggregating to Rs. 3,91 crore. Thus, net profit of all the public sector enterprises amounted to Rs. 5,287 crore only. It works out to be 2.78 per cent. turn on the capital invested in the public sector. Thus, the country has been incurring huge losses on account of public sector enterprises. New Economic Reforms introduced in 1991 are directed against the expansion of public sector and in favour of private sector. Policy of privatisation is the main plank of new economic reforms. In simple words, entrusting of public sector industries to private sector is called privatisation.

Process of adoption of privatisation policy gathered momentum at international level in 1979 when the then Prime Minister of England **Mrs. Margaret Thatcher** transferred British Tele-communication to private enterprise. In 1980 and 1985, "British Gas Corporation", "Rolls Royce" and "British Airways" were also privatized. In 1981, United States of America adopted "**Reaganomics**". Similarly, France and Taiwan also adopted privatisation in one way or the other. Besides, economies of countries like Japan, Taiwan, South Korea, Hongkong, Singapore, etc. reveal that privatisation is the secret of their success. In India also special emphasis has been laid on the privatisation of public sector industries during the Eighth Five Year Plan.

□ 2. Meaning of Privatisation

Privatisation of industries means opening the gates of public sector to private sector. It enhances the importance of private sector because private sector comes to play significant role in the economic development of the country. Thus, transferring of public sector industries to private sector is called privatisation. It may manifest itself wholly or partially. Accordingly, the term privatisation is used in two senses:

(1) **Narrow Meaning of Privatisation:** In a narrow sense, privatisation implies the private ownership of public enterprises.

(2) **Broader Meaning of Privatisation:** In a broad sense, privatisation implies transferring the ownership of public sector to private sector or managing and controlling of public sector by private individuals without transferring the ownership. Some of the definitions of privatisation in broader sense are as follows:

- (i) In the words of **Barbara Lee and John Nellis**, "Privatisation is the general process of involving the private sector in the ownership or operation of a state owned enterprise."
- (ii) According to **J.N. Goodrich** "Privatisation refers to any process that results in the transfer of assets, activity, asset or organisation in whole or in part which is owned or controlled either directly or indirectly by a Government to a Non-government body, generally speaking any change from public to private sector."
- (iii) In the words of **Dr. A. Peter** "Privatisation is the transfer of function or activity or organisation from public to the private sector."

It is clear from the above description that privatisation does not mean passing of ownership right of public sector enterprises to private sector. Even when, the public enterprises are managed and operated by private sector, without having its ownership, this situation will also be called privatisation.

□ 3. Measures of Privatisation

Three measures of privatisation are : (i) Ownership Measures, (ii) Organisational Measures and (iii) Operational Measures.

(i) **Ownership Measures:** Ownership measures of privatisation are those measures by which full private ownership of a public enterprise is vested in private sector. It has four forms:

- (a) **Total Denationalisation or Full Ownership:** It implies transferring of full ownership of a public enterprise to private sector. Thus, private sector becomes full owner of public sector.
- (b) **Partial Ownership or Joint Venture:** It implies partial ownership of or partnership in public enterprise by the private sector. Both public and private sectors are jointly owner of that enterprise. Percentage of private sector depends upon the policy of the government.
- (c) **Liquidation:** It implies sale of public sector assets to private sector. The latter may utilize these assets for the same purpose or any other purpose.
- (d) **Management Buy-Out:** It implies selling of the public sector enterprise to the workers employed in it. These workers form a co-operative society, get loan from banks and become owners of the enterprise.

- (ii) **Organisational Measures:** By virtue of these measures government control over public enterprises is restricted. Its different forms are as under:
- (a) **Holding Company:** Government forms a holding company. Managers are given freedom to operate it. Decisions are taken by the managers on the basis of market conditions.
 - (b) **Leasing:** Ownership of the enterprise remains vested in the government but its management is leased to private sector for a given period.
 - (c) **Restructuring:** It implies that the management of public enterprise be conducted according to the discipline. Restructuring may be of two kinds: (i) **Financial Restructuring:** Loss of the enterprise is borne by the government and new capital is invested in the enterprise to keep it going. Debt-equity ratio of the enterprise is changed. (ii) **Basic Restructuring:** Under it change is made in the functions performed by the enterprise.
 - (iii) **Operational Measures:** These measures are concerned with the improvement in the efficiency of the public enterprise. Management is allowed to have its own way. Workers are allowed to participate.

pate in management and decision-making. Any other measures likely to increase the efficiency of enterprise are also taken in hand.

□ 4. Causes of Privatisation

Inefficiency and low productivity of public sector account for the increasing tendency of privatisation in the recent years. The main causes of privatisation are listed below:

- (1) **Disintegration of Socialist Economies:** Most crucial sector of Russia and other socialist economies was public sector. Taking these economies as model, almost all under-developed countries gave excessive importance to public sector. However, on account of lack of decision-making power on the part of management and excessive political interference, public enterprises turned inefficient and proved to be the signal factor responsible for the failure of these economies. In Russia, under **Perestroika**, liberal policy was adopted to some extent, but these economies disintegrated soon thereafter. As a result, other economies also lost confidence in the efficiency of public sector. On the other hand, economies of USA, Japan, Germany, etc. were making rapid progress under private sector. Thus, economies of rest of the world were attracted toward market economy and private sector because of its efficiency.

- (2) **Inefficient Public Sector:** Organisers of public sector do not have the independence to take decision. Most of the decisions of public sector enterprises are taken by the Ministers. Their decisions are politically motivated. Decisions are taken after long delay. As a result, production capacity is not fully utilised and there is fall in productivity. All these factors render public sector inefficient.

- (3) **Uneconomic Price Policy:** Prices of public utility services like, electricity, irrigation, transport, water, etc. are not determined on the basis of economic principles. These are determined on the basis of political, social and other non-economic considerations. In most of the cases, prices are deliberately kept less than the cost of production. Consequently public sector enterprises suffer losses. Privatisation is advocated to avoid such losses.

- (4) **Burden on the Government:** Losses incurred by public sector enterprises are not borne by their organisers or any other person. Losses are made good by the government revenue. Organisers are therefore indifferent to profits earned or losses incurred. No heed is paid to the productivity and the efficiency of the enterprise. There is no spirit of competition among these enterprises for want of accountability. Quality of production deteriorates and consumers are the losers. It is to remove these shortcomings that the tendency of privatisation has gathered momentum.

In short, the concept of privatisation has been gaining ground due to increasing losses and inefficiencies of public sector enterprises.

□ 5 Objectives of Privatisation

Main objectives of privatisation are to increase efficiency and competitiveness among industries, augment private profit, to increase productivity and efficiency of the enterprises. Main objectives are described as under:

- (1) To increase the efficiency and competitive power of the enterprises. (2) To reduce deficit financing and public deficit. (3) To strengthen industrial management. (4) To earn more and more foreign currency. (5) To make optimum use of economic resources and diffuse their ownership. (6) To achieve rapid industrial development of the country.

□ 6. Merits or Advantages of Privatisation

Main advantages of privatisation are as follows:

- (1) **Reduction in Economic Burden:** Economic burden on government is reduced because private sector also makes its contribution to the heavy capital investment by the government.
- (2) **Increase in Efficiency:** Privatisation of the ownership of public sector industries, increases their productivity, profitability and effectiveness.

- (3) **Reduction in Sense of Responsibility:** Wide-spread bureaucracy, red-tapism and sense of irresponsibility in public sector is removed to a large extent with the advent of privatisation.

- (4) **Scientific Management:** As a result of privatisation management of industries becomes more scientific, conscious and responsive to needs.

- (5) **Reduction in Political Interference:** One gets rid of political interference to some extent as a result of privatisation. There is no delay in taking industrial decisions. Industries are run on sound economic principles. Investigations into the functioning of the industries by the experts becomes possible.

- (6) **Encouragement to New Inventions:** Privatisation encourages new inventions and the entrepreneur feels inspired.

□ 7. Demerits or Disadvantages of Privatisation

Main demerits of privatisation are as follows:

- (1) **Industrial Sickness:** Privatisation does not necessarily add to efficiency. Widespread industrial sickness in India is a glaring example. Currently, there are about 2.34 lakh sick industrial units in India. Bank loans amounting to Rs. 10,767 crore are outstanding against them.

- (2) **Lack of Social Welfare:** Under privatisation, private entrepreneurs are keen to invest their capital in those industries in which margin of profit is very high. Profit motive militates against maximum social welfare.

- (3) **Class Struggle:** Privatisation implies class struggle. Capitalists and labourers have conflicting interests that adversely affects smooth functioning of the economy.

- (4) **Increase in Inequality:** Privatisation gives rise to increased possibility of economic inequality & it results in concentration of economic power.

- (5) **Increase in Unemployment:** There is more possibility of increase in unemployment in the wake of privatisation. To augment their profits, private entrepreneurs employ highly sophisticated technology which is mostly capital intensive. Such a technology causes unemployment. Production methods at maximizing profit. Entrepreneurs are more inclined to produce goods that cater to luxuries and comforts. Needs of weaker sections of the society are ignored.

QUESTIONS

1. What is meant by privatisation? What is its relevance in the context of Indian economy?

2. Explain the concept of privatisation. What are its causes, advantages and disadvantages?
3. What do you mean by privatisation? Discuss its merits and demerits?

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GLOBALISATION - MERITS AND DEMERITS

□ 1. Introduction

The increasing interaction of the domestic economies with the world economy is generally termed as globalisation. The globalisation of underdeveloped economies like that of India is the need of the present times, looking at the needs of the unsatisfactory economic record of previously closed economies like East Germany, Poland, the ex-U.S.S.R. and so on. On the contrary the open economies of Singapore, Taiwan, Hong Kong and South Korea have progressed well, thereby justifying the process of growth under liberalisation through Globalisation. The underdeveloped economy must prepare itself of moving on non-traditional lines to achieve goals of macro balances between aggregate demand and aggregate supply, saving and investment, revenue and expenditure, exports and imports etc. The underdeveloped economy needs to be totally transformed to solve its basic problems of poverty, unemployment and inequality. Globalisation of the economy is a remedy to all these ills. Therefore most of the countries have decided to participate in the process of globalisation. Most of them have made sweeping changes in their policies to reform their economies and re-orient the policies to make them market friendly and outward looking. They have re-oriented their policies to expose the economy to free competition, open it for foreign capital, technology and companies for attaining high degree of efficiency and raising productivity and ultimately integrating domestic economy with the world economy.

□ 2. Meaning of Globalisation

Globalisation simply means integrating the economy of the country with the world economy. **Globalisation embodies integration of international markets for goods, services, technology, finance and labour.** It is underpinned by the opening up of national economies to global market forces and a corresponding reduction in the scope of the government to stage national macro-economic policies. Indeed, the 'end of geography' symbolises the thrust of globalisation with far reaching implications for national, regional and open economies.

In current economic literature, the term Globalisation is used to mean a more liberal "Outward oriented policy", which includes eliminating anti export biases, lowering of very high import tariffs, placing lesser reliance on quantitative restrictions on imports. However it can be said that the outward looking policy does not mean the government would completely abandon all forms of control and place the entire economy at the mercy of multinationals. The main aim of the policy of globalisation would be to remove certain imbalances and restrictions which hamper the free flow of trade.

□ 3. Definition

(1) In the words of **Rubens Ricupero** (Secretary General of United Nations Conference on Trade and Development), "Globalisation is the integration of the world economy as the result of three main forces

"the increase in trade in goods and services, (ii) the increase in the investment of transnational companies and the consequent change in the nature of production. Production becoming no longer national but as a process that takes place in different countries and (iii) international financial and exchange rate transactions."

In short, it becomes apparent from the above definition that globalisation has the following characteristics.

(i) Integration of domestic economy with global economy.

(ii) Economy is opened for foreign capital, foreign technology and free competition.

(iii) Free World Trade Exports and Imports are liberalised. Elimination of Tariffs and Quotas.

(iv) Expansion of Multinational Corporations.

(v) Free Flow of International Capital.

(2) According to eminent economist **Deepak Nayyar**, "Globalisation may be defined as a process associated with increasing openness, growing economic interdependence and deepening economic integration in the world economy."

4. Indications or Dimensions of Globalisation

Over the last 25 years, the process of globalisation has spread rapidly. During this period, there has been substantial development in the fields of international finance, trade and capital investment. Rapid expansion of this process has resulted in the following important changes in the economies. These changes are the main indications of the process of globalisation.

(1) **International Trade:** Large volume of world production is entering world trade. Most of the old trade is taking place among firms which co-operate in international field. Share of intra-firm trade increased from 20 percent to 33 percent in world trade. Share of world trade in world's gross domestic product has risen from 12 percent to 18 percent.

(2) **International Investment:** Percentage of international investment has also looked up. Between 1980 and 2002, foreign direct investment (FDI) has increased from 4.8 percent to 12.6 percent of world production. Foreign direct investment rose from 2 percent to 7 percent of world's gross capital formation.

(3) **International Finance:** International finance sector has developed very rapidly. Finance sector dominates trade and investment sectors. There has been a startling expansion of foreign money market. According to 2002 statistics, transactions worth \$ 1300 billion were taking place daily in this market as against \$ 60 billion everyday in 1983.

5. Causes of Globalisation

Following are the main causes of emergence of globalisation:

(1) **Policies of Liberalisation:** Pursuance of policies of liberalisation by different countries fully account for the growth of globalisation. As a result of these policies restrictions on international economic transactions were removed. With the removal of these constraints, road to globalisation was all clear. Policies of openness were also adopted towards financial sector subsequently.

(2) Technical Revolution: Revolution in the fields of transport and communication has rendered the world a small place to live in. Jet aircrafts, computers, satellites, and information technology all have served to remove frontiers of time and space. Besides, the cost of transmission and reception of information has fallen considerably.

(3) New Forms of Industrial Organisation: Development of new management techniques in industrial organisation has also accelerated the process of globalisation. On account of nature of technical progress, falling share of wages in cost of production, increasing importance of mutual closeness between producers and consumers, etc., firms are in a dilemma to choose between foreign trade and foreign direct investment to participate in expanding international sector.

(4) Experience of Developing Countries: Over the last two or three decades, centrally planned economies like Russia, Eastern Europe, Eastern Germany etc. have failed on economic front. These economies were hesitant in adopting the process of globalisation. On the contrary, those developing economies like Korea, Thailand, Taiwan, Hong Kong, Singapore etc., which adopted the process of globalisation achieved new heights of economic success. China also succeeded in achieving high rate of economic growth by resorting to the process of globalisation. These success stories of globalisation inspired India and other countries to globalize their economies.

(5) Emergence of United States as a Super Power: Success of globalisation is conditioned by the existence of a super power whose currency is universally acceptable. Since 1970 along with the beginning of the process of globalisation, America has been emerging as a super power in world polity. Disintegration of Russia and triumph of capitalism rendered America a super power. Political supremacy of America has also been instrumental in hastening the process of globalisation. Existence of a super power is indispensable for the process of globalisation. It is the currency of such a super power that facilitates smooth running of international markets. This role is being played by America.

□ 6. Merits of Globalisation

The supporters of Globalisation have put forward a number of arguments in favour of Globalisation. They are as under:

(1) Flow of Foreign Capital: Globalisation will encourage flow of foreign capital in the form of direct foreign investment, commercial borrowings, collaborations etc. Transference of capital from developed to underdeveloped countries will be mutually beneficial. The developed countries have surplus capital. Globalisation helps in flow of surplus capital of developed countries to underdeveloped countries. As a result of this transference of resources, developed countries earn profit and in case of underdeveloped countries, investment in productive activities increase. Underdeveloped countries suffer from lack of capital. Need for capital has increased to accelerate the rate of economic growth. Since saving does not increase in the same ratio as the income does, this void is filled by flow of foreign capital. Thus to increase the availability of capital to the desired extent role of foreign capital has been creditable.

(2) Entry of Multinational Corporations: Globalisation encourages entry of multinational corporations. These corporations have unique and empirical capacity to increase production and distribution. Wherever they go they make radical changes in the existing production system of that country, their superior technology, professional, managerial competence and quality are of paramount importance to the country. These corporations bring modern technology with them. They can offer investment on research and development (R and D). As a result process of research is initiated. These corporations apply innovations to underdeveloped countries through their subsidiaries.

(3) Increase in Efficiency: Burton has established that Globalisation would result in better capital utilisation and economies of scale. Most studies support the hypothesis that there is a positive relationship between the degree of openness and economic efficiency. Efficiency means to minimise costs and maximise profits. Globalisation leads to privatisation and competition. Both of which promotes efficiency. The goal of privatisation is to earn profits and this goal can be achieved only when the firm is able to minimise the costs. A firm can face the competition and survive in the free market only when it is able to provide quality products at competitive prices. This requires efficient production.

(4) Increase in Knowledge: Rapid increase in knowledge through globalisation provides a new potential for developing countries to grow faster. The knowledge explosion is driving technical change, which is changing the nature of global interaction and competition. Unless the developing countries move rapidly to join the fast moving global economy, the information network that supports it, the gap between rich countries and the poor countries would grow wider. The developing countries must develop a strategy for using effectively the growing knowledge base which must be tapped internationally. In short globalisation results in the diffusion of knowledge for the benefit of all. The multinational corporations which are the important organs of globalisation impart training to local employees in respect of modern techniques of production, marketing, financing, exports, etc.

(5) Availability of Modern Technology and Marketing: Modern technology and managerial functions. As a result the productivity of these enterprises increases and resource are optionally utilised. It is due to globalisation that technology has been transferred from developed countries to developing countries. The multinational corporations which flourished in this era of globalisation make available marketing information, storage facilities, transport, packing designs etc.

(6) Socio-Economic Transformation: Globalisation is not only an economic phenomenon. It is also a cultural and social phenomenon. It is found that due to globalisation, personnel in management and other superior positions will come to underdeveloped countries with their own life styles which will have influence on these societies. If those attracted by Euro-American life styles also adopt some good features of these societies- such as dignity of labour, responsibility for neighbourhood or community welfare, respect for law and order and respect for knowledge and character, there would be positive advantages in terms of social change. If these virtues spread to the rural areas, then the rural people will also be benefited and liberated from wrong and blind beliefs.

(7) Promotes Competition: Globalisation promotes competition. Under the pressure of competition, human beings will strive to give best of their effort. There is no denying that competition brought the world economic many benefits in terms of a very efficient economy at a very low cost. Global competition has an emphasis on consumer concern, delivering the consumer the very best quality and variety of goods. This helps to bring down prices because consumers have a choice and can drive inefficient operators out of business. In short, competition is an attempt to get consumer support that results in continuous search for what the consumer needs. It leads to an ongoing programme on how to produce and deliver the best product. It aims at maintaining quality control in the competitive market.

(8) Develops World Trade: Globalisation has extended world trade. The establishment of World Trade Organisation in 1995 aimed to discourage bilateralism and encourage multilateralism. Globalisation is reflected in the rising share of international trade in world output. The volume of world merchandise trade is estimated to have increased at an annual rate of more than 6 percent, compared with an output growth of less than 4 percent. This means that each 10 percent increase in world output has on average been associated with a 16 percent increase in world trade. On account of globalisation, world trade and investment barriers fell rapidly. There was dramatic decline in transportation and communication costs.

(9) International Division of Labour: Globalisation implies the functional integration of internationally dispersed activities. It causes a new type of international division of labour. It is manifested in the ability of producers to slice up the value chain. That is breaking up the production process into many geographically separated steps. A good is produced in a number of stages in different countries. Producers locate the different stages such that it improves access to resources and capabilities and facilitates penetration of newly expanding markets. This process of slicing up of the value chain provides greater room for developing countries to specialise in the labour intensive stages of the manufacturing process of a commodity which as a whole might be capital intensive. This increases opportunities for developing countries to participate in and gain from trade. Geography and national boundaries are no longer constraints. A United States of America (U.S.A.) toys manufacturer sets up a purchase contract with a firm in Hong Kong (China) which establishes a joint venture to manufacture labour intensive toys elsewhere in China, using plastics shipped from Malaysia and ships the final product to the United States. The new logic is to supply every national market by sourcing from whichever country in the world, which could ensure supply.

□ 7. Demerits of Globalisation

The opponents of globalisation have extensively criticised it in a variety of ways. The demerits of globalisation may be summed up as follows:

(1) Cut-throat Foreign Competition: The critics are of the view that globalisation will lead the foreign countries to cut throat competition. It will weaken political, social and economic independence. Multinationals might be in a position to manipulate things to their advantage, which will prove detrimental to the interests of the poor nations. By making use of improved technology in their production system, these corporations fix lower price of their products and thus compete out local producers. Once the indigenous industry is completely destroyed by this competition, multinational corporations have full control over the market. By virtue of their competitive strength they elbow out indigenous producers from highly profitable, progressive and developed sectors. It is difficult for local industries to stay in the market for long in the face of huge capital resources, high technology, competent management possessed by these corporations. Competitive market has offered several opportunities but its proper exploitation is only possible when developing economies realises the fact that the rich take away from the poor more than they give. The rich are rich at the cost of the poor and the development is always at the expense of cut throat competition with the underdeveloped.

(2) Causes Economic Inequality: It has further been criticised that globalisation will lead to economic inequality. Globalisation leads to the growth of multinational corporations. These corporations have proved harmful to the goal of economic equality, in more than one way. (i) Regional Inequality has further aggravated because of them. MNCs are interested in setting up industries in particular regions and hence those regions develop very rapidly and other regions remain undeveloped. (ii) MNCs pay more sal-

aries and perks to their employees than other employees. This widens the gap between the income of the owners, giving rise to economic inequality. (iii) These corporations give more importance to the production of luxury goods than the production of mass consumption goods. Reason being that it is more profitable to produce the former than the latter. Thus the scarce resources of the country are not put to optimum use. (iv) these corporations further accentuate rural and urban disparity. By setting up their factories in urban areas they encourage villagers to leave their villages and settle down in urban areas. In fact globalisation leads to inequality and exploitation.

(3) Increase in Debt Burden:

The immediate impact of globalisation might be to increase the debt burden of the developing countries which are already under heavy debt. The mounting impact will engulf them in a debt trap from which it may be very difficult for them to recover. It has been argued that debt servicing is imposing a real burden on the economies of many developing countries. Since a large percentage of exports are devoted to debt servicing it is to be assumed that the impact of growth in exports on economic growth has weakened. The debt service ratio does not only affect economic development, but it also influences the rate at which economic development takes place. Debt servicing is a heavy burden on the balance of payments of the developing countries. Over 25 percent of exports of developing countries are devoted to debt servicing. Servicing of heavy debt may actually contribute towards worsening of the debt problems of the heavily indebted countries. In the words of Rodgold, "On account of globalisation, debt repayments as a proportion of Gross National Product is rising rapidly. The process by which high scheduled debt repayments are translated into lower manageable actual payments is proving costly. It has created an atmosphere of uncertainty which reduces confidence and discourages private investment and net financial flows have fallen substantially."

(4) Adverse Effect on Balance of Payments:

Globalisation has adversely affected balance of payments position of most of the underdeveloped countries. Their imports usually consist of capital goods and intermediate products. After independence several of underdeveloped countries tried to adopt import substitution as a vehicle for their development. Rather than effectively replacing the imports, their demand for capital goods rose sharply, which required increased amount of foreign exchange. But foreign exchange became scarce due to declining terms of trade for their exports. At the same time import bills went up. The third world countries specialize in the export of primary commodities. The world prices for primary goods have declined and its demand stagnated. In several of these countries food supply lags as well due to bad weather, slow or negative productivity growth, decline of investment in agricultural sector etc. The food and foreign exchange constraints interact. Under such conditions if government stimulates agriculture exports, it might adversely affect food production. All these factors combine to have an adverse effect on balance of payments position of underdeveloped countries. Moreover deterioration in the balance of payments situation. Moreover deterioration in the balance of payments position of underdeveloped countries is also due to the selfish behaviour of developed countries. On the one hand the World Bank and IMF argue that the markets should be allowed to work freely, on the other hand, the most developed countries also contributes to adverse balance of payments of developing economies.

(5) Increased Dependence on Multinational Corporations:

To perform successfully in a global economy is to get integrated into it. Globalisation is not a simple process of integration with world markets through market transactions. Countries are incorporated in the globalisation process is growth of intra-firm's trade, which creates barriers to entry for developing countries. This increase

the value of bribes with Multinational corporations. For obtaining access to world markets. The key to success in the international market place seems to be in the attitude, **I will make what you need and not I will sell what I make.** This increases dependence on multinational corporates. The main objectives of these corporations is to earn maximum profit. To achieve this objective they invest their capital in underdeveloped countries. Such an investment proves very profitable. The reason being that labour is very cheap in these countries and trade unions are either non-existent or are very weak. Moreover, these industries provide cheap raw materials for certain kind of production and also profitable market for finished goods for developed countries. Big chunk of profits earned in underdeveloped countries flow to the head-quarters of MNCs. These corporations receive from under developed countries more than 50 percent profit every year on the direct capital invested by them. According to one estimate 300 MNCs of America received from under developed countries about \$40 billion as profit. In underdeveloped countries there is generally a craze for 'foreign goods' among a large section of population partly due to the international demonstration effect.

(6) Increase in Consumerism: It has further been criticised that Globalisation which implies consumerism of the western type, has actually bought about in the nation, a high priority for luxury cars over mass transport and five star hotels over low cost indigenous housing. The necessities and comforts are sacrificed in favour of conspicuous consumption. This discourage savings and encourages consumption. The increasing trend towards consumerism was one of the causes of economic crises faced by East Asian, Tigers like South Korea, Thailand and Malaysia. Moreover globalisation will promote demonstration effect. With capital investment from foreign countries personnel with their life style will come. In so far as it affects directly and through demonstrate effect, it distorts the allocation of national resources and becomes a means to social discord, it will increase social tensions among different classes of people of the society.

(7) Element of Uncertainty: Globalisation is expected to promote the flow of foreign capital. But an element of uncertainty looms large in respect of foreign capital. It may be repatriated at any time. Hence foreign capital can never be a permanent part of an economy. At the time of crisis when foreign capital is needed the most, the availability becomes scarce. The South East Asia's recent economic crises is an ample testimony in favour of this argument. When the so called economic tigers of East Asia were in dire need of foreign investment the flow of foreign capital was not available. This made their crises even more worse. The workers and trade union leaders fear that globalisation will lead to unemployment. This also leads to uncertainty to their work culture.

8. Conclusion

(8) Dubious Experiments of Policy Reforms: The critics are of the view that on the name of globalisation the under developed countries are pushed into doubtful experiments of policy reforms including deregulation and internationalisation of financial sector, privatisation and elimination of all kinds of restriction. This is offered as solution regardless of country's institutional and financial background. These reforms may prove counter-productive if undertaken without considering the strengths and weaknesses of a country. These reforms may expose the economy to excessive dependence upon external events beyond its control. The South East Asian crises is an ample evidence of this danger. **Lance Taylor** analysed macro economic performance of 50 countries and demonstrated that financial openness usually led to more frequent severe financial crisis and painful adjustment process. His empirical studies disputed the supposed positive relationship between liberalisation and rate of growth of national income, export performance and degree of vulnerability to external shocks. Indeed most of the time liberalization has been associated with deterioration of growth. The liberalisation to correct external deficit is carried out through deflationary measures which further reduce the income of the working classes. The IMF

aims at reducing the government budget deficit by cutting expenditure rather than raising the values through progressive taxation. Spending on health, education, nutrition and environmental protection and conservation is severely affected. This adversely affects the poor sections of the society.

(9) Interference of International Institutions: Globalisation has resulted in increasing influence of international institutions like World Bank, and IMF in the policy making process of underdeveloped countries. This is due to the fact that the shortage of foreign exchange reserves to cover import bills of a country to borrow or attract foreign investment. If this continues then after some time the deficit burden become unmanageable, and leads to debt crisis. Under such circumstances World Bank and IMF are engaged as a rescue for the borrowing countries. The lending bank's profit and stability depend on their continuing to be serviced. As the crisis grows, reliance on the lending banks increases, who in term poses more conditions to further their interest. Their interference in policy making increases. Following the structural adjustment forced on the Third World by IMF and World Bank to deflate these economies and bring down domestic absorption and generate an export surplus at any cost. Following this will also decline in real wages, while tax relief is given to rich. This will mean redistribution of income to the richer income groups, which affect further income contraction. The other income contraction is decline in terms of trade of the under-developed countries.

(10) Depletion of Natural Resources: The structural adjustment programme of the World Bank also has an adverse impact on the country's natural resources in many ways. First, there is pressure to increase exports of natural resources and agricultural commodities on large scale. Since external debt repayment in foreign exchange, this require that country's exports should exceed its imports. The IMF supported policy reforms put emphasis on the creation of export incentives to facilitate a though devaluation. It is said that devaluation increases the demand for exports; which become cheaper and decline imports which become more expensive. The increased demand for export shift the country's natural sources such as land, forests, minerals into a tradeable sector and away from production for local consumption. Thus globalisation ignores the long term consequences of the depletion of natural resources. In short, Globalisation for the Third World countries simply means loss of economic independence, dragging economy to foreign capital, and subjugation to the industrial countries.

Globalisation has been sold as a sort of universal panacea. It had been argued in its favour that it brings almost immediate prosperity and well-being. But unfortunately that is not what we have been told. If we consider what globalisation began to accelerate in last few years, what we have to do is that the average growth of the world economy was mediocre. Globalisation is not producing acceleration of growth worldwide as expected. The talk of Globalisation of economies and free trade is insignificant as long as, the developed countries do not enable the developing countries easy marketing opportunities. In fact globalisation of an economy involves its integration with the rest of the world. Its economy has grown to a level of skills, where it is internationally competitive and its exports are adequate to pay for its import needs. Globalisation is mutually beneficial when capital, labour, technology and goods flow between equals. In other words when the country is ready to face the world competition

on equal terms. Otherwise any attempt by the underdeveloped economies to globalise their economies can rebound adversely on the vast majority of the people, who is in poverty, lack of education and malnutrition.

It must be emphasised that the policy which does not address the people less. Our commitment to people is more important than the global economic developed countries work on the basis of competition and logic of exchange.

□ 9. Globalisation of Indian Economy

In order to pull the country out of economic crisis, Government of India, in 1991 sought financial assistance from International Monetary Fund and World Bank. These two international institutions imposed on India the conditionality of implementation of **Stabilisation and Structural Adjustment Programme** to secure the said assistance. It was to fulfil these conditions that India introduced **New Economic Policy 1991**. The process of globalisation in India was the outcome of this policy. Two parts of the conditions laid down by international institutions were:

(1) Stabilisation : Stabilisation refers to that situation of an economy wherein **inflation** and **balance of payments deficit** are kept under control. To achieve this objective it is essential to scale down fiscal deficit and rate of money supply. It is the stable economy that attracts foreign investment.

(2) Structural Adjustment Programme: It refers to the structural adjustment of the economy on the basis of policy of liberalisation. It has two aspects:

(ii) Internal: In the domestic sector liberal policy be adopted for adjustment of investment, production, prices, etc. Government controls should be minimised in this regard and ultimately the same be removed.

(ii) External Government control over the flow of foreign goods, services, capital, technology investment, etc. should be reduced to the minimum. It implies liberalization of foreign economic policy & globalisation of the economy.

In short, it was in 1991 that the process of globalization of Indian economy was initiated under pressure of international financial institutions referred to above. As a result, government interference in economic activities declined. Policy of liberalisation has been adopted in respect of international trade, foreign investment and foreign capital.

9.1 Characteristics of Globalisation of Indian Economy

Main characteristics of globalisation of Indian economy are as under:

(1) Globalisation of Trade: It means reduction of government controls over international trade and adoption of liberal policy in respect of imports and exports. Since 1991, government of India has been pursuing the policy of liberalisation to achieve the objective of globalisation of trade under new economic policy. In order to liberalize, foreign trade from the control of government and to allow its growth in a free manner, following steps have been taken. (i) In July 1991, Indian rupee was devalued by 22 percent in two instalments so as to let the rupee find its real exchange rate. (ii) In 1993-94, **full convertibility on trade account** was enforced and integrated exchange rate system was adopted. (iii) In 1994-95 **full convertibility on current account** was enforced. It implies freedom to buy and sell foreign currency for international transaction on current account. (iv) Restrictions on imports and exports have been reduced. Import

(v) Quantum of import duties has been lowered. (vi) In the Export Import Policy 2000-2001, restrictions on the import of 751 items have been withdrawn. In 2001-2002 import of all goods will be made free. (vii) According to Export Import Policy 2000-2001, old machines could be imported for the next 10 years without licence.

(2) Globalisation of Investment: It means removal of restrictions on foreign investment and offering concessions to attract the same. In new economic policy 1991, government has liberalized foreign investment policy and taken following measures in this respect:

(i) In 1991, foreign capital investment upto 51 percent has been allowed in 34 high priority industries without prior approval of the government.

(iii) In 1996, foreign direct investment upto 74 percent has been allowed in 9 industries. Foreign investors are allowed to take profit on investment to the country of origin.

(iii) If foreign companies want full ownership of joint ventures in India or want to set up subsidiary companies ..

(iv) Restrictions on transference of shares by one non-resident Indian (NRI) to another non-resident companies will run counter to the spirit of the law.

(v) Foreign investors are allowed to disinvestment equities at market price. They are free to remit the
have been withdrawn.

[vii] Several concessions and facilities have been given on foreign direct investment for the development needs of disinvestment to the country of origin.

of infrastructure viz. roads, power, communications, etc. Hundred percent equity has been allowed in case of power houses.

(vii) Multinational Companies (MNC) have been given many concessions to set up export-oriented units in the country.

(viii) Foreign Investment Promotion Board has been established to provide single window facility

[ix] Non-resident Indians are allowed 100 percent investment in Export Houses, Trade Houses, approval of foreign investment.

(x) In Export Import Policy 2001-2002, foreign and multinational companies are allowed 100 per cent FDI in the following sectors:-

(xi) New Insurance Act provides for 26 percent foreign investment in the share capital of private sec-

(3) Globalisation of Finance: As a result of Economic Policy 1991, liberal policy has been adopted by companies.

... applied in respect of international finance. International finance refers to foreign governments, international institutions, commercial borrowing, grants and investment. It also includes foreign financial institu-

is and foreign banks. It is the policy of the government to minimize restrictions on foreign capital now to provide diverse facilities for the setting up of foreign banks and other financial institutions. Following

measures have been taken for globalization of international finance:

W) Companies governed by Foreign Exchange Act have been allowed to go out the permission of the Reserve Bank of India.

(iii) Efforts are afoot to mobilize deposits of non-resident Indians.

(iv) Indian Financial Institutions like, State Bank of India, have sold **India Resurgent Bonds** to mobilize foreign capital. (v) Many facilities have been offered to foreign banks to establish themselves in India.

In short, globalization of Indian economy has been progressing rapidly.

(4) Effects of Globalisation of the Indian Economy: Main effects of globalisation of the Indian economy are mentioned below:

(i) Increase in Foreign Trade: As a result of foreign trade policies adopted in the wake of the process of globalisation, India's share in the world trade has gone up. In 1990-91, India's share in world trade was 0.53 percent. In 1995-96, there was 20 percent increase in it, that is, it rose to 0.60 percent. In 2003-2004, it further increased to 0.8 percent.

Table 1. India's Share in World Trade (Percentage)

Year	India's Share in World Trade
1990-91	0.53
1995-96	0.60
2003-2004	0.8

(Source: Economic Survey, 2004)

Above table shows that as a result of globalisation of India's foreign trade, there has been a little increase in India's share in world trade. However, many other countries of the world like China, Hong Kong, Singapore, etc. have much larger share in world trade than India. For instance, share of China in world trade is 6 percent, of Hong Kong 3.5 percent and of Singapore 2.5 percent. But India's share is even less than 1 percent. However, share of exports in India's GDP has been constantly rising. In 1990-91, it was 1 percent of GDP that rose in 2003-2004 to 10.4 percent.

(ii) Increase in Foreign Investment: As a consequence of globalisation, there has been a considerable increase in foreign direct investment as well as foreign portfolio investment. In 1991, foreign direct investment was barely to the tune of Rs. 174 crore that rose in 2002 to Rs. 19,500 crore. Thus foreign direct investment has witnessed an increase of 112 times. Similarly, portfolio investment has also increased very much. In 1991, net portfolio investment was merely Rs. 11 crore which in 2001-2002 increased to Rs. 10,100 crore. Between 1991 and 2002 number of foreign collaboration projects was 17,664 with foreign investment amounting to Rs. 32,710 crore. Thanks to the policy of liberalization in 2001-2002, engineering industry had the maximum foreign direct investment amounting to Rs. 1,799 crore.

Table 2. Foreign Investment in India

Year	Foreign Direct Investment (Actual Inflows) (Rs. crore)	Net Portfolio Investment (Rs. crore)	Total foreign Investment (Rs. crore)
1991	174	11	185
2003	19,500	10,100	29,600

(Source: Handbook of Indian Statistics, 2004)

The above table shows that in 1991 total foreign investment was Rs. 185 crore that increased in 2003 to Rs. 29,600 crore.

(iii) Globalisation of Capital: India has made enough progress as a result of globalisation of capital.

In 1990-91, total foreign capital authorised was Rs. 8,123 crore, of which actual utilisation was Rs. 6,704 crore. On the contrary, in 2003-2004, total foreign capital authorised was Rs. 17,105 crore as against actual utilisation of Rs. 17,344 crore. Rise in the utilisation of foreign capital is an indication of the progress of globalisation of Indian economy.

Table 3. External Assistance

Year	Authorisation (Rs. crore)	Utilisation (Rs. crore)
1991	8,123	6,704
2003-2004	17,105	17,344

(Source: Economic Survey, 2004-2005)

Consequent upon globalisation, number of foreign banks in India has been rising constantly. In 1991 there were 25 foreign banks operating in India. Number of foreign bank branches rose to 218 in 2004.

(iv) Foreign Exchange Reserves: As a result of globalisation of Indian economy, foreign exchange reserves have also increased substantially. In 1991, foreign exchange reserves of India amounted to Rs. 4,82, crore which in 2000-01 increased to Rs. 1,97,204 crore. Thus, there has been an increase of 41 times in foreign exchange reserves of India.

QUESTIONS

- What is meant by globalisation? Give its merits and demerits.
- Discuss the concept of globalisation. Examine its advantages and disadvantages.
- Is globalisation desirable? Give reasons in support of your answer.
- Define the term globalisation. Give arguments in favour and against globalisation.
- What do you mean by globalisation of Indian economy? Discuss its features and effects.
- Examine the process of globalisation of Indian economy.
- What is meant by globalisation of economy? Explain dimensions and causes of globalisation.

25

ELEMENTARY CONCEPTS OF VAT

GATT, WTO AND TRIPS

- Value Added Tax (VAT)**
- Value added tax is such an indirect tax which is imposed on Value Added at various stages of production. Value added refers to the difference between value of output and value of intermediate consumption. This concept is prevalent in most countries of the world. VAT in fact is the multi-stage sales tax. It is imposed at each stage of production "A full fledged VAT is, in essence an ad valorem tax on domestic final consumption levied and collected at all stages between the point of production and the point of final sale."

(VAT is imposed on value added at each stage of production. Value added is market value of sales minus purchases of non-factor inputs.)

$$\text{Value Added} = \text{Total Sales} - \text{Cost of Intermediate Consumption} = \text{Final Sales}$$

$$= \text{Gross Domestic Product} = \text{Rent} + \text{Interest} + \text{Profit} + \text{Wages}$$

Estimation of VAT involves **Invoice method**. This method involves taxation at each stage of production. The producer is then offered exemption or compensation on the tax paid on the purchase of intermediate goods and services. So that, in effect, each producer has to pay tax only on the value added, not on the value of output. It is calculated on the basis of sale and purchase invoices. This tax has no relation with size and weight etc. of the commodity.

In the Federal Structure as of the Indian economy, VAT may be levied in three possible ways: (1) **Central Levy** :- VAT may be levied by the central government. The central government will fix the tax rates. The revenue thus collected is distributed among different states of the country. (2) **State Levy** :- VAT may completely be a tax levied by the state government. In such a case the central government has no role to play. (3) **Dual VAT** :- This is the type of tax imposed jointly by the centre and the states. Area of responsibility of each government is clearly defined. One of its various forms is that the centre regulates the operation of VAT from the stage of initial production to the stage of final sale of the goods in the wholesale market. The tax-revenue at the stage of final sale in the wholesale market is realised and retained by the state governments.

Session 0.

- O Merits and Demerits of VAT**
- Principal merit of VAT is that it acts as **built-in-check** on the tax-evasion. Accordingly, tax revenue of the government enhances. Also, it involves **uniform rate of taxation**. So that it becomes **Neutral** in nature. Further, VAT ensures more effective regulation and control of demand of various goods and services in the market. If necessities of life are exempted, VAT acts like a progressive taxation.
 - VAT involves 'cross audit' of the invoices, so that it can be effectively implemented. In a poor country dominated by a large number of small enterprises, VAT may prove to be an **effective instrument of taxation**.
 - However, compared to sale tax, VAT is certainly a **more complex system of taxation**. It involves lot of book keeping and audit control. It is quite expensive system and encourage inflation. Authorities do not get co-operation from the people. It is difficult to adopt this system in underdeveloped countries because of administrative inefficiency. Despite these shortcomings, VAT is being increasingly adopted in place of sales tax in most nations of the world.

4. **VAT widens the tax-net** by covering 'goods' as well as 'services'. A separate tax on specific services (as it exists in India at present) is no longer required. Integrating 'services' with 'goods', tax revenue is expected to substantially rise.

2. General Agreement on Trade and Tariff (GATT)

O (i) Introduction

After world war - II many International institutions were proposed to be established with a view of reconstructing the war economies, initiating their growth process, ensuring international monetary stability as well as promoting international trade. International Monetary Fund (IMF), World Bank and International Trade Organisation were some of the important proposed institutions. IMF and World Bank were established in 1945, though the third one found its modest beginning in the year 1947 when nearly 23 nations of the world signed its Charter in Havana (Cuba). Later in the same year the member nations entered into general agreement on tariffs, popularly known as the General Agreement on Tariff and Trade (GATT). The agreement aimed at lowering the tariff rates and promoting the international trade to the extent possible. The GATT agreement became effective from January 1, 1948.

O (ii) What is GATT?

The GATT embodies set of rules and principles designed to promote international trade in general and the reduction of tariff barriers in particular. In the words of the **Sir Sidney J. Wells**, "The essence of GATT is an understanding by the contracting parties to engage in mutual tariff reduction and to extend to all other contracting parties any reductions made in favour of participating country." GATT has thus far undergone eight rounds of international dialogue. The last round successfully concluded on Dec. 15, 1993 in Punta Del Este, the capital of Uruguay, and came to be popularly known as **Uruguay Round**.

O (iii) Objectives of GATT

- (1) Expansion of international trade.

✓(2) Increased level of productivity with a view to ensuring full employment in the member countries.

(3) Expansion of world-resources and their fuller utilization.

(4) Increased level of living for the global population.

These objectives of GATT are very general in nature. However, these are sought to be achieved following a rigorous policy of free and multi-directional international trade.

O(iv) Principal Elements of GATT

According to Prof. Elseworth GATT is based on the following principles:

✓(1) Trade is to conducted in a non-discriminatory manner

If a member nation is granted any concession in tariff by the other member nations, the concession so granted will automatically extend to all member nations of that GATT. This indeed is the chief principle of GATT. Accordingly all member nations will get Most Favoured Nation Treatment - MFNT.

✓(2) Discouragement to Quantitative Restrictions

Barring a few exceptions, GATT seeks to discouraging quantitative restrictions on international trade. However, no coercion is to be used in reducing the quantitative restrictions. Only the policy of moral persuasion is to be adopted. In this context, Prof. Elseworth is of the view that GATT may not succeed in altogether eliminating that quantitative restrictions. Nevertheless, it may certainly succeed in alleviating the 'balance of payments problem' of the member nations. GATT favours quantitative restrictions only in the following circumstances: (a) When owing to unfavourable balance of payments, there is a serious problem, of foreign exchange reserves. (b) when imports act as a hindrance in the Price Support Policy or Production Control Policy of the member nation (c) when less-developed member nations are pursuing some specific programme of growth dynamism.

✓(3) Disagreements are to be Reserved Through Consultation

According to clause XXIII of the Agreement, member nations are required to sort out their differences through mutual dialogue. However, unresolved issues may be reported in the annual meeting of GATT. A committee may be appointed to look into the areas of disagreements. The decision of the committee becomes a binding on the concerned member nations. In case of violations the member nations may be deprived of all possible concessions. Thus far, hardly there have been any notable violations. Chile edged a complaint against Australia that the latter has sabotaged her exports of natural Sodium nitrate by way of offering subsidies to the production of the synthetic Sodium nitrate. Australia responded positively to the GATT ruling suitably amending its subsidy policy and satisfying Chile's objections.

The GATT was replaced by WTO in January 1, 1995.

13. World Trade Organisation (WTO)

O(i) Introduction

Fifty years have passed since the Bretton Woods agreements established a system for managing the international monetary system and trade under the leadership of the International Monetary Fund (IMF), International Bank for Reconstruction and Development (IBRD or the World Bank), and a couple of International Trade Organisation having set of rules and principles, mutually designed and agreed upon to promote international trade in general and reduction of tariff barriers and removal of import restriction in particular. It is a new world trade order or system. WTO has taken over GATT to implement the agreement reached at the Eighth Round of GATT negotiations (also known as the Uruguay Round) on December 15, 1993. The Eight Round Agreement consists of a set of 28 bilateral agreements that each contracting parties to the GATT signed. In short, WTO, is a new globally recognised trade organisation with the new name succeeding GATT on renewed agreements and having a new and tougher enforcement power to promote international trade. WTO consists of a

council for goods, a council for services and a council for intellectual property rights. WTO alongwith the World Bank and the IMF, will greatly influence global trade policy. The Declaration on the Contribution of WTO to achieving Greater Coherence in Global Economic policy-making identifies the need for strengthening the relationship between the activities of the WTO, IMF and the World Bank as a way of ensuring greater coherence in Global Economic Policy-making.

O(ii) Nature of Agreement

The Uruguay Round involved two thousand six hundred and thirty one days of negotiations, more than 120 participating nations and thousands of controversies, debates and enough heartburn to go around the globe several times over. The agreement was finally signed on 15th April 1994 in Marrakesh, Morocco. On the basis of this agreement WTO is established and has become operational since January 1995. India's ratification of the Agreement has ensured the nations status as a founder-member of WTO. The WTO will spell order for the near chaotic state of the \$ 5 billion international trade in goods

and services. According to a recent study conducted by OECD, if the provisions of the Eighth round fully implemented, the global income would rise by another \$2,74,000 crore by 2002. Of this \$8,600 crore will accrue to the developing countries. India's export should go up, as per Govt. Statement parliament on 6th December 1993 by \$ 150 crore to \$ 200 crore annually in addition to the nominal growth.

O(iv) Objectives of WTO

Important objectives of WTO are as follows:

- The primary aim of WTO is to implement the new world trade system as visualised in the Agreement.
- To promote World Trade in a manner that benefits every country.

(c) To ensure that developing countries secure a better balance in the sharing of the advantages resulting from the expansion of international trade corresponding to their developmental needs.

(d) To demolish all hurdles to an open world trading system and usher in international economic renaissance because the world trade is an effective instrument to foster economic growth.

(e) To enhance competitiveness among all trading partners so as to benefit consumers and help global integration.

(f) To increase the level of production and productivity with a view to ensuring level employment in the world.

(g) To expand and utilise world resources to the best.

(h) To improve the level of living for the global population and speedup economic development of the member nations.

These objectives of WTO are more or less similar to the objectives of GATT. However, under WTO these are sought to be achieved following a more rigorous and tougher enforcement of policy export competition, market access and free trade.

O(v) Scope of WTO

Traditionally, GATT was concerned with the trade in goods which were mainly primary manufactured products. The General Agreement on Trade in Services (GATS) is the first multilateral agreement on trade that has as its objective the progressive liberalization of trade in services. The agreement covers trade in all service sectors and the supply of service in all forms. WTO has a much wider scope than GATT as new areas are included in the Agreement having implications for the production process of goods also. Agriculture, a controversial area, has been included and other areas are implication for the production process of goods have also been included. The other new areas are:

1. Trade Related Intellectual Property Rights (TRIPS)

2. Trade Related Investment Measures (TRIMs)

3. General Agreement on Trade on Services (GATS).

The WTO has tougher implementation power and wider acceptance for the implementation of the Agreement than ever before under GATT. Its principal Agreements are as under:-

□ 4. WTO and INDIA

India is one of the founder members of World Trade Organisation. India has 90 percent of its trade with those countries that are member of WTO. There has been a lot of debate on the issue whether India would gain or lose by becoming member of WTO or by signing Dunkel Draft. Following arguments can be advanced in favour or against India becoming a member of WTO.

□ 4.1 Disadvantages to India or Arguments against WTO

Critics are of the opinion that agreements on the provisions of GATT or WTO will be beneficial to developed countries alone and underdeveloped countries like India will stand to lose. Entry of foreign companies in India will rob our culture and traditions and the country will be plundered on the pattern of East India Company.

Communist leader Somnath Chatterjee opined that the final document of GATT or WTO is a document that will render India a colony of developed countries once again. Future generations of the nation will never forgive the ruling party for such a blunder. Following arguments are given against GATT or WTO:

(1) Disadvantage to Agricultural Sector:

It is apprehended that by including agriculture in GATT or WTO, Indian farmers will become dependant on multinational companies for improved seeds and agricultural technology. The farmers will not be able to save better seeds from their crop and will be compelled to buy at high rates insecticides, fertilizers, agricultural machinery etc. from multinational companies, every time. Big farmers alone will be able to take advantage of improved farm technology. The cumulative effect of all this will be that small farmers, who are large in number, will be forced to sell their lands. This will further aggravate the problem of unemployment in rural sector. Plants and cattle feeds will come under the ambit of patents and so will be under the control of multinational companies. This will harm the interests of Indian agriculture. Moreover, it will adversely affect the announcement of minimum support price of agricultural products and public distribution system.

(2) Reduction in Subsidy:

Critics are of the opinion that after concluding GATT or WTO Agreements, subsidy to agricultural sector will be slashed. It will affect adversely the poor farmers.

(3) Import of Food grains:

It is apprehended that by entering into GATT or WTO Agreements, surplus food grains of developed countries will be imported on a large-scale. It will adversely affect

country's balance of payments.

(4) Restrictions on the use of Brand Seeds: Under WTO, scientists and farmers will not be able to use brand seeds for commercial purpose. Under the circumstances, big farmers alone could buy foreign expensive seeds. It will be difficult for small and marginal farmers to make use of improved variety of seeds. It will widen the gap of economic disparity.

(5) Patent Rights of Natural Products: If foreign MNCs took initiative and secured rights over minor natural products of India, it may lead to serious consequences for Indian agriculture. For instance, **neem** can be used for making soap, tooth-paste, medicines etc. Similarly, there is large demand for Psyllium Husk (l Sabgol) in foreign countries. Their foreign patent may prove very expensive for India.

(6) Plant Breeding Protection: According to WTO, protection of breeding has been determined by Sui-Generis system. Indian farmers will have to spend large amount of money to get new and improved variety of plants and their dependence on multinational companies will further increase.

(7) Arguments against TRIMs: In terms of WTO, India could not impose any restriction on foreign investment. Consequently, multinational companies will be free to establish their industries in India. It will harm indigenous industries. Domestic investors will suffer as they have little capacity to compete with multinational companies. As a result, on the one hand, country's production will get discouraged and unemployment situation aggravated, and on the other, dominance of multinational companies over country's economy will go on extending and their profits will continue to rise. All this will harm our economy.

(8) Trade Related Intellectual Property Rights: Presently, India does not recognise patents in the field of medicines, food grains and chemical products. Most of the developed countries accord recognition to product patent. With the enforcement of the provisions of the Agreement, all member countries of WTO will be required to accord recognition to product patent. India has been given a period of ten years to make provision for patent. According to critics, with the enforcement of new system, prices of the existing medicines will rise steeply. Multinational companies may file a claim against copying of any patent before World Trade Organisation. Indian researchers will have to face avoidable difficulties to prove their non-involvement in imitation case. They will have to waste their time and money. In this context it may be noted that a complaint will be filed by the complainant in his own country. Dispensation of justice is cheap in India and the amount of compensation is also low. But in developed countries like America it is very expensive and Indian producers may have to spend a lot of money in their defence if a prosecution is launched against them in that country. Thus, justice bought in other countries will be relatively dearer than in India. Indian pharmaceutical industry will be hard hit by patent agreements. MNCs will charge exorbitant prices of variety of medicines.

(9) Foreign Ownership of Plants and Animals: Plants and animals have also been included in the preview of WTO and the same can be purchased by foreign companies. It will not be in the interest of Indian economy, as has been apprehended by the President of Madras Development Institute.

(10) Arguments against TRIPS: It is argued against TRIPS i.e. Trade Related Intellectual property, that it will discourage the process of research and innovation in the country. Critics are of the opinion that it is unjust to have uniform standards for all member countries, in matters of TRIPS, because these standards vary with economic and technical development of each country. The level of technology used in the developed country can never be reached by developing countries. India will therefore stand to lose. Any setback to research and innovation process will accentuate the backwardness of our agriculture and medical services will be beyond the reach of an ordinary man. It is feared that prices of medicines may rise by 10 to 15 times.

(11) Disadvantages to Service Sector: It is feared that WTO will adversely affect our service sector also. Our banking, insurance, transport, education and hotel services will not be able to compete with the similar services offered by MNCs. As a result, indigenous institutes engaged in these service sectors will gradually wind up and our economic freedom will be endangered.

(12) Disadvantage of Patentisation: Maximum apprehensions are being expressed against the provision of patent for the period of 20 years. Such a long period will have an adverse effect on Indian economy, especially on scientific and medical research. Consequently, prices of most of the goods are likely to increase from six to twenty-fold.

14.2 Advantage of WTO for India

Or

Arguments in favour of WTO

Above arguments have been advanced against WTO, whereas reality is quite different. An indepth study reveals that these arguments present only one-sided assessment of the proposals. Some of the arguments are totally baseless. Some of the main advantages likely to accrue to India by this Resolution are as follows:

(i) General Advantages: India is likely to get following general advantages from WTO:

(1) Multilateral Trade Negotiations: India has been in favour of multilateral trade negotiations from the very beginning; because as a result of it all member countries will enjoy the benefits of **Most Favoured Nation** clause. As a member of WTO, it will be possible for India to enter into multilateral trade agreements with 124 countries. There will be no need to enter into bilateral agreements with these countries. Besides, custom tariffs will fall and trade expand with the opening of new markets. It is hoped that as a result of WTO agreements world trade will witness an increase ranging between 2000 and 3000 million dollars. India can also increase the value of its trade by 150 to 200 crore dollars. This increase is in addition to the general rise in India's foreign trade.

(2) No Reduction in Subsidies: It is wrong to argue that there will be reduction in subsidies to agriculture as a result of WTO proposal. The question of reduction in subsidy arises, only when the said

There will also be further development of high yielding varieties of crops. In general system, there will be increased investment in Research and Development in agricultural

therefore wrong to believe that on account of WTO subsidy to agriculture will be reduced. The fact is with acceptance of the proposal, chances of rise in the quantum of subsidy become bright. Because of membership of WTO, no reduction will be effected in the on-going assistance being provided to p

less rather it will promote export of agricultural products, agricultural research and development of yielding variety of crops. All our major projects of agricultural development are outside the purview

(3) No Need of Increase in Imports of Foodgrains: On account of WTO Agreement will not be necessary for India to increase import of foodgrains. It is so because import of foodgrains is not necessary for such countries as face balance of payments difficulties and so have already imposed quantitative restrictions on the imports. India has been facing balance of payments difficulties and as such it is not necessary for her to import foodgrains. Besides, due to balance of payments problem, India will be free to check imports or impose quantitative restrictions thereon. It is also true that India will not have to face balance of payments problem for all times. Agreement related to agriculture is for a period of six years. But, if at all India has to import foodgrains, then import duty on foodgrains will be 100 per cent, on processed food items it will be 150 per cent and on edible oils around 300 per cent. Such a high rate of import duty will render the price of imported foodgrains in domestic markets quite prohibitive. The question of import of foodgrains in the country does not arise.

~~the~~ Draft included copyright, trade mark, trade secrets, industrial designs, power supply, geographical indications, and patents under intellectual property rights. The draft is not going to cause any special harm

(4) Increase in Exports of Foodgrains: As a result of reduction in government subsidies at international level. Patents, especially in the context of those related to medicines, there is difference between the provisions of Indian law and patent provisions of Dunkel Draft. It is therefore possible that has recommended a cut in custom duties and reduction in import restrictions. It will also promote hardly 10 to 15 per cent medicines figure in the patent list. As such, there is no point to be over aggressive on this score. World Health Organisation has kept most essential and life-saving drugs

(5) Freedom to use Seeds: Former Director General of WTO has clarified that the farmer will be free to use seeds, saved from his crop, for the next sowing. He will also be free to get his seeds exchanged with the seeds of other farmers. Researchers will be able to prepare another variety from a reserved variety. However, they will have to seek permission from original breeder for it.

(6) Patent and Sui-Generis System: Government has clarified that in India there is no provision of patenting seeds nor is there any intention of changing this provision in future, as well. It has also made it clear that in the matter of seed-patent and **sui-generis** system it will make its own provisions under which Plant Breeders will be issued certificates. In this system, it has been further clarified, there will be provision for the rights of the farmers as well as that of the researchers. Farmers will be able to improved and purified seeds in the market through the medium of the protection of rights of plant breeders and it will benefit Agricultural Research Institutes as well. As a result of this, the government has also made it clear that in the matter of seed-patent and **sui-generis** system it will make its own provisions under which Plant Breeders will be issued certificates. In this system, it has been further clarified, there will be provision for the rights of the farmers as well as that of the researchers. Farmers will be able to improved and purified seeds in the market through the medium of the protection of rights of plant breeders and it will benefit Agricultural Research Institutes as well.

(9) Trade Related Investment Measures – TRIMS: Provisions of WTO under Trade Related Investment Measures are to the advantage of India. TRIMs That give foreign investors the same rights as domestic investors, also give full right to the government regarding the extent to which it may allow foreign capital investment in trade. It also accords freedom to the government to decide about the type of additional capital investment in its country. Again it is the concerned government that will decide about the obligations to be fulfilled to meet the compulsions of exports from the viewpoint of balance of payments.

(g) Trade Related TRIPS Provisions of WTO under Trade Related

(10) Services: By including trade in service sector under WTO proposals, developing countries will stand to gain. According to WTO developed countries will establish large number of trade

and service establishments like banking, insurance, transport, hotel, etc. In return, developed countries will allow access to their markets to India for the sale of her products. By allowing MNCs to set up their business establishments in the country, on the one hand, trade in service sector will extend and, on the other, millions of unemployed persons in India will get ample employment opportunities. It will check immigration of young men to foreign countries due to lack of proper employment opportunities within the country and also solve the problem of brain drain.

(11) Clothing and Textile Industry:

WTO will benefit clothing and textile industry the most. Under Multi - Fibre Arrangements (MFA) our cloth and ready-made garment trade was subject to quota restrictions. As a result of WTO all these restrictions will be removed in the next ten years. Export of Indian clothes and textiles will receive great fillip. Withdrawal of quota fixation process will encourage our exports to America and European countries. It will boost textile industry and new employment opportunities will be created in this sector.

O Conclusion

In short, on analysis of the above facts it can be concluded that WTO will definitely be of advantage to India. All doubts and arguments against WTO are exaggerated and baseless.

■ 5. Trade Related Intellectual Property Rights - (TRIPS)

TRIPS' is one of the principal element of Dunkel Draft (referring to GATT) subsequently adopted by WTO. Dunkel Draft places copyright, trade works, trade secrets, industrial designs and patents under the purview of TRIPS. This is not expected to be detrimental to India's interest. Because, barring patents, in all other areas of TRIPS, Indian judiciary and administrative services are of international standard. In the field of patents, particularly related to medicines, laws in India do not exactly synchronise with the Dunkel proposals. As a result, there may be some modern rise in the prices of medicines. It is to be noted, however, that only 10 to 15% of the medicines in India fall within the purview of patents as proposed by Dunkel. World Health Organisation has kept essential and life saving drugs out of the purview of Dunkel Draft. Moreover, there is generous availability of non-patented medicines in India which should help contain the price-rise of patented medicines. Also, it is only after a period of 10 years that patent laws will come into force. This period should be sufficient enough for the Indian Pharmaceutical Industry to develop its own brand of effective medicines.

Incidentally, patents are given to inventions and innovations and not for discoveries. The natural gene or genetic material is away from allowing them to be patented. Thus following will remain outside the preview of patents: plants, animals, biological system related to procreation of plants and animals and such products which are detrimental to man, animal or the general environment.

QUESTIONS

- What is VAT? How is VAT different from the existing tax structure in India?
- 'VAT is expected to check tax evasion'. How?
- What is GATT? State the 3 principal elements of GATT.
- What is meant by World Trade Organisation? Discuss its objectives, scope and the nature of Agreement under it.
- Explain fully the nature and functioning of World Trade Organisation.
- What is meant by World Trade Organisation? Why is it established? How will you justify the membership of it for India?
- Critically examine the relevance of World Trade Organisation (WTO) for Indian Economy.
- Write a short note on TRIPS.

Trade Related Intellectual Property Rights.